Economic Expectations, Voting, and Economic Decisions around Elections

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"Right now, do you think that economic conditions in the country as a whole are getting better or getting worse?"

Gallup[1] has been asking this same question for decades. This question is one of the few economic expectation questions that is repeatedly asked to survey participants along with direct political identification questions such as party identification or voter intention. The answers are highly correlated with voter preferences. Around elections in which the presidency changes parties (e.g., 2000, 2008, and 2016), the percentage of people answering "better" soars for the party coming into power and plummets for the party leaving power, with movements as great as 25 percentage points in the days before and after the election (Krupenkin, Hill & Rothschild, 2018).

What does this question about economic conditions capture? First, what are people thinking about when they give an answer regarding economic conditions "as a whole": are they thinking about themselves (i.e., pocketbook) or national economic indicators (i.e., sociotropic)? Second, are respondents shifting their answers to signal something about their party (i.e., partisan cheerleading) and/or do they shift their economic decision making due to these beliefs?

To address this ambiguity, we launched our own pre-election polling to capture general population voter intention and expectations of election outcomes, along with both expected household and national economic impacts. We followed up with post-election polling to investigate how economic expectations shifted after election outcomes were known. In addition to using the more specific polling questions, we examined search queries from a large search engine, by party, to determine if polling results discussed above are a form of

[1] http://news.gallup.com/topic/economy.aspx

partisan cheerleading or if the opinions expressed actually factor into economic decision making through product search behavior. Our work spans three elections: the 2016 UK Brexit vote, the 2016 US presidential vote, and the 2017 UK parliamentary vote.

We find that respondents who associate themselves with the "winning team", i.e., Leave voters in the 2016 UK Brexit vote and Trump voters in 2016 US presidential election, substantially increase their expectations for the stock market, but change their expectations of their household economic wellbeing only modestly. Respondents who associate themselves with the "losing team" are more varied in their responses, but the overall impact of the election outcome on this group is more muted. Second, changes in the stated expectations of respondents who associate themselves with the "winning team" are indicative of attitudinal shifts that do not manifest themselves in their actual behavior (they may be partisan cheerleading) as revealed by their online search behavior, in contrast to the members of the "losing team", whose decline in durable goods purchases correlate with their stated economic expectations. Combining novel survey data and search, this study provides a uniquely meaningful comparison of stated attitudes with actual behaviors.

I. Data and Estimation Strategy

We combine three key unique datasets: 1) survey data from Pollfish, 2) survey data from MSN, 3) Bing Search data, as well as: Census data and voter file data.

Pollfish

We use Pollfish's platform to ask people about their political preferences and expectations, along with outlooks for both national and household economic growth. Pollfish is a mobile-based polling platform that allows app developers to monetize their apps by including pop-up survey rather than an advertisement. Pollfish offers close to half a billion potential respondents worldwide. Of course, only a fraction of people asked to participate respond to any survey, and post-survey analytics are required to produce representative estimates. For any single cross-sectional poll, our strategy for estimating voter intention roughly follows Konitzer, Corbett-Davies, Rothschild (2018), the method is known as Dynamic MRP (i.e., multi-level regression with post-stratification). We ask (or get free from Pollfish) a broad set of demographics for each respondent and use the responses and demographics to estimate the poll share in a range of demographic cells. The number of cells are the Cartesian product of all age, gender, and geographic division categories: 126 for the US and 86 for the UK.

Estimating a cell's two-party vote share by simply averaging responses in that cell produces highly unstable estimates (and is impossible for cells that are empty). So, we model survey responses in terms of demographics by "borrowing" responses from demographically similar cells. We then estimate each demographic cell's actual percentage of the target population, estimated from census data and (in the US) voter file data. We then post-stratify our modeled responses onto our modeled post-stratification space.

