Do Public Perceptions of the Economy Track the National Economy?

Michael Peress*

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Abstract

A key aspect of democratic accountability is that voters to hold incumbents accountable for economic performance. At minimum, a strong economic vote requires voters (at least in aggregate) to make accurate assessments of the relative performance of the national economy. My analysis pools survey estimates of perceptions of the national economy over an almost 40 year period and compares these estimates to five measures of economic performance—growth (in GDP), unemployment, inflation, growth in disposable personal income, and stock market returns. My results suggest an extremely close alignment between the *long-term* economy and economic perceptions. At the same time, my results indicate an only moderately strong economic vote. Voters meet the informational threshold for holding incumbents accountable for economic performance, but are limited to using a single tool (elections) to hold incumbents accountable for many relevant factors.

*SUNY-Stony Brook, michael.peress@stonybrook.edu

1 Introduction

How closely do voters follow the national economy? Do voters follow the economy closely enough to hold incumbent parties responsible for their management of the economy? What window of time do voters use in evaluating economic performance? Answering these questions is key to understanding an important component of democratic accountability. If voters lack accurate knowledge of the economy, then they cannot hold incumbent governments accountable. If they respond naively to very recent economic statistics, incumbent governments may be able to manipulate the economic vote. If voters respond to the very long term economy, then incumbent governments may have little incentive to produce good economic outcomes.

The literature lacks a detailed assessment of these questions, but media coverage has often assumed that one exists. Media coverage has often assumed a very strong link between *very recent* economic performance and the voter's evaluations of the economy. This consensus is so strong that media coverage has treated a "disconnect" between the recent economy and evaluations of the economy during the Biden administration as an anomaly that needs to be explained (Miller and Paris, 2023; Karma, 2024), or in some cases, corrected by the media or politicians (Levitz, 2024). The assumption that voters *should* follow the *recent* economy, and if they don't, it's the media's fault, is not a new development. President George H.W. Bush, as a candidate for reelection, "expressed frustration that most Americans believed the economy was still declining even though he said statistics showed that it was growing" (Greenhouse, 1992). Lipset (1993) similarly described a disconnect between the recent economy and public evaluations of the economy with Patterson (1993) assigning much of the blame to media coverage.

The expectation of a strong connection between economic perceptions and the actual economy is not entirely without justification. Recent media coverage of the economy has often

relied on the Index of Consumer Sentiment (ICS) as a measure. Journalists may be aware of documents reporting a close correlation between components of the index and the objective economy (Surveys of Consumers: University of Michigan, 1995). Fair's work (e.g. 1978) has argