

An election returns policy index: Theory and application to the 2016 U.S. presidential election

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Abstract

We propose a new stock-market-based measure which captures the effect of government policy implementation on profit-relevant issues, based on a summary statistic relating returns on an election date (or other political event) to subsequent returns. Our “Election Long-Short Index” is the difference in market-capitalization-weighted returns of firms that outperform versus underperform the market on election day. We discuss the circumstances under which our index may be interpreted as a measure of policy implementation success, and apply it to the 2016 U.S. presidential election (as well as the Brexit referendum in the United Kingdom). In both cases, our measure moves in expected ways in response to subsequent political and business news. We perform a number of decompositions of our index, which provide further insights on investors’ evolving beliefs about the policy goals and implementation of the Trump administration.

JEL classifications: G10,G38,P16

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1 Introduction

Stock markets have proven to be a useful testing ground for the expected business effects of a wide range of phenomena, from natural disasters to covert CIA operations.¹ In recent years, researchers have turned their attention in particular to understanding the effect of politics on business profits by studying the stock market’s reaction to unexpected political turnover, often coming as a result of unexpected election results.²

While these studies crisply capture investors’ (change in) expectations at a moment of particular importance, it raises the question of the extent to which these expectations are borne out in practice. In this paper, we propose a stock market based “investor policy index” which aims to capture the extent to which initial expectations of policy shifts are sustained and whether the anticipated changes are ultimately implemented. Our measure is based on a simple summary statistic relating returns on an election date (or some other politically-relevant event) to subsequent returns.

For an election (or other event, political or otherwise), we use the firms which outperform the market on the event date to form an “Election Long Index” and similarly construct an “Election Short Index” comprised of underperforming stocks. We weight stocks in these indices by the product of market capitalization and the absolute value of their out/underperformance. The difference between the two – the Election Long-Short Index – increases by construction on the event date. We take subsequent returns as a summary measure of investors’ beliefs in the extent to which their expectations of policy changes anticipated on the event date are likely to be realized in practice. Our summary statistic has the useful and intuitive property that the ratio of the change in the index on date t to the change in the index at the event date is equal to the coefficient from a (market capitalization-weighted) least squares regression of date t returns on event date returns.

Conceiving of the the Election Long-Short Index in this way helps to highlight the circumstances under which it serves as a useful barometer for the successes of anticipated policies. As is typical of event studies, our index yields cleaner results when there is little other relevant news for stock returns on the event date. Likewise, if a politician or party’s desired policies shift post-election, our index will capture their success to the extent that their new goals are correlated (in terms of their impacts on firms) with the policies anticipated immediately following the election.

We apply our methodology to the 2016 U.S. presidential election, which represents one of the biggest political surprises in recent history. As has been well-documented, the market overall saw significant gains on November 9, after Trump’s victory became apparent the evening of Election Day. These overall gains mask considerable heterogeneity in the cross-section of November 9 returns. For example, for-profit universities, large banks, and coal companies experienced large gains, while

¹For an event study of earthquakes, see Shelor et al. [1992]; for CIA coups, see Dube et al. [2011].

²Faccio [2006] provides a multi-country perspective on investors’ responses to unexpected political turnover. For work focused on the U.S., see, for example, Fisman et al. [2012], for an event study on expected political turnover induced by Vice-President Richard Cheney’s heart attacks.

alternative energy stocks and hospitals declined, returns that, we will argue, were broadly reflective of differences in the Trump versus Clinton campaign platforms. We show that our Trump Long-Short Index moves in expected ways in the year following the election, if we are to interpret it as a measure of Trump’s ability to enact his agenda: the index declined in the weeks following FBI Director James Comey’s firing, then recovered after his testimony, which failed to deliver impeachment-worthy revelations. Our index declined again with the indictment of Paul Manafort, and increased with the passage of the Senate tax bill, which may have indicated that Trump’s agenda was back on track. We show that more standard measures of an administration’s success – presidential approval ratings as well as the probability of early departure or reelection based on Betfair wagers – move in the same direction as our index, but are less responsive to some of the pivotal events in the Trump administration to date.

We provide several decompositions of the overall Trump Long-Short Index, which are informative of the particular policy effects that were expected from a Trump administration. First, we consider within- versus between-industry versions of the Trump Long-Short Index. While much of the November 9 variation in returns is industry-based, we still find that both the within- and between-industry indexes track the overall index fairly well, indicating that Trump policies were expected to have sector-level as well as more firm-specific consequences. We next decompose the overall index’s returns into components that are correlated with – and orthogonal to – the taxes rates of firms in the year prior to the election. Interestingly, both the tax-correlated and tax-orthogonal components of the overall index respond to political events during Trump’s presidency to date, though (reassuringly) the tax-correlated index’s response to the passage of tax reform near the end of 2017 is particularly pronounced. Finally, we construct an import penetration “long-short” portfolio based on industry-level import penetration – which we conjecture should be helped by trade restrictions. This portfolio increases on November 9 but, in contrast to our main index, continues to increase during 2017, and more generally is negatively correlated with the main index throughout the period (possibly because, when frustrated on other policy dimensions, the President turns to protectionism, which is more easily enacted without the cooperation of the Congress). Finally, we provide several robustness exercises, showing that the reversion we document for the Trump Long-Short Index is robust to using risk-adjusted returns, and document very similar patterns for an index generated using stock markets worldwide.

Finally, we demonstrate the usefulness of our methodology using a second recent political event, the yes vote for the Brexit referendum on June 23, 2016. Our Brexit Long-Short Index is short the stocks expected to fare worst under Brexit, such as financials. In subsequent months, the Brexit Long-Short Index reverted as the process and likely terms of Britain’s EU exit indicated that these firms might suffer less than initially anticipated.

We make several contributions to our understanding of how politics impacts business and the economy. Most directly, our results provide a quantitative assessment of the expected impact of

the 2016 presidential election on corporate valuations, and show how political events during the first months of Trump’s Presidency were accompanied by these expected effects dissipating. More broadly, we provide a methodology that, as illustrated by our Brexit application, may be added to the financial economist’s toolbox for examining political (and other) events.³ Our approach can be seen as providing information that is complementary to prediction markets, which may not attract sufficient liquidity for some types of outcomes, like Trump’s reelection probability, which is too far in the future, or the rules governing trade in financial services under Brexit, which is too technical to interest bettors (see Snowberg et al. [2007] for the application of prediction markets to U.S. presidential elections, Wolfers and Zitzewitz [Forthcoming] for a prediction market-based analysis of aggregate market effects of the 2016 election, and Wolfers and Zitzewitz [2004] for a discussion of prediction markets applications more generally).⁴

2 Methodology

We begin by defining an intuitive index which captures the distribution of benefits and costs as a result of a political event. Specifically, on event date e , let the returns of firm i be denoted by R_i^e , which we assume reflects the change in firm value as a result of changes in expected policy at date e . For ease of exposition, we treat as two separate groups the firms that beat the market at date e (expected beneficiaries) and those that lag the market (expected losers), and use these two groups to construct an Election Long Index and an Election Short Index respectively. In each case, we give proportionately more weight to firms with higher anticipated benefits or costs, and further weight these returns by market capitalization MV_i^e . Thus, each firm is assigned a weight in its portfolio of:

³We are not the first to study market reaction to either of these events – indeed, the use of event studies to examine political events is a well-established methodology. Our innovation is in the creation of a new tool for examining how investor beliefs about a set of policies evolve subsequent to the election, rather than exploring individual firm or industry responses to examine the extent to which policy platforms and other political considerations are capitalized into market prices. See Knight [2006] for an analysis of the impact of the 2000 U.S. presidential election on stock prices. For event studies focused on the 2016 election, see Wagner et al. [2018a] and Massound and Zhou [2018], and for Brexit see Ramiah et al. [2017].

⁴It is natural to ask whether our index is correlated with returns prior to the election, in particular on dates when prediction markets suggest a discrete increase or decrease in Trump’s probability of election. As Wolfers and Zitzewitz [Forthcoming] discuss in more detail, stock returns prior to November 9 suggest that investors generally held a negative view of Trump’s likely effect on aggregate stock prices, and these beliefs shifted discretely following his election. When we compare individual stock movements on November 9 with those during the one pre-election event window examined by Wolfers and Zitzewitz [Forthcoming] that occurred during regular trading hours, the reopening of the Clinton email investigation on October 28 (which was accompanied by a 5 percent increase in Trump’s victory probability), we find that while pre and post-election beliefs about Trump’s impact on some individual industries and firms (e.g., private prisons, for-profit education, pharmaceuticals, biotech, hospitals) were consistent, beliefs about cyclically sensitive industries like construction, energy, financial services were not. Overall, the performance of a back-casted version of our index in tracking pre-election political events would be poor, reflecting this shift in beliefs. In contrast, the apparent strong performance of our index in reflecting political events throughout 2017, as well as the consistency of the results for different pre-election event windows in Wolfers and Zitzewitz [Forthcoming], suggests that beliefs about Trump have been more consistent before and after the election.

$$w_i = MV_i^e (R_i^e - \bar{R}^e) \quad (1)$$

with the weights rescaled to sum to one. Let L be the set of firms in the long index and S be the set of firms in the short index. We set the index equal to 100 at date $e - 1$, and let it change according to subsequent returns, so that the long index at date T is given by:

$$E_L^T = 100 \sum_{i \in L} w_i \prod_{t=e}^T (1 + (R_i^t - \bar{R}^t)) \quad (2)$$

We similarly define the short index E_S^T . Our summary measure of the extent to which investors at date T continue to anticipate implementation of profit-relevant policies expected at date e is given by our Election Long-Short Index, which is simply $E_{LS} = E_L - E_S$.