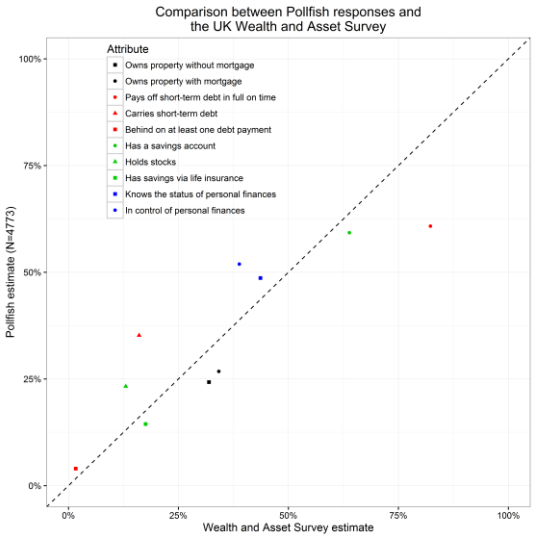

FIGURE 1. VALIDATION OF POLLFISH-BASED POLLING WITH COMPARISON TO WEALTH AND ASSET SURVEY

The polling analysis method has been used repeatedly in the political science literature (Konitzer, Corbett-Davies, Rothschild 2018; Wang et al., 2015); but this its first application to address financial or economic questions. We offer two robustness checks. First, our post-stratified results are stable. For example, for thee question of risk-seeking behavior, toplines of the post-stratified results are within 10 percentage points of each other for five polls we did around Brexit from June 7 to July 15, 2016. Further, Figure 1, presents the results of validating our estimates against the UK Wealth and Asset Survey, which revealed a high correlation between our pooled estimates from our five surveys and the estimates from their representative survey.

We repeated these polls in cross-sections (i.e., so we did not see the same people in more than one poll). The timing was relatively similar for each election: Brexit voters were polled June 7 (16 days before the election) and July 16 (23 days after the election), US presidential election voters were polled October 21 (18 days before) and December 8 (30 days after), and voters in the UK general election were polled June 1 (7 days before) and June 19 (11 days after).

MSN

MSN is a popular current events website which uses topical polls to drive engagement. From June 2016 onward (still ongoing at the end of 2017) we have had editorial control over the results of political polls that were published on both the front-page and politics-page of the MSN website. The poll changes daily and starts with a few topical policy questions (e.g., If you could vote on the current tax plan bill in the Senate, how would you vote?). It then asks the

respondent's presidential preference, age, gender, and party identification.

Bing Search

To examine survey respondents' search behaviors, we created a novel dataset of 150,000 Bing searchers who responded to the MSN polls: this data is for the US presidential election only. To determine whether respondents searched for houses and cars, we generated a list of searches using a 'seed term' (e.g., houses or cars) and the ``related searches'' function on Google Trends. All searches that subsumed these terms were also counted (e.g., for "house" we also include ``buy house Florida"). The results are robust to the inclusion or exclusion of specific search terms. We re-weighted the respondents by age, gender, and state, using breakdowns imputed from the full voter file of the estimated 2016 election taken from pre-2016 voter files, to better match the demographic makeup of their party. Krupenkin, Hill & Rothschild (2018) provides a more detailed methodology.

We use a binomial logit model that counts each searcher that searched for houses, cars, or the stock market on a particular day as 1, and any searcher who did not as a 0. Standard errors were clustered by searcher. As there is significant seasonality in house and car purchases, we examined the differences in searches in 2016 versus those in 2017, instead of immediately before and after the election. The search dataset included searches from 02/15/2016 to 07/31/2017. We controlled for a variety of covariates, including month, day of the week, and demographics effects.

Search frequency is positively correlated with purchase (Alexander 2016, Lynn and Bryniolfsson 2009, Hyunyoung and Varian 2012). Still, not all people are in the immediate purchase funnel, some people search without immediately intending to buy, because certain types of searches are interesting and satisfying in and of themselves although time consuming, while others are in the very early pre-purchase position. These searchers will only add noise to any results on correlated shifts in survey responses and economic decision making.

II. Results

Markets were relatively confident they knew the outcomes of these elections: the Brexit vote was $0.75 per $1.00 contract for Remain, the US presidential election was $0.89 for Clinton to win, and the UK general election was $0.84 for Conservatives to win an outright majority and $0.94 for Conservatives to form a minority government (Note: Leave votes won, Clinton lost, and the Conservatives formed minority government). These prices are from prediction markets, which buy and sell contracts on upcoming political events (canonically worth

$1 if the event occurs and $0 if it does not). This confidence reflects the position of financial markets; there was a strong correlation between prediction market prices and currency exchange rates in run-up to the US and UK elections (i.e., before the Brexit vote, the US dollar exchange rate with the UK pound was highly correlated with the prediction market price for a Leave vote for Brexit and the price of Trump winning the US presidential election tracked very closely with the price of the MX peso in US dollars) (Wolfers and Zitzewitz, 2018).

Yet, the general population remained optimistic that their side was going to win; thus, most supporters of a political party are validated when their preferred option wins and surprised when their preferred option loses; thus, assuming efficient Bayesian updating and ignoring concurrent information released around election, the "losing team" should show more movement in economic expectations after elections. Our polling shows that in the US presidential election, 78 percent of Trump supporters thought he would wind and 95 percent of Clinton supporters thought she would win. This conforms with Rothschild and Wolfers (2013) who found that 60 percent of people think their candidate will win, even when she goes on to lose by 10 percentage points (in the 2016 US presidential election, the losing candidate won the popular vote by 2.1 percentage points).

Around these three votes we asked repeated cross-sections of respondents. both before and after the vote, about their economic expectations for the country and their families. We focus on the local stock market returns (i.e., How do you think the [US or UK] stock market will do over the next 12 months from today?) and their family's wellbeing over the next 12 months (Do you think that 12 months from today your immediate family will be ...). Table 1 shows the key results.

TABLE 1— ECONOMIC EXPECTATIONS PRE- AND POST- ELECTION BY POLITICAL AFFILIATION. FOR INSTANCE, THE UPPER LEFT CELL HAS PRE-POLL 22% (POST-POLL, 9%) OF THE REMAIN VOTERS SAY THAT THEIR FAMILY WOULD BE BETTER OFF IN THE COMING YEAR

(pre/post)	Family Better	Family Worse	Market Better	Market Worse
Brexit: Remain	22/9*	22/41*	30/30	35/48*
Brexit: Leave	18/28	22/15	30/55	28/20
US: Democrats	53/53	9/10	47/42	28/30
US: Republicans	47/64*	14/6	44/70**	28/8**
UK: Labour	35/33	23/20	35/26	42/46
UK: Conservative	36/38	14/14	54/48	26/25

* Significant at the 1 percent level
** Significant at the 0.1 percent level

We determine statistical significance in the difference by comparing the probabilities generated from the model error. This would slightly underestimate the amount of error possible, as it misses error in the post-stratification space.

Republican and Leave voters, the "winning teams", show an increase in both market and family expectations, but the increases in market expectations are more pronounced. For instance, the percentage of Leave voters who

indicated they believed the stock market would be better off financially in a year increased by 25 percentage points and the percentage who believed their family would be better off financially increased by 10 percentage points. The results for Democratic and Remain voters show a more mixed result: Both worry about both market and personal finances. Both Democrats and Remain voters showed less movement after the elections than their counterparts. For instance, no Democratic metric moved more than five percentage points from before to after the US presidential election. In the UK general election, which ended with a mixed result, all respondents become more pessimistic regarding economic expectations after the election.

Expectations regarding family are more optimistic in the US than in the UK, perhaps owing to the narrative of the American Dream. Even after their party lost, Democrats' expectations for their families' well-being in the coming year are more optimistic than those of respondents from the winning side in the UK (i.e., 53 percent of Democrats thought their family would do better versus just 28 percent of leave voters after the vote, and 33 and 38 percent of Labour and Conservative voters respectively after the 2017 general elections).

Asking about only the economy, and not specifically about family and financial markets, would have missed a major narrative for the Brexit voters. Most Leave voters were under no illusions that Brexit would improve their lives, as after the vote only 28 percent reported they believed their family would better-off financially in a year. Further, Remain voters were concerned about the impact of the result on financial markets and their families' income, with 41 percent reporting their family would be worse off and 48 percent saying the market would be worse off in a year. Of course, this relation is endogenous, as our polling shows that voters with higher levels of education and higher income, who are more likely to work or be invested in the financial markets, overwhelmingly voted for Remain.

