



Street View

DECEMBER 2017
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EXECUTIVE SUMMARY

With U.S. tax reform legislation seemingly poised for enactment, one might assume that policy uncertainty generally—and tax policy uncertainty, specifically—is falling. The reality is more complicated, however, with some measures suggesting that policy uncertainty is actually on the rise.

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Inside:
**Policy-related Uncertainty May Be Rising,
Despite Tax Reform**

Policy uncertainty is an investor’s nearly constant companion, not only in times of crisis but even in relatively benign environments. With U.S. tax reform legislation seemingly on track to pass in short order, a casual market observer could be forgiven for assuming that uncertainty in general—and uncertainty around tax policy, in particular—is falling.

The reality appears more complicated. As of this writing, the U.S. Senate had passed its version of a \$1.4 trillion tax reform bill. Assuming the House and Senate are able to merge their two versions of the legislation, it is expected quickly to be signed into law. While many details remain unclear, it would stand to reason that companies with large tax liabilities will be among those with the most to gain from a large cut in the corporate income tax rate (see appendix for average effective tax rates by industry).

TAX POLICY UNCERTAINTY REMAINS ELEVATED (FOR NOW)

Indeed, companies in the S&P 500 Index with the highest tax rates have seen a large jump in volatility recently, as the debate over tax reform took various twists and turns. Figure 1 plots the ratio of the volatility of high tax companies to that of the broader index.¹ In the past several weeks, the chart shows, shares of high-tax companies became as much as 20% more volatile than the overall market.

FIGURE 1 - RATIO OF REALIZED VOLATILITIES (1/1/15-12/4/17)

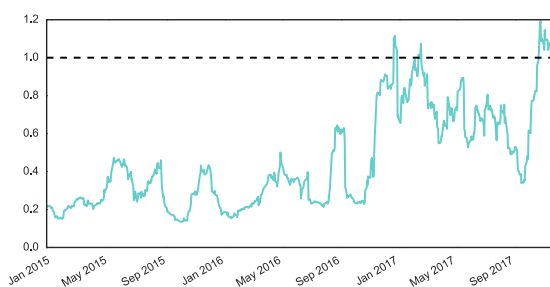


Figure 1 - Ratio of realized volatilities: Portfolio of high-tax stocks over SP500. Source: Bloomberg and author’s computation.

Perhaps more interestingly, while high-tax companies’ relative volatility seems to have eased as the Senate passed its version of the tax reform bill, it remains elevated relative to the rest of the index. One reason may be that even though enactment of tax reform appears highly probable, the bill’s actual effects remain somewhat murky.

BROADER POLICY-UNCERTAINTY MEASURES HAVE BEEN RISING

It’s also worth remembering that tax uncertainty is only one of many different sources of U.S. policy uncertainty that investors must contend with. In the short term, for example, the government still must negotiate a spending bill. The future of the Affordable Care Act is unclear. Uncertainty persists about the pace, timing, and ultimate effects of future interest rate hikes, and a new Fed chair is taking office early next year. Election Day 2018 is less than a year away.

Indeed, zooming out from the narrow question of tax policy, one finds that policy uncertainty more broadly has been rising—even as tax reform has appeared to near resolution. Baker, Bloom, and Davis (2016)² describe an interesting proxy for overall policy uncertainty with their daily Index of Economic Policy Uncertainty (EPU). The index derives an overall measure of uncertainty from thousands of newspaper articles going back to 1900, with the authors finding that policy uncertainty is associated with higher equity-market volatility, reduced investment and employment in certain sectors, and other effects.

Figure 2 plots the Economic Policy Uncertainty Index from the beginning of 2017 and shows that broad, macro-level uncertainty surrounding U.S. policy began rising late this fall, after having moderated throughout much of the year.³

1 Ratio of the realized volatility of high-tax companies to that of the S&P 500 Index. This is the residual realized volatility (adjusted by the realized volatility of the SP500 Index) of an equally-weighted portfolio of three indices: TAXR Index, GS High-tax Index (GSTHHTAX Index) and Morgan Stanley High-tax Index (MSXXHTAX Index). The appendix reports the average effective tax rate by industry over the period 2007-2011 (US Treasury)

2 Scott R. Baker, Nicholas Bloom, and Steven J. Davis. 2016. "Measuring Economic Policy Uncertainty." Quarterly Journal of Economics, vol 131(4), pages 1593-1636.

3 The figure plots the 30-day moving average starting in January 2017 through December 2017.

FIGURE 2 - INDEX OF POLICY UNCERTAINTY THROUGH 11/30/17

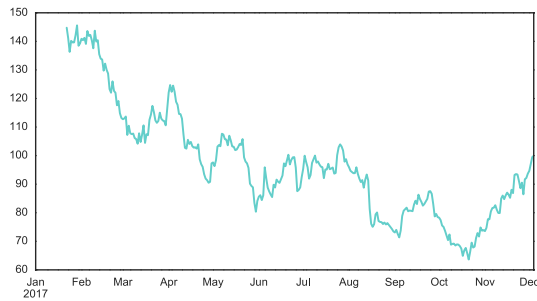


Figure 2 - Policy-related uncertainty index. 30-day moving average. Source: policyuncertainty.com and author's computation.