Our index captures the intuition that, if investors' beliefs about the incidence of benefits and costs anticipated as a result of the election are maintained, the index should remain high. If uncertainty about policies' implementation is resolved favorably, our index should appreciate further, while the index should decline if expected policies fail to materialize or fall short of expectations.⁵

The index allows us to follow the extent to which investors believe that profit-relevant policies are on track. It also has the intuitive property that the ratio of the change in the index at date T and the change in the index at date e is given by the correlation coefficient from a regression of date T returns on date e returns, weighted by market value, since

$$\frac{\Delta E_{LS}^T}{\Delta E_{LS}^e} = \frac{\sum_{i \in \{S,L\}} w_i (R_i^T - \bar{R}^T)}{\sum_{i \in \{S,L\}} w_i (R_i^e - \bar{R}^e)} = \frac{\sum_{i \in \{S,L\}} MV_i (R_i^e - \bar{R}^e) (R_i^T - \bar{R}^T)}{\sum_{i \in \{S,L\}} MV_i (R_i^e - \bar{R}^e) (R_i^e - \bar{R}^e)}$$

Intuitively, we can thus think of the change in the index at time T as reflecting whether beliefs moves *toward* or *against* initial expectations.

A few caveats are in order for the application and interpretation of the index. Most importantly, the weights in the long-short index (including whether a firm is assigned to the long index or the short index) will capture beliefs about changed policy expectations at date e measured with noise. The signal-to-noise ratio is a function of (a) the extent that beliefs about policies are affected at e ; (b) whether policy changes will have a substantial effect on firm valuation; and (c) whether other relevant information appears on date e . Assuming no short-run changes in expected policies, (a) and (b) are largely a function of the unexpectedness of the election outcome as well as the differences in platforms between candidates. For the 2016 U.S. presidential election, we can expect the index will perform relatively well, given the unexpected outcome, and the stark differences in policy platforms on issues ranging from tax policy to regulation.

⁵Note that our index captures changes in the beliefs implicit in stock returns, without regard for the rationality of the beliefs or the efficiency with which the market reflects them. If markets initially underreact or overreact to an event, our index will reflect subsequent appreciation or depreciation, respectively.

The interpretation of the index also depends on the extent to which policy objectives stated at e shift following the election. If a politician “pivots” and successfully pursues a different mix of policies, the impact on our index will depend on the correlation (in terms of the impact on firms’ value) of the old and new policy mix. As of early 2018, the 2016 presidential election seems well-suited to interpreting index changes through the lens of efficacy in implementation rather than policy shifts, given Trump’s continued focus on slimming regulations, cutting taxes, repealing the Affordable Care Act, and sabre rattling on trade.

The multiplicity of effects that were expected as a result of Trump’s election also highlights the circumstances in which our measure may be particularly useful – if his administration was expected to focus its reform efforts on a single industry or issue, one could simply assess policy successes and failures by focusing directly on the affected firms (e.g., if banking reform were the expected focus one could look directly at financial industry returns). More broadly, our approach is useful if the researcher has no direct proxies to classify firms as expected winners and losers, as our approach does this indirectly via stock returns.

The interpretation of our index as a regression coefficients naturally suggests possible extensions. For example, just as the variation in stocks returns on date e can be decomposed into its within-industry and between-industry components, we can construct within-industry and between-industry versions of our index. The within-industry index will maintain the same industry mix in L and S and take positions in firms that out/underperformed their industry on date e , while the between-industry index takes positions in industries that outperformed the overall market. In the same way that a overall regression coefficient is a weighted average of within and between-regression coefficients, the performance of our overall index reflects a weighted average of its within and between-industry components. Other decompositions of date stock returns e , and thus of our index, are possible, such as into components that are correlated with or orthogonal to corporate tax rates or other variables correlated with date e returns.

Finally, the regression interpretation also gives us guidance for statistical inference. Given that the date T return on our index is proportional to a cross-sectional regression coefficient of date T returns on date e returns, standard errors for the index return can be calculated using standard techniques.

3 Data description

The data for our Election and Brexit Long-Short Indexes come from the North American and Global versions of the Compustat Security Daily files. We include only common stocks and classify firms’ location based on the primary market in which their equity trades. For the election index we construct for the 2016 Presidential election, we include only listed firms whose primary market is in the United States, while for the Brexit vote we include firms whose primary market and

headquarters are both in Europe (i.e., in a member country of the European Union or European Economic Area). Returns are expressed in U.S. dollars, converted if necessary using daily exchange rates from the Federal Reserve (publication H.10). Our event dates are November 9, 2016 for the U.S. Election and June 24, 2016 for Brexit. To classify firms into industries we use the GICS codes available in the Compustat data. Finally, we extract from Compustat information on firms' cash tax payments and income in order to calculate tax rates according to the definition in Wagner et al. [2018a].

We supplement our company-level data in several ways. First, we collected two sets of measures of Trump's popularity. The first is a daily poll-based measure of the fraction of respondents who report approving of the president's performance, taken from FiveThirtyEight, a political statistics and analysis website. We use the polling average based on adult respondents (though approval ratings are very similar for polls based on all respondents or limited only to voters). A second measure is derived from wagers placed on the website of U.K. bookmaker Betfair.com, which provides a market-based measure of Trump's probability of reelection in 2020 and of departing office by the end of the years 2017, 2018, and 2019. Finally, we generate an industry-level measure of import exposure based on import data from Schott [2008], deflated by total industry output (obtained from the Bureau of Economic Analysis).

We present summary statistics in Table 1 for the firms in the Long and Short portfolios of the Trump Election sample, along with the attributes of some of the decompositions we will consider in our empirical applications below.

Various characteristics of the two portfolios line up with popular narratives of the winners and losers under Trump policies, and also some of the findings in Wagner et al. [2018a]: long portfolio firms paid cash tax rates that were 7 percent higher than short portfolio firms, consistent with investor expectations of tax cuts, and were more reliant on U.S. sales and production, consistent with expected America First policies. Small-cap stocks also tended to outperform large-caps on November 9, as indicated by the much lower median market capitalization of the long portfolio; value stocks and previously low-performing stocks also did well, as suggested by the higher book-to-market and lower prior returns in the long portfolio. These observations foreshadow that some of the election's effect will be absorbed by standard asset pricing factors, which are themselves correlated with various firm attributes that were the sources of positive returns on November 9. To illustrate, consider the tax-correlated component of our index. We observe that the long portfolio has a median market capitalization that is twice as large as that of the short portfolio, as small cap firms are less able to move profits overseas (and hence would benefit more from anticipated domestic tax cuts).

Turning to the sector shares of the long and short portfolios, they also reflect stated positions of the Trump campaign (relative to Clinton's). The long portfolio is heavily weighted toward Pharmaceuticals, Biotechnology and Financials, reflecting expectations of deregulation. Also notable, the

long portfolio is weighted toward Industrials whereas the short portfolio includes a high proportion of Information Technology firms, perhaps reflecting the Trump campaign’s promises of promoting domestic manufacturing. The sector-wide distribution also masks some interesting within-sector variation. For example, while the long portfolio is overweighted toward Energy at the sector-level overall, coal is entirely contained in the long portfolio, while renewable electricity is entirely in the short portfolio.

4 Empirical Applications

4.1 The 2016 Presidential Election

We present the Election Long-Short Index for the 2016 Presidential Election in Figure 1. Recall that, by construction, the index goes up on November 9, the date investors incorporated the election outcome into market prices. It rose again on November 10 and stayed high – at about 115 – through the first part of 2017, before starting to decline in mid-March.⁶ Some of the index’s movements coincide with eventful periods for the Trump Administration, which we have shaded in the figure. Some of these highlighted events primarily involve shocks to Trump’s expected political longevity (e.g., the firing and testimony of Comey, the Manafort indictment), while others involve news about the passage of, or failure to pass, new policies (e.g., ACA repeal and tax cuts).⁷

Focusing first on key legislative efforts during the administration’s first year, the index fell between the introduction of the American Health Care Act (AHCA), which would have repealed the Affordable Care Act (ACA), and its subsequent failure to pass in the House of Representatives (on March 7 and 24, respectively). The index increased slightly when the U.S. Senate voted 51-50 to open debate on ACA repeal on July 25 and fell when repeal failed to pass (51-49) on July 28. The index also increased sharply in the week leading up to the passage of the Senate’s tax reform bill in late November 2017, showing that the index responds to policy outcomes that may have been of concern to investors at the time of the election. We also label a pair of events that speak to investors’ possible fears of the administration’s longevity and/or its political capital to act on its

⁶Broadly consistent with the patterns we observe in Figure 1, Wagner et al. [2018b] find that stock returns continued increasing on November 10 and 11, then reverted somewhat on November 14 and 15 (the next two trading days after November 11). They thus conclude that the stock market required as much as 5 days to fully process Trump’s election. We construct a version of our index that uses returns from November 9 – 15 and obtain nearly identical results.