The differentiation between market and family expectations are valuable in the US as well; while they are correlated with each other, there are some interesting differences between them. Republicans who believed their financial situation would improve almost certainly think the market will also improve, however, many think the market will improve, but do not forecast an improvement in their personal well-being. Nearly two-thirds of Republicans indicated before the election that their financial station would improve, and that group increased by 16 percentage points after the election, in expectation of the stock market performance improving. However, even those

Republicans who were still concerned about their financial prospects, after the election, became more optimistic about the market. Republicans who believed their financial situation would get worse over the next year fell to just six percent, but those who believed the market would improve rose from 5 to 26 percent, as those who thought it get worse fell from 83 to 43 percent).

TABLE2— ECONOMIC EXPECTATIONS PRE- AND POST- ELECTION BY MARKET EXPECTATION CONDITIONAL ON FAMILY EXPECTATIONS

(pre/post)	Market Better	Market Worse
Family Better (GOP)	67/83	12/2
Family Worse (GOP)	5/26	83/43
Family Better (DEM)	62/56	17/22
Family Worse (DEM)	11/5	78/67

* Significant at the 1 percent level
** Significant at the 0.1 percent level

It should be noted that we have not included assessments of risk in this paper. It is perfectly rational to have the same positive expectation of the market, but believe that there is higher variance with asymmetric consequences (i.e., a market crash having a much more pronounced, and negative, repercussion on personal financial prospects than positive market developments). Hence, we refrain from commenting on these expectations' rationality, and rather focus on behavioral manifestations of these attitudinal swings.

People who think the stock market will go up should seek to buy things that will either gain value as an investment and/or be much more expensive to buy the next year. A house typically gains value as an investment and will be more expensive later if the market is doing well. What about people who think their personal finances will get stronger; cars depreciate over time, but are a key consumption item. These two expectations are different, but highly correlated, so, without seeing the same people in surveys and searches, we examine the aggregated shifts in searches by party, cognizant of the relationship between these two expectations shown in Table 2.

Many people cannot freely shift house or car purchases, meaning our expectations should be that no changes occur for the vast majority of searchers, even if they have truly shifted their economic expectations. Thus, any changes that we do document are an extremely strong manifestation of behavioral effects, because they are significant despite identification drawn from a small percentage of people who could realistically shift their purchases.

We performed two tests to check whether search patterns changed after the election general. First, we examined the overall number of searches per searcher based on party. If Democrats were so depressed and demoralized after the election that they stopped searching, this would pose a significant challenge to our results. There was no significant difference in the intensity of searches for adult content and various other major categories over this time

period. Second, we examined changes in searches for ``adult'' content over the same time-period. This specific placebo was chosen because it makes up a significant volume of internet searches, while having little connection to perceptions of the economy. The average number of searches for adult content for both Democrats and Republicans stayed constant from 2016 to 2017. Thus, any shifts in searches for houses and cars is not the result of a decrease in the overall number of searches per searcher, or how they were using the Bing search engine in general.