IMPLICATIONS FOR ALLOCATORS

Despite the likely imminent passage of major tax reform legislation, uncertainty about U.S. fiscal and monetary policy appears to be trending higher—not lower—with potential ramifications for future financial market volatility, employment, corporate investment, and other measures. Although the passage of tax reform legislation after a lengthy battle may hint at some sort of closure, allocators should be aware that policy uncertainty seems likely to remain their companion for a long time to come.

APPENDIX

This appendix provides the average effective actual federal corporate tax rate by industry (2007-2011) as provided by the U.S. Treasury.⁴

FIGURE 3 - EFFECTIVE ACTUAL TAX RATE, AVERAGE 2007-2011 (%)

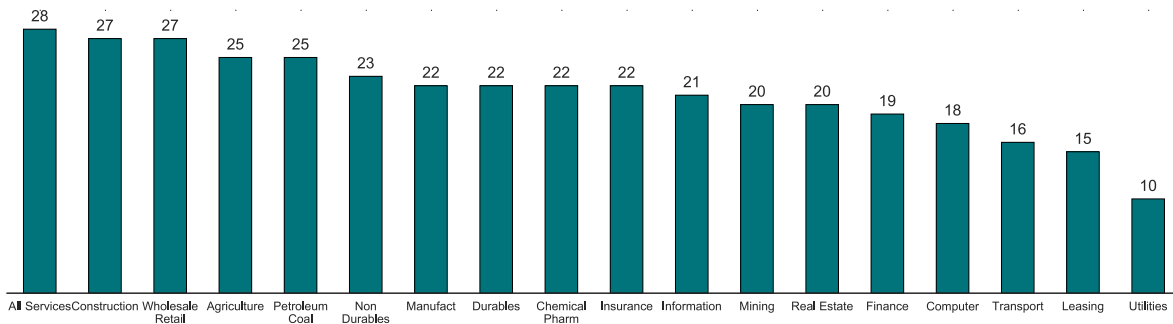


Figure 3 - Effective Actual Tax Rate, Average 2007-2011. Source: US Treasury

⁴ <https://www.treasury.gov/resource-center/tax-policy/tax-analysis/Documents/Average-Effective-Tax-Rates-2016.pdf>

INTERESTING TECHNOLOGY-RELATED ARTICLES

Two Sigma views itself as a technology company that applies a rigorous, scientific method-based approach to investment management. Our technology is inspired by a diverse set of fields including artificial intelligence and distributed computing. Occasionally, we read articles in the popular press that describe applications of technology that we find interesting, thought-provoking, and relevant for people thinking about improving the investment management process. Below is a subset of the articles we read this month. Please do not view the inclusion of these articles as an endorsement by Two Sigma of their viewpoints or the companies discussed therein. Two Sigma welcomes discussions (and contributions) about these and other such technology-related articles.

“A.I. Will Transform the Economy. But How Much, and How Soon?” by Steve Lohr

<https://www.nytimes.com/2017/11/30/technology/ai-will-transform-the-economy-but-how-much-and-how-soon.html>

There are basically three big questions about artificial intelligence and its impact on the economy: What can it do? Where is it headed? And how fast will it spread?” So begins a recent New York Times article on the potential near- to medium-term social and economic impacts of A.I. The article cites a growing body of research suggesting that beyond the technology itself, economics, government policy, and social attitudes will play a major role in determining the scope and pace of A.I.’s major impacts. It further suggests that broad A.I. adoption will follow a pattern similar to that of previous innovations, such as the electric motor, although the timing may be accelerated. Among the most eye-catching predictions cited in the article is one made by McKinsey: in a recent paper, the consulting firm predicted that A.I. will force between 16 million and 54 million Americans to look for new occupations within the next 13 years.

“Google Street View Can Reveal How Your Neighborhood Votes” by Linda Poon

<https://www.citylab.com/transportation/2017/12/google-street-view-data-demographics-cars-research/547436/>

A team of A.I. researchers at Stanford recently developed a pair of algorithms that predict the income level, educational attainment, voting patterns, and other measures for different U.S. neighborhoods, based on images of locally parked cars captured by 50 million Google Street View images. Specifically, the researchers made use of a convolutional neural network (CNN), a powerful deep learning algorithm with particular strengths in object classification. The accuracy of the researchers’ methodology was comparable to that of the Census Bureau’s American Community Survey—a study that costs \$250 million annually and requires a small army of data collectors to go door-to-door. The story is an interesting example of how alternative datasets can provide high-quality socio-economic insights in an increasingly efficient way.

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