⁷Timelines of the Trump administration generated by the media provide much more comprehensive listings of policy announcements, many of which overlap with the dates and events we highlight in the figure. Many of these involve proclamations that were potentially anticipated by and/or leaked to investors, and some of which are associated with movements in the index. One example is Trump’s threat, delivered on April 26, 2017, that he was willing to pull out of NAFTA. Our index increased in the days leading up to the announcement, then declined (perhaps as it became clear that it was just the opening shot in an attempt at renegotiation). The preponderance of this type of event, and the difficulty in pinning down the timing of investor reaction, make it difficult to cleanly link most announcements to shifts in investor expectations. The shaded periods represent our attempts at selecting the key events affecting the current administration’s longevity and effectiveness in implementing its policy agenda.

policy goals. The first, labeled “Comey,” begins with the firing of James Comey on May 9, which led to a sharp decline in the index over the following weeks. The index then recovered on June 8, when Comey’s testimony failed to produce damaging evidence. Finally, we observe a sharp decline in the index with the indictment of Paul Manafort on October 30, 2017.

For comparison, in Figure 2 we show the Betfair probabilities of Trump’s reelection and survival through the end of calendar year 2019, as well as his approval rating (as compiled by fivethirtyeight.com), shading the same set of events. In many cases, these more traditional measures of Presidential success move in the same direction as our index, though often the effects are more muted.

In Figure 3, we decompose our index into within and between-industry components, using GICS subindustries as the level of aggregation (there are 164 subindustries in our sample). The between index reflects the performance of industries that outperformed or underperformed the overall market when Trump was elected, while the within index reflects the subsequent performance of firms that outperformed or underperformed their industries. Some of the between-industry gains can readily be tied to the performance of particular sectors or subindustries. Financial stocks, the largest component in the long portfolio, track the overall index, for example waxing and waning with Trump’s fortunes during the Comey and Manafort events.⁸ The within-industry index, by contrast, exhibits a steady reversion of its post-election gain. We can offer some speculative explanations for the within-industry pattern. First, many of big gains on November 9 were tied to expectations of infrastructure spending, which has yet to materialize. The anticipated beneficiaries were spread across a range of industries, including chemicals, construction equipment, and construction management companies, many of which have given up their (relative) gains. Even more speculatively, the reversion may reflect that it has proven more challenging than investors anticipated to assist (or remove assistance from) narrowly targeted groups of firms, rather than entire industries. One widely-reported case is that of biofuels, which Trump advisor (and biofuels investor) Carl Icahn had advocated – ultimately unsuccessfully – for deregulation. The administration similarly has allowed preexisting subsidies to remain in place, leading, for example, to reversion in valuations of fertilizer, solar, and wind producers.

In Figure 4, we decompose our overall index into components that are orthogonal to and correlated with firms’ cash tax rates.⁹ As shown in Wagner et al. [2018a], firms with high tax rates outperformed the market when Trump was elected. It is understandable (and indeed reassuring for our methodology) that high tax firms also outperformed during the week when it became clear that the Senate would pass the corporate tax cut (a pattern also documented in Wagner et al. [Forthcoming]); this is reflected in the sharp jump in the correlated index. The orthogonal index

⁸We refer the interested reader to Fisman and Zitzewitz [2017] or Wagner et al. [2018a] for further discussion of industry-level patterns.

⁹The cash tax rate is the ratio of taxes paid to net income before tax. We follow Wagner et al. [2018a] in focusing on this measure of a firm’s tax rate, but the results are similar if we use accrued tax liability in the numerator.

also appreciates that week, likely reflecting both imperfections in our proxy for which firms benefit from the tax bill, as well as the increased expectation for other Trump-supported policy changes as a result of the bill’s passage. Earlier events are accompanied by larger movements in the orthogonal index; while changes in the tax-correlated index are far more muted, they are generally of the same sign as the tax-orthogonal index.

As noted in our discussion of Table 1, companies with relatively more domestic employment and sales performed relatively well on November 9. In Figure 5, we examine the extent to which anticipation of protectionist policies helps to explain the movement of our index more broadly. To do so, we create an import long-short index based on whether an industry is above or below the mean rate of import penetration, based on Schott [2008]. Consistent with anticipation of “America First” style policies, the import penetration long-short index appreciates on November 9, along with an increase in the dollar’s trade-weighted value, which is also shown in the figure. However, over the rest of the sample period the import index shows a steady increase, and often moves in the opposite direction of our overall index, which we also show in the figure. In the case of tax cuts, this is partly explained by the fact that companies more exposed to import competition already had relatively low tax rates. But the negative association also appears for both the Comey and Manafort events. Some of this may be explained by trade-related announcements that are unlabeled in the figure – for example, Trump threatened to withdraw from NAFTA in late April, a period when the import index appreciated considerably, and subsequently scaled back his rhetoric in early May, perhaps leading to the import index’s decline. Surprisingly, however, beyond November 9, the import index does not generally move with the dollar index, indicating the returns for import-exposed industries are not driven simply by exchange rate factors. One possibility – albeit highly speculative – is that during more turbulent periods, when other aspects of the Trump agenda fail to progress, the administration focuses on policy dimensions it can enact unilaterally, such as tariffs and trade restrictions.

Table 2 presents estimates of changes in our index, and our decompositions thereof, with associated standard errors. We estimate these changes in panel regressions of the following form:

$$R_i^t - \bar{R}^t = \gamma_t + \sum_E \sum_{t \in E} \beta_E (R_i^e - \bar{R}^e) + e_i^t$$

where β_E captures the average daily return of our index during event window E (divided by its return on November 9) and γ_t is a date fixed effect. We multiple these estimates by the November 9 index return and the length of each event window to obtain (noncompounded) index returns during each window. We calculate standard errors that allow for two-dimensional clustering by date and by the 26 GICS industry groups represented in the sample. We provide these estimates for each event window shaded in Figure 1, as well as for the first and second half of our sample period (the halfway point happens to be June 7, the day before Comey’s testimony). The events

that we judged to involve increases in the likelihood of Trump’s agenda being implemented (Events 3, 4, and 7) were accompanied by increases in our indices, while the others were accompanied by decreases. While the tax-correlated index had, as expected, strong gains when the Senate passed the tax cuts, it also moved consistently with the overall index during the event windows related to health care (Events 1, 4, and 5), as well as during events that were primarily about the longevity of the Trump administration (Events 2, 3, and 6). During the shorter event windows, for most of the index changes, we can reject that they are equal to zero at least at the 5 percent level.¹⁰

At the bottom Table 2, we summarize the index movements during our seven event windows by presenting estimates of the difference between those accompanying the events that were positive (3, 4, and 7) and negative (1, 2, 5, and 6) for Trump’s agenda. The positive and significant coefficients estimates in this row indicate that all 5 indices moved consistently with our a priori expectations. We also show the changes in our indices, and associated standard errors, for the first and second halves of our sample. We begin the first half on November 10, after a second positive day for our index, and break the sample before Comey’s testimony, when concerns about Trump’s longevity were heightened. For our overall index, we find statistically significant evidence that the first seven-month period was a poor one for President Trump; the components of the index each declined over the first half of the sample, though these effects are imprecisely measured. With the exception of the within-industry index, our indices recovered somewhat in the second half of our sample period, consistent with this period beginning with Comey’s testimony and ending with the passage of the tax cuts, but these recoveries were not statistically significant at conventional thresholds. The first-half decline and second-half recovery are large relative to our index’s initial movement, yet are not consistently statistically significant. This helps illustrate the diminishing precision with which our index is likely to measure policy implementation with the passage of time, as other factors come to influence stock prices.

We now turn to examining how the returns of our overall index is affected if we control for the performance of the overall market and for the performance of other commonly used asset pricing factors. In a typical event study of a single firm, the performance of the market and other factors is usually assumed to be unaffected by the event in question, and the primary focus is on the stock’s “alpha” (its return beyond what would be expected given factor returns). In our setting, we argue that it is reasonable to expect the market and other factors to be affected by Trump’s election and subsequent political news. Thus, the inclusion of factor controls can, in a sense, can be viewed as providing another decomposition of our index returns, into returns that can be explained (and left unexplained) by firm characteristics such as market beta, size, and value.

In Table 3, we show the betas for the most commonly used asset pricing models – the CAPM

¹⁰If we use unweighted returns for our index and also for subsequent returns, the coefficient switches sign only for Event 6 (Manafort), though many of the point estimates are diminished in magnitude. Much of this is the result of large price changes for very low market cap stocks. The results are closer to our main estimates if we exclude micro caps (the bottom quintile of firms by market capitalization using NYSE breakpoints) from our analysis.

and the three and five-factor Fama-French models, with and without momentum. Our Trump index has a positive CAPM beta of 0.21, reflecting the fact that higher beta stocks outperformed following Trump’s election. Our index also has a positive loading on the SMB and HML factors and a negative correlation with momentum. All of these loadings are consistent with the portfolio characteristics reported in Table 1. The positive SMB partly reflects smaller firms facing higher tax rates due to less ability to offshore profits, and thus benefiting more from expected tax cuts. The HML loading partly reflects expectations that Trump’s election would disproportionately help “old economy” industries.

In Table 4, we repeat our event-window returns for our overall index from Table 2, and then introduce controls for various asset pricing factors. U.S. equities performed well during our sample period, and if we control for the positive CAPM beta of our index, its reversion during the first half of our sample is even more striking. In our shorter event windows, we find that accounting for market returns and the relative performance of small-cap stocks has only a small impact on the estimated event returns. Including the value factor does substantially reduce the estimated event returns for most event windows, as well as the standard errors for these estimates. As noted above, this is because the stocks that Trump was expected to help tended to have high book-to-market. Nevertheless, our estimate of the difference in index performance during positive and negative event windows remains statistically significant when controlling for value, and controlling for additional factors strengthens the results somewhat. Overall, we conclude that the patterns in our main index partly reflect the expectation that Trump’s election would help value stocks, and partly reflect expectations, and revisions thereof, that are independent of the value factor.