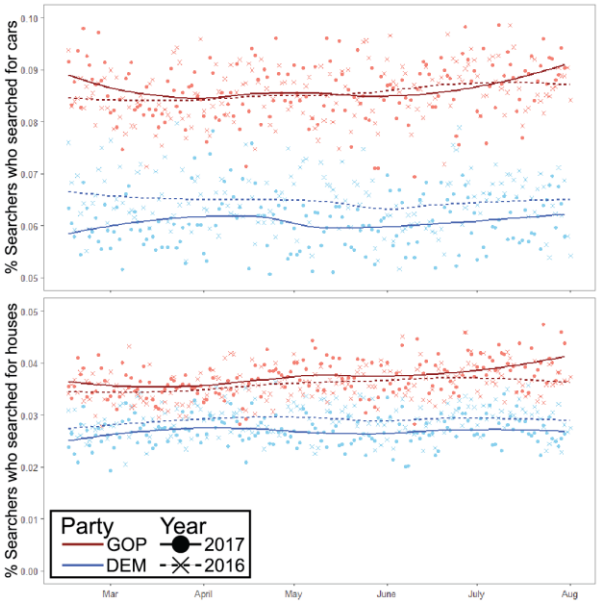

FIGURE 2. 2016 V. 2017 SEARCHES FOR CARS AND HOMES BY PARTY IDENTIFICATION

Figure 2 shows the proportion of Democratic and Republican searchers who searched for houses and cars. It reveals two patterns: (i) In both 2016 and 2017 Republicans performed more searches for car and houses than Democrats; (ii) Democrats' search intensity dropped from 2016 to 2017 whereas Republicans' search intensity remained stable.

Democrats searched for expensive durable goods at lower rates than Republicans. This likely reflects the demographic composition of the Demographic party. For instance, Democrats are younger on average.

Search behavior by political party was impacted by economic expectations in the wake of the 2016 US presidential election, for Democrats only. The difference in car and house search intensity between 2016 and 2017 was significant for Democrats (it dropped). Republicans were slightly more likely to search for houses, but the difference was not significant.

In separate regressions, we show that Democrats were indeed less likely to search for houses and cars in 2017 than in 2016, while Republicans' search behavior was unchanged, even when controlling for day-of-year effects and other correlates. Stylized regression: search = year + Democrat + Year*Democrat + Age + Gender + Pop Density + Race + Income + Week + Day of Week + Month + State. The key coefficient is the Year*Democrat and Year, which reveals the significance in searches, year over year, for affiliates of the two parties' members.

The "losing team", Democrats, exhibited more muted shifts in survey results, had a

greater change in their search habits than Republicans: The attitudinal reaction of the "losing team" manifested itself in revealed behavior, while the attitudinal reaction of the "winning team" did not, and can be characterized as partisan cheerleading.

III. Discussion

Surveys show that economic expectations shift sharply around elections depending on political party affiliation. For members of winning coalitions, expectations improve, which is more striking for market expectations relative to household expectations. For losing coalitions, there is less movement, and decreases in expectations for the market and the family exhibit less clear patterns. Much of this is partisan cheerleading, insofar as respondents are signaling something that does not manifest in behavior. However, in the aftermath of the 2016 US presidential election, Democrats were indeed less likely to search for both cars and houses than they had been before the election, while the likelihood that Republicans would search for these terms remained constant.

Hence, we find that people's stated economic attitudes do transfer to changes in behavior, but only for losing coalitions. A caveat of our finding is that not all search behavior is directly aimed at purchases, although we limited search terms to those with a higher probability of being correlated with purchase.

President Trump takes a lot of credit for stock market performance, and his supporters report that they have a great deal of faith in his promise to vitalize the stock market. However, there is no evidence that his supporters translated that faith into purchase of major durable goods. On the flip side, Democrats, worried about the effect of Trump's election on the market and their income stream, have diminished their investment and interest in durable goods.

REFERENCES

Choi, Hyunyoung, and Hal Varian. "Predicting the present with Google Trends." Economic Record 88.s1 (2012): 2-9.

Corbett-Davies, Sam, Tobi Konitzer, David Rothschild. 2018. "Non-Representative Surveys: Modes, Dynamics, Party, and Likely Voter Space" Working paper.

Kinski, Alexander. Google trends as complementary tool for new car sales forecasting: a cross-country comparison along the customer journey. MS thesis. University of Twente, 2016.

Krupenkin, Masha, Shawndra Hill, and David Rothschild. 2018. "Partisanship and risky financial decisions". Working paper.

Rothschild, David, and Justin Wolfers. 2011.

"Forecasting Elections: Voter Intentions versus Expectations" Working paper.

Wang, Wei, David Rothschild, Sharad Goel, and Andrew Gelman. 2015. "Forecasting elections with non-representative polls" *International Journal of Forecasting*, 31(3), 980-991.

Wolfers, Justin, and Eric Zitzewitz. 2018. "What do financial markets think of the 2016 election" Working paper.

Wu, Lynn, and Erik Brynjolfsson. "The future of prediction: How Google searches foreshadow housing prices and sales." (2009).