Finally, we explore whether our approach to gauging the Trump administration’s likely effect on firm profitability can be extended to stocks worldwide. To do so, we plot in Figure 6 a version of the Trump Election Long Short Index for portfolios constructed from stocks across 38 non-U.S. markets.¹¹ Overall, the world version of our index closely parallels the U.S.-based index, suggesting that Trump policies – to the extent that they were expected to have effects beyond U.S. borders, whether directly or via channels such as trade – are also captured by an index constructed via the approach presented in Section 2.

4.2 The Brexit Referendum

As a second application, we create the Brexit Long-Short Index for the British referendum on leaving the European Union, which took place on June 23, 2016. As with Trump’s victory, the Brexit “leave” vote was largely unanticipated by the markets, and only became apparent long after the end of trading on the day of the referendum – the Betfair probability remained close to 90 percent for a “remain” vote until nearly 10 p.m. London time on November 23, at which point the

¹¹The 38 countries are those using the 22 currencies included in Federal Reserve Publication H.10, excluding Venezuela.

Betfair probability of a remain vote dropped to 50 percent. We therefore use returns from June 24, 2016, the day after the referendum, to construct our index.

We present the Brexit Long-Short Index in Figure 7, which rises (again by construction) on the first day that index returns are calculated. The index continued to rise in the days that followed, plausibly as a result of the emergence of Boris Johnson, a strong Brexit proponent, as the likely successor to Prime Minister David Cameron (the post-referendum Betfair odds had Johnson as a very heavy favorite). The index's subsequent reversion coincides roughly with the shift toward (and ultimate selection of) Theresa May – a candidate with, at minimum, more moderate views on the E.U. – as successor to Cameron. The index subsequently declined, returning to its pre-referendum level by late 2016, plausibly reflecting a range of factors: investors had apparently shrugged off the consequences of Brexit, at least for large, publicly traded firms; there remained uncertainty over its implementation (for example, whether the British parliament would approve the use of Article 50, as required in order to withdraw from the E.U.); and other world events, most notably the U.S. Presidential election, also had a substantial effect on market prices. In Appendix Figure 3 we also include the within versus between industry decomposition. The patterns are very similar for each, though with a smaller initial gain and less subsequent reversion for the within-industry index.

As one indication that the index is capturing investors' expectations of Brexit-related changes in expected profitability, we show in Appendix Figure 4 finance industry returns (GIC group 4020) from the referendum date forward. We focus on finance because it was the sector that was most widely reported as vulnerable to E.U. exit¹² Financial stocks, as expected, declined on news of the yes vote, and continued their decline and subsequent reversion in a pattern that is essentially the mirror image of the Referendum Long-Short Index returns. It is also instructive to observe that the finance industry enjoyed strong returns immediately following the U.S. Presidential election, reflecting the fact that many British banks have significant U.S. exposure (recall that the Long Portfolio for the Trump Long-Short Index was heavily weighted toward finance). Finance industry returns serve in part as a validation of our overall long-short index – given that it was reported that U.K.-based financial institutions were among the most vulnerable to Brexit, it is comforting that the finance industry index follows a trajectory that parallels our main index.

In contrast to the case of Trump's election, European stocks fell sharply on news of the vote to leave the European Union. Financial stocks general have high market betas, and our Brexit Long-Short index has a significant net negative market beta (about -0.75). This negative beta accounts for about 50 percent of the increase in our index on the first two trading days after the Brexit vote, but following the recovery of the European market over the next four days, market-adjusting our index makes little difference. As discussed above, given that Brexit was plausibly expected to have macroeconomic effects, we should view this exercise as a decomposition of the expected effects of

¹²See, for example, "Brexit fallout – the economic impact in six key charts," *The Guardian*, July 8, 2016. Available at <https://www.theguardian.com/business/2016/jul/08/brexit-fallout-the-economic-impact-in-six-key-charts>, last accessed January 7, 2018.

Brexit, rather as an exercise in “controlling” for the market. Thus the interpretation of our results would be that expectations that Brexit would have negative effects on the general European stock market mean reverted within about a week, while expectations that it would have negative effects for specific firms (beyond what one would expect from aggregate market movements) mean reverted within about 4-6 months.

5 Conclusion

In this paper we provide a new measure of government policy implementation based on firms’ responses to unexpected political news, which may be updated in real-time using daily stock returns. We demonstrate its utility in applications to two major recent political events, the 2016 U.S. presidential election and the Brexit referendum

We highlight several similarities of – and differences between – our index as a measure of expected policy implementation for Trump’s election versus the Brexit referendum, which may be helpful in appreciating the merits and also the limits of our approach. In both cases, the “signal-to-noise” ratio in calculating index weights is likely very high: neither outcome was anticipated, and stock prices moved very substantially for both events as the outcome’s probability shifted. For example, the FTSE 100 Index dropped by 6 percent and the British pound fell by more than 4 percent when the Betfair odds of a Brexit yes vote increased from 10 percent to 50 percent. Furthermore, the markets’ reactions in both cases reflected highly heterogenous responses at the firm level, as reflected in the very high one-day returns of both indexes.

In the case of the Trump Long-Short Index, subsequent returns can largely be tied to changes in the administration’s likely successes and failures. While there are clear exceptions – the secular decline in coal company stock prices is a result of global energy prices rather than Trump administration policy – many shifts in the index coincide with events affecting the likely longevity or efficacy of Trump’s presidency (for example, the index’s decline around the Manafort indictment), or specific policy successes and failures (like tax and healthcare reform). The same may be true of the Brexit Long-Short Index in the month following the referendum, with index changes that coincide with Brexit-relevant news about leadership succession. However, as is also laid bare by financial stocks’ sharp increase following the U.S. presidential election, other factors correlated with Brexit vulnerability may cloud the interpretation of the index with the passage of time.

A final noteworthy distinction is that, for the Trump Index, there are alternative proxies for the overall success of his administration in executing on its agenda — notably the reelection probability from Betfair as well as Trump’s approval rating. By contrast, there is no such measure – beyond our own index – for tracking investors’ beliefs about Brexit’s impact. This is because the consequences depend on technical considerations – not just the timing the invocation of Article 50, on which Betfair ran a thinly traded prediction market, but also on the terms negotiated with the EU, which

do not lend themselves to the creation of a straightforward betting contract. We suggest that our index approach may be particularly useful in such circumstances.

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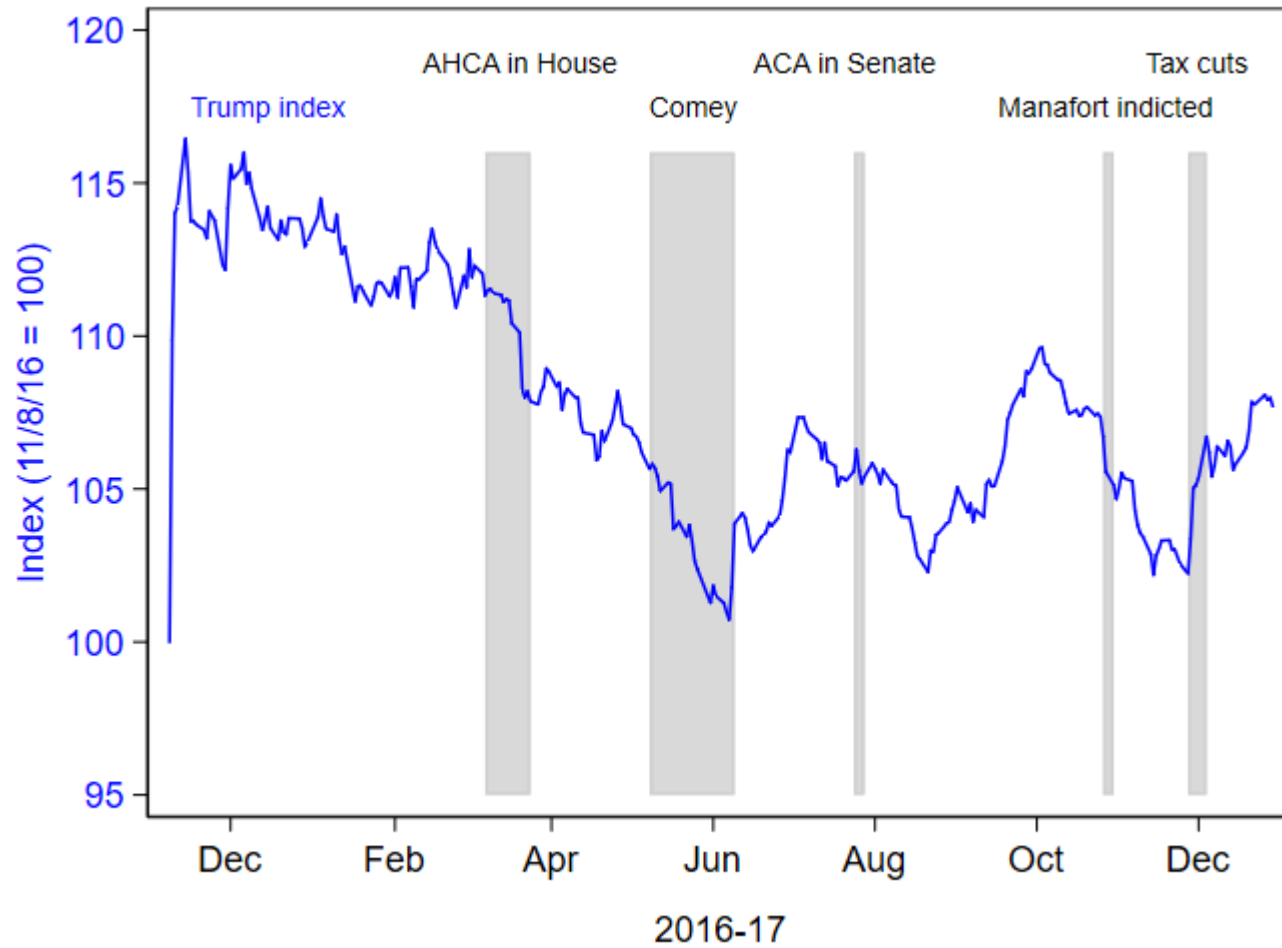
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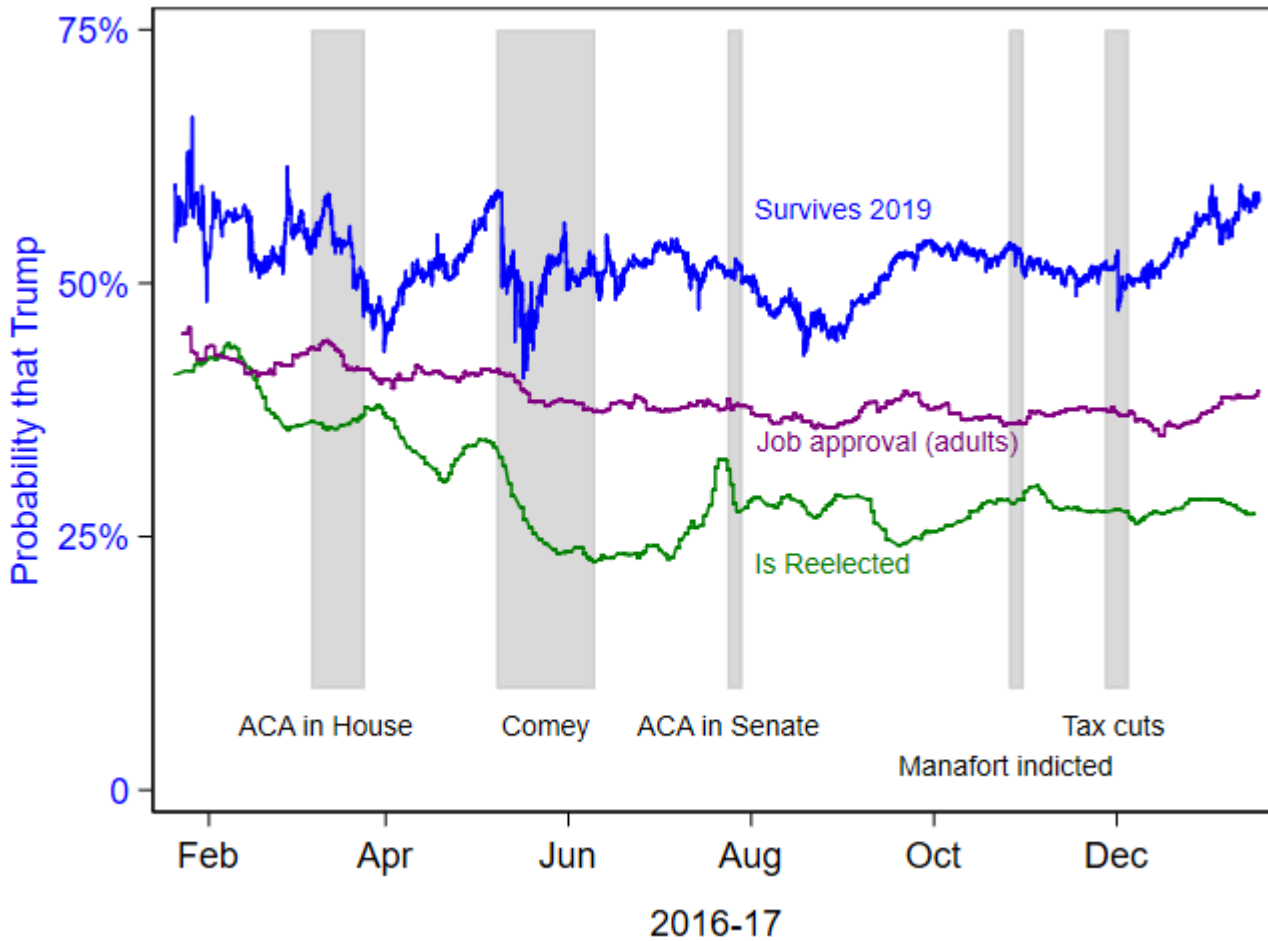
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Figure 1 – The Trump Long-Short Index



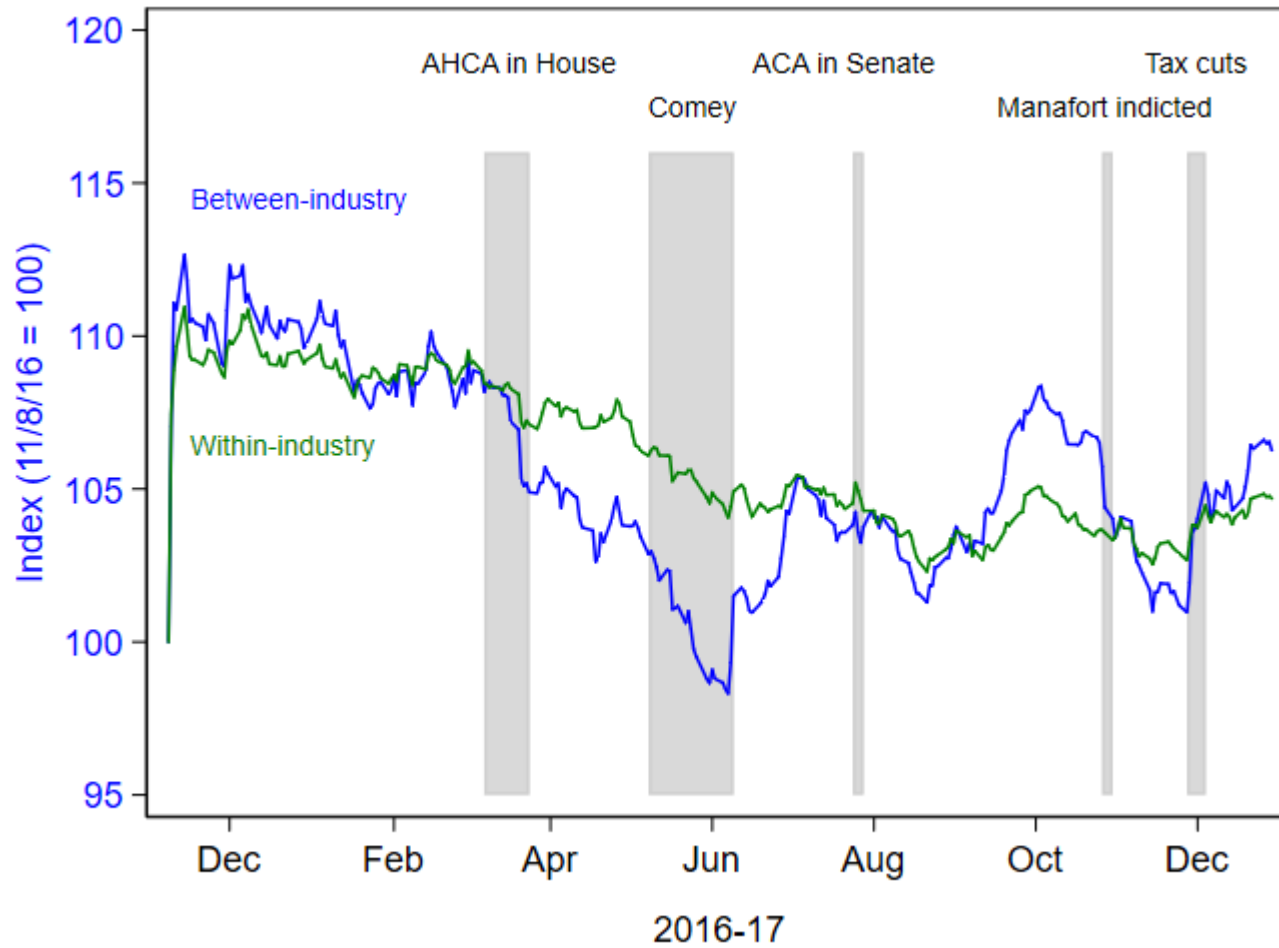
This figure shows the Trump Long-Short Index, calculated based on the market-capitalization weighted stock returns of U.S. equities on November 9, 2016. See Section 2 for details of its construction.

Figure 2 – Alternative measures of the Trump administration’s performance



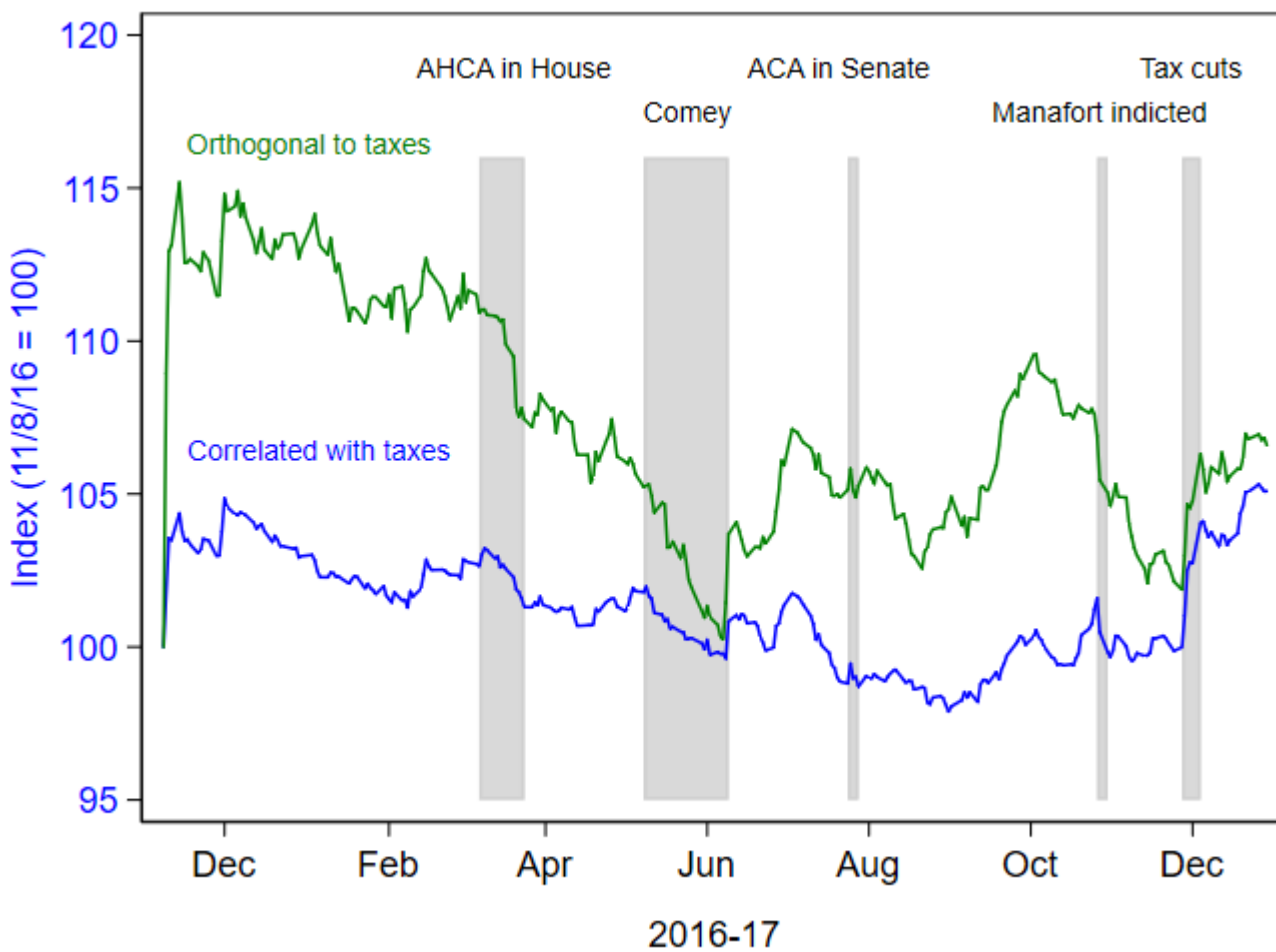
This figure provides the fraction of U.S. adults that approve of President Trump’s performance (“Job approval (adults)”), as well as Betfair probabilities of Trump’s survival through to the end of 2019 and of his reelection in 2020.

Figure 3 – Within- versus between-industry decomposition of the Trump Long-Short Index



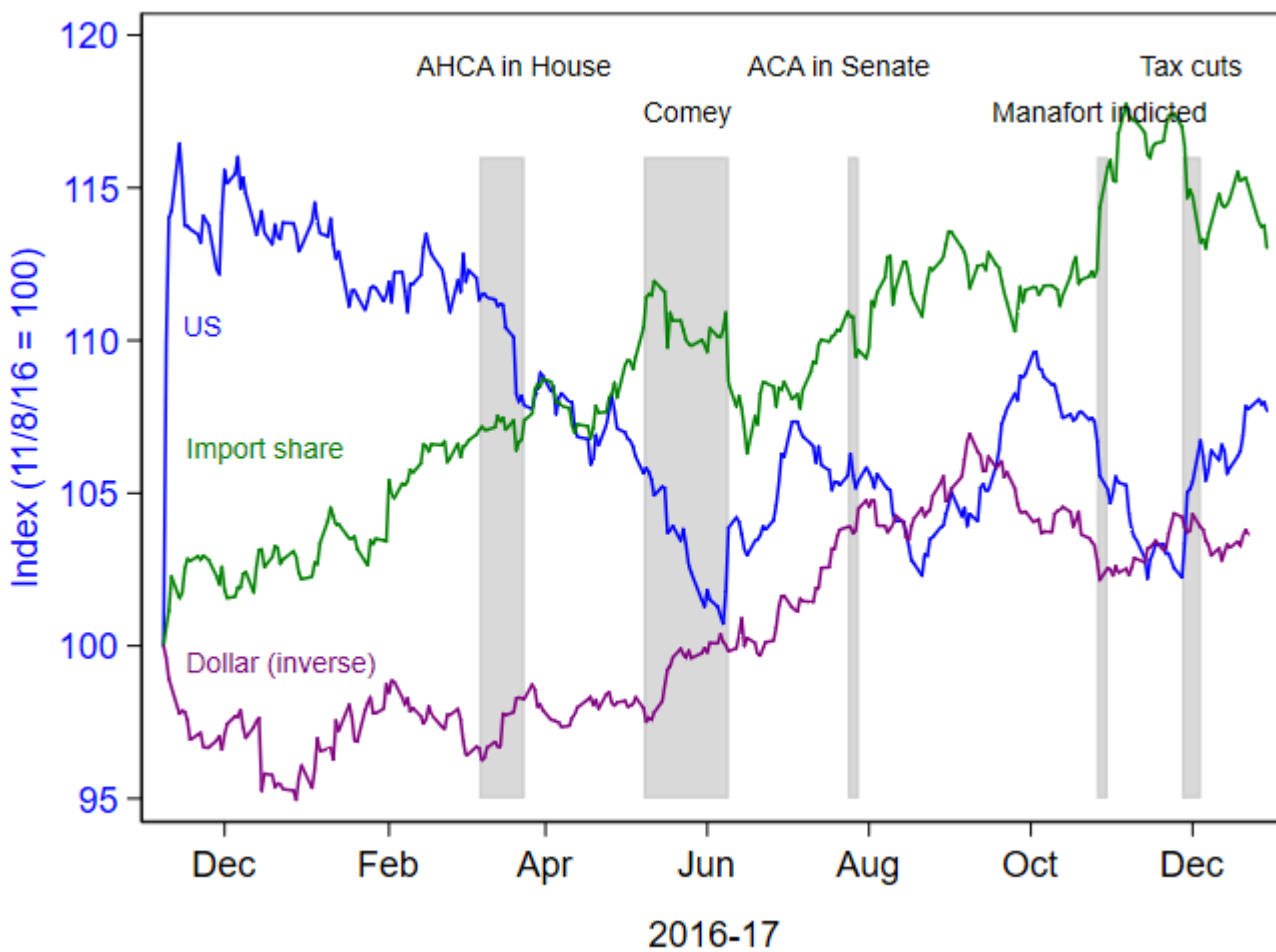
This figure provides a decomposition of our Trump Long-Short Index into indices calculated based on returns relative to the GICS sub-industry average (Within-industry) and GICS sub-industry average returns relative to overall market returns (Between-industry).

Figure 4 – Tax-correlated versus tax-orthogonal decomposition of the Trump Long-Short Index



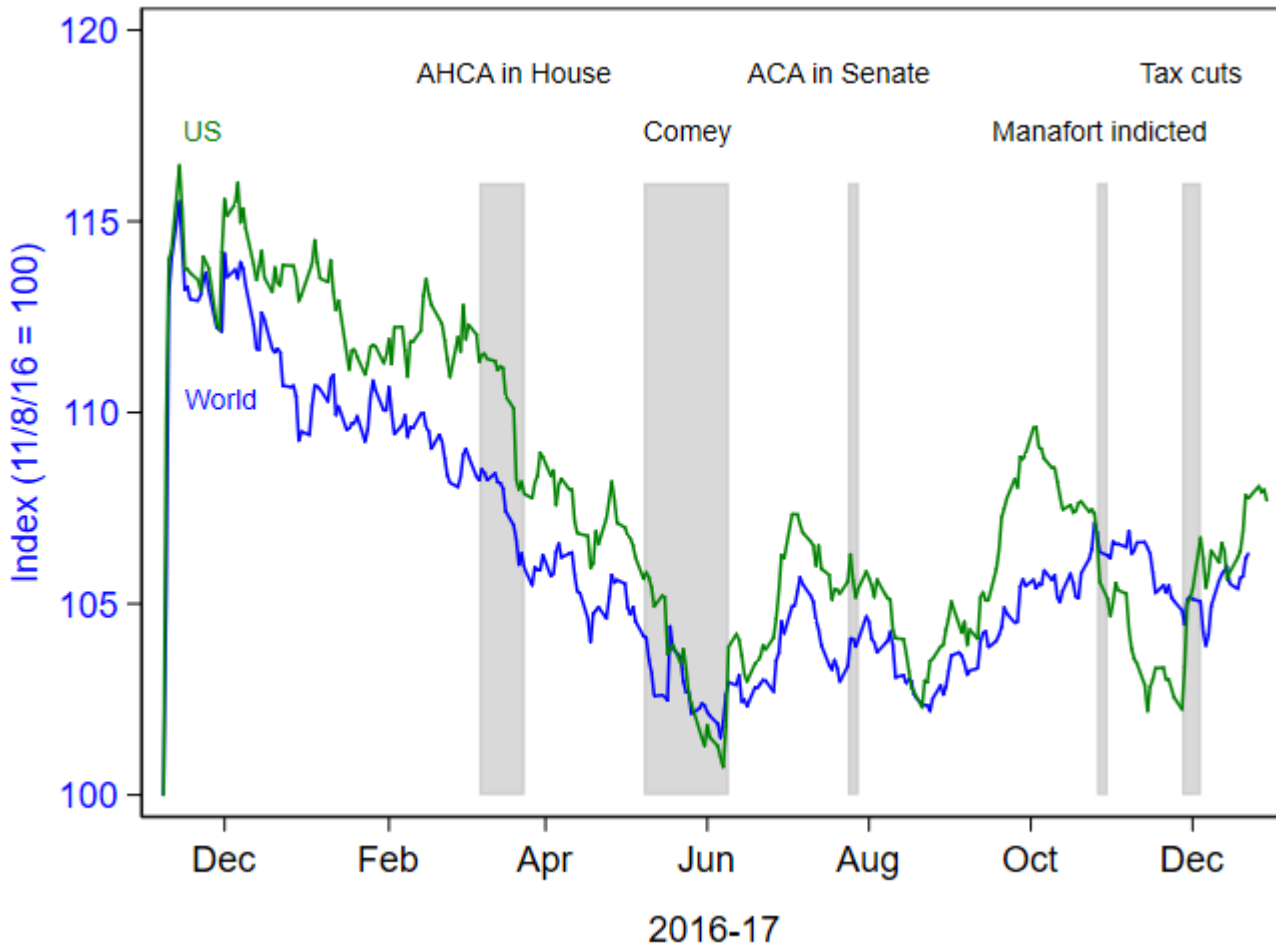
This figure shows a decomposition of the Trump Long-Short Index constructed by regressing the index on tax rates paid by firms in the year prior to the 2016 U.S. presidential election (using the tax rate measure from Wagner, 2017). The predicted component is the “Correlated with taxes” index and the residual from this regression is the “Orthogonal to taxes” index.

Figure 5 – Import Long-Short Index



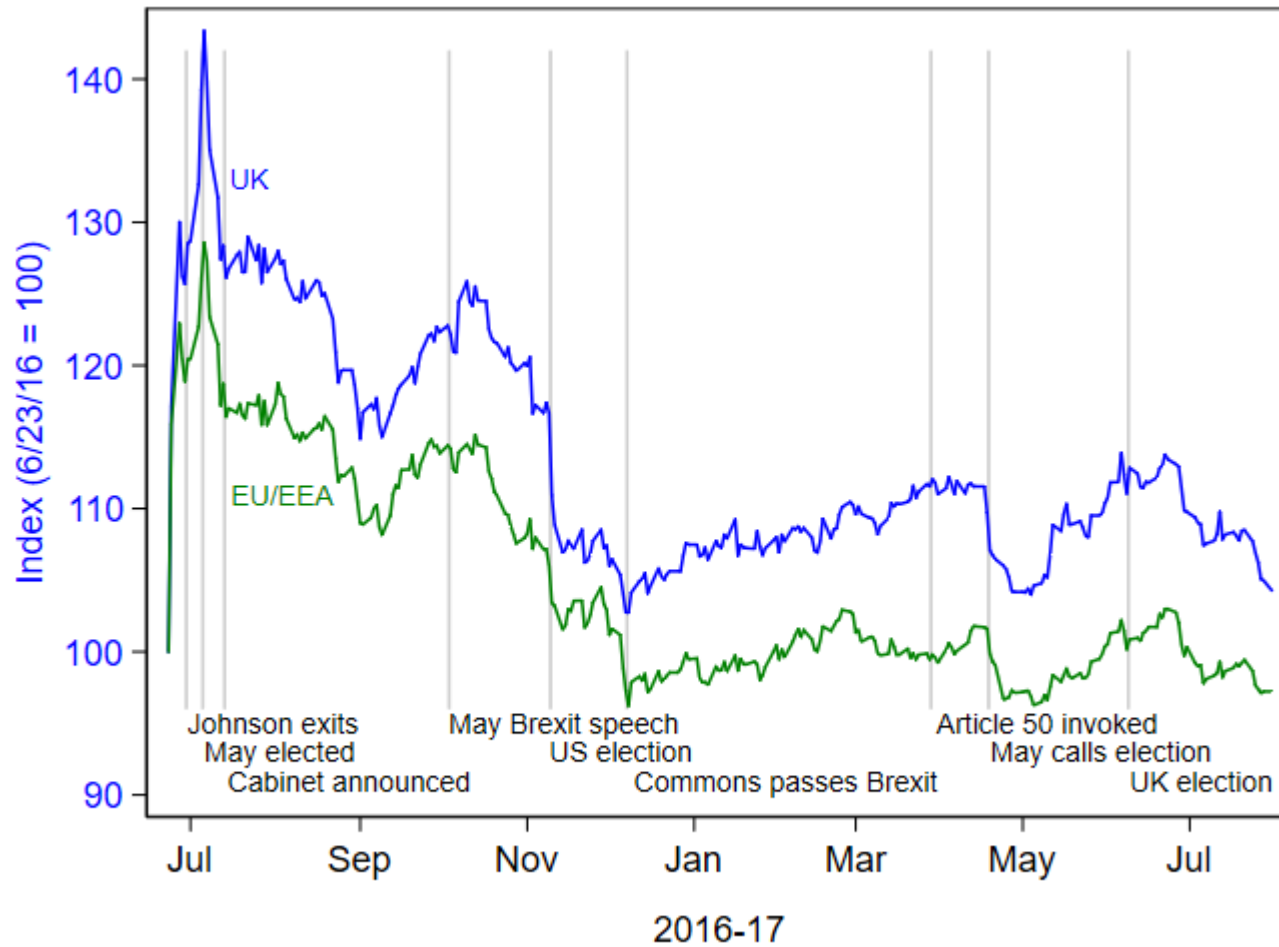
This figure shows the Import Long-Short Index, in which the long portfolio is constructed by taking the (market-capitalization weighted) returns of firms with above mean import penetration and the short index is constructed using the returns of firms with below mean import penetration. Our industry-level import penetration measure comes from Schott (2008).

Figure 6 – World Trump Long-Short Index



This figure shows a variant on the Trump Long-Short Index calculated using stocks from 38 markets worldwide. For comparison, we reproduce the U.S. Trump Long-Short Index from Figure 1.

Figure 7 – The Brexit Long-Short Index



This figure shows two versions of the Brexit Long-Short Index, calculated in each case based on the market-capitalization weighted stock returns of equities on June 24, 2016. The UK index is constructed using companies based in the United Kingdom, while the EU/EEA index is constructed using all publicly traded firms headquartered in European Union countries. See Section 4 for details of its construction.

Table 1. Summary Statistics for 2016 Election Long-Short Portfolios (and component indices)

	Overall index		Correlated with taxes		Orthogonal to taxes		Between industry		Within industry	
	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long
Number of firms	1935	2620	1307	1141	962	1486	1995	2521	2068	2448
Total market cap (\$T)	15.2	10.9	11.0	10.4	12.8	8.65	14.7	11.3	13.9	12.0
Portfolio characteristics										
Mean market cap (\$B)	102	60.8	86.1	93.7	117	71.2	107	71.2	68	44.7
Median market cap (\$B)	39	29.2	30.5	58.4	52	40.5	41.4	41.2	29.5	14.3
Return on event day	-2.7%	7.1%	0.4%	2.2%	-2.5%	6.4%	-1.6%	5.4%	-1.4%	6.1%
Cash tax rate	18.0%	25.2%	7.3%	36.2%	22.0%	22.0%	18.0%	23.5%	19.5%	24.4%
Accrual tax rate	22.8%	26.1%	19.6%	30.8%	24.8%	25.2%	23.1%	25.3%	23.1%	25.8%
Industry import share	31.1%	36.9%	47.7%	25.8%	27.8%	35.7%	30.3%	38.0%	36.8%	34.2%
US share of emp	73.4%	76.7%	85.7%	69.6%	70.3%	74.3%	72.3%	70.6%	72.4%	79.6%
US share of sales	66.8%	71.7%	72.4%	69.8%	65.3%	70.5%	66.4%	67.8%	67.3%	73.8%
Book-to-market	31.1%	49.8%	46.8%	36.4%	27.0%	50.8%	30.4%	46.2%	35.8%	46.5%
Prior returns	12.6%	1.6%	11.6%	6.1%	11.8%	2.8%	12.1%	4.0%	10.9%	2.8%
Share of portfolio by GICS sector										
10 Energy	2.8%	8.5%	5.7%	5.1%	1.4%	5.9%	1.3%	8.0%	9.1%	9.1%
15 Materials	1.8%	4.9%	2.2%	3.5%	1.8%	3.9%	0.8%	4.5%	3.6%	3.6%
20 Industrials	3.5%	13.9%	5.5%	15.1%	4.7%	14.6%	1.8%	14.1%	11.7%	11.7%
25 Consumer Discretionary	13.2%	3.9%	9.6%	14.9%	16.0%	3.4%	13.4%	2.2%	9.1%	9.1%
30 Consumer Staples	19.4%	1.8%	2.3%	15.9%	22.4%	1.3%	22.5%	1.5%	6.3%	6.3%
3510 Health Care Equipment & Services	10.0%	3.7%	1.7%	9.7%	11.2%	3.2%	9.0%	1.5%	9.6%	9.6%
3520 Pharmaceuticals, Biotechnology	1.0%	29.3%	5.9%	6.5%	1.0%	27.2%	0.5%	34.7%	12.8%	12.8%
40 Financials	3.9%	29.3%	16.7%	20.3%	2.2%	35.5%	1.1%	31.6%	17.6%	17.6%
45 Information Technology	22.6%	2.4%	21.4%	8.5%	23.1%	1.8%	24.7%	0.3%	11.3%	11.3%
50 Telecommunication Services	1.3%	1.5%	4.5%	0.0%	0.5%	1.6%	1.3%	1.5%	2.0%	2.0%
55 Utilities	11.0%	0.1%	12.3%	0.1%	9.6%	0.1%	13.0%	0.0%	2.6%	2.6%
60 Real Estate	9.7%	0.6%	12.1%	0.3%	6.1%	1.4%	10.9%	0.1%	4.3%	4.3%
Portfolio shares of selected GICS subindustries										
10102050 Coal & Consumable Fuels	0.02%	0.25%	0.07%	0.01%	0.00%	0.19%	0.00%	0.28%	0.21%	0.21%
25302010 Education Services	0.00%	0.28%	0.01%	0.14%	0.00%	0.19%	0.00%	0.34%	0.18%	0.18%
25401030 Movies & Entertainment	1.16%	0.05%	0.36%	1.51%	1.65%	0.07%	1.35%	0.00%	0.68%	0.68%
55105020 Renewable Electricity	0.20%	0.00%	0.03%	0.00%	0.01%	0.00%	0.24%	0.00%	0.11%	0.11%
60101080 (part) Prisons	0.00%	0.32%	0.05%	0.00%	0.00%	0.42%	0.04%	0.00%	0.00%	0.66%

This table reports average characteristics for stocks in the long and short portfolios of the indicated indices. Characteristics are weighted by each stock's portfolio share. Portfolio shares in various GICS sectors and subindustries are reported below.

Table 2. Changes in indexes, and alternative indicators of political capital, during event windows

	Industry indexes			Cash tax rate indexes	
	Overall	Between	Within	Correlated	Orthogonal
1. AHCA in U.S. House (3/7-3/24)	-3.34 (1.84)	-3.25 (1.78)	-1.25 (0.81)	-1.29 (0.72)	-3.36 (1.78)
2. Comey fired (5/8-6/7)	-4.80 (2.21)	-4.60 (2.05)	-1.93 (1.27)	-1.97 (1.23)	-4.88 (1.94)
3. Comey testifies (6/8-6/9)	3.09 (0.87)	3.22 (1.00)	0.83 (0.18)	1.03 (0.93)	3.38 (0.87)
4. Senate opens debate on ACA repeal (7/24-7/25)	0.67 (0.35)	0.41 (0.38)	0.63 (0.12)	0.65 (0.11)	0.67 (0.28)
5. ACA repeal fails in Senate (7/25-7/28)	-0.87 (0.55)	-0.49 (0.75)	-0.87 (0.19)	-0.75 (0.37)	-0.56 (0.69)
6. Manafort indicted (10/26-10/30)	-1.56 (0.66)	-1.70 (0.80)	-0.32 (0.24)	-1.71 (0.43)	-1.84 (0.85)
7. Senate passes tax cuts (11/27-12/4)	4.45 (2.15)	4.30 (2.20)	1.73 (0.95)	3.97 (1.42)	4.46 (2.11)
Positive events (3, 4, 6) less negative (1, 2, 5, 7)	19.77 (7.09)	18.83 (7.33)	8.10 (2.84)	11.99 (3.42)	19.98 (6.48)
First half of sample (11/10/16 - 6/7/17)	-13.16 (6.32)	-13.03 (5.73)	-4.64 (3.28)	-3.78 (2.55)	-12.74 (6.08)
Second half of sample (6/7/17 - 12/31/17)	6.68 (5.96)	7.80 (5.67)	0.61 (2.98)	5.47 (3.66)	6.10 (6.16)

This table reports estimates of the sum of daily changes in the indicated long-short index during the indicated event window. Changes are estimated using regressions of stock returns on either stock returns from 11/9/2016 (for the overall index), the within or between industry component of these returns, or the component of these returns that is correlated or orthogonal to cash tax rates. Observations in these regressions are weighted by market capitalization, regressions include day fixed effects, and standard errors allow for two-dimensional clustering by date and GICS industry group. To convert the regression coefficients to cumulative index changes, coefficients are multiplied by the number of trading days in each window and by the Nov 9 index change (see text for details). Event windows begin and end at 4 PM ET on the indicated date.

Table 3. Betas for 2016 Election Long-Short Index

Estimation period: 11/10/2016 to 12/31/2017

Model	Mkt-RF	SMB	HML	UMD	RMW	CMA
CAPM	0.21 (0.04)					
FF3	0.08 (0.04)	0.20 (0.04)	0.32 (0.04)			
FF3+Momentum (Carhart)	0.12 (0.04)	0.19 (0.04)	0.30 (0.04)	-0.08 (0.03)		
FF5	0.06 (0.04)	0.19 (0.04)	0.30 (0.05)		-0.22 (0.05)	-0.05 (0.05)
FF5+Momentum	0.10 (0.04)	0.18 (0.04)	0.31 (0.05)	-0.10 (0.04)	-0.23 (0.05)	-0.12 (0.07)

This table reports betas from regressions of daily returns of the 2016 Election Long-Short Index on various asset pricing factors. Factor returns are from Ken French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

Table 4. Raw and factor-adjusted returns for overall index during event windows

	Raw returns	CAPM	CAPM+SMB	FF3	FF3+Mom	FF5	FF5+Mom
1. AHCA in U.S. House (3/7-3/24)	-3.34 (1.84)	-2.76 (1.12)	-3.39 (1.21)	-0.87 (1.25)	-1.70 (1.15)	-0.70 (1.20)	-1.49 (0.90)
2. Comey fired (5/8-6/7)	-4.80 (2.21)	-5.72 (1.82)	-4.96 (1.72)	-1.81 (0.65)	-1.23 (0.87)	-1.65 (0.80)	-1.06 (0.88)
3. Comey testifies (6/8-6/9)	3.08 (0.87)	3.05 (0.95)	2.37 (1.30)	0.18 (0.68)	0.28 (0.66)	-0.03 (0.70)	0.03 (0.65)
4. Senate opens debate on ACA repeal (7/24-7/25)	0.67 (0.35)	0.45 (0.34)	0.34 (0.34)	-0.25 (0.29)	-0.46 (0.38)	-0.25 (0.34)	-0.37 (0.38)
5. ACA repeal fails in Senate (7/25-7/28)	-0.87 (0.55)	-0.66 (0.58)	-0.13 (0.44)	-0.19 (0.27)	-0.57 (0.43)	-0.27 (0.22)	-0.50 (0.29)
6. Manafort indicted (10/26-10/30)	-1.56 (0.66)	-1.77 (1.09)	-1.18 (1.12)	-0.49 (0.63)	-0.40 (0.56)	-0.83 (0.65)	-1.14 (0.78)
7. Senate passes tax cuts (11/27-12/4)	4.45 (2.15)	3.53 (2.26)	4.52 (2.12)	2.23 (0.96)	0.53 (1.38)	3.19 (1.19)	1.53 (1.13)
Positive events (3, 4, 6) less negative (1, 2, 5, 7)	19.77 (7.09)	17.20 (6.33)	16.85 (6.33)	5.70 (2.26)	4.40 (2.43)	7.07 (2.49)	5.88 (2.28)
First half of sample (11/10/16 - 6/7/17)	-13.16 (6.32)	-19.57 (5.48)	-16.63 (4.91)	-11.47 (3.66)	-13.18 (3.97)	-8.51 (2.25)	-11.01 (2.54)
Second half of sample (6/7/17 - 12/31/17)	6.68 (5.96)	1.22 (5.32)	4.52 (5.12)	3.31 (2.23)	3.89 (2.15)	4.34 (2.17)	4.65 (2.29)

This table reports changes in the overall index during the indicated event windows, as well as index changes that are adjusted for changes in asset pricing factors. Col 1 is the same as Col 1 in Table 2. Subsequent columns control for changes in asset pricing factors by adding interactions of the factors with November 9 returns.

Table 5. Summary Statistics for Brexit Long-Short Portfolios

	<u>Brexit Index</u>	
	Short	Long
Number of firms	1674	4022
Total market cap (\$T)	4.822	7.418
<u>Averages (weighted as in portfolios)</u>		
Return on event day (in USD)	-13.9%	-5.0%
<u>Share of portfolio by sector</u>		
10 Energy	5.4%	5.5%
15 Materials	6.3%	6.5%
20 Industrials	14.7%	13.8%
25 Consumer Discretionary	18.9%	9.4%
30 Consumer Staples	2.3%	21.4%
35 Health Care	1.2%	17.7%
40 Financials	34.6%	8.0%
45 Information Technology	2.6%	7.6%
50 Telecommunication Services	4.6%	4.2%
55 Utilities	7.2%	2.2%
60 Real Estate	2.4%	3.6%
<u>Share of portfolio by headquarters location</u>		
United Kingdom	34.9%	17.4%
France	19.5%	13.4%
Germany	13.3%	13.6%
Switzerland	3.1%	16.4%
Spain	11.7%	1.5%
Netherlands	3.1%	7.4%
Italy	8.3%	1.6%
Sweden	0.0%	7.1%
Ireland	1.8%	4.3%
Belgium	1.0%	5.0%
Denmark	0.5%	4.3%
Norway	0.6%	2.5%
Finland	0.0%	2.7%
Greece	0.7%	0.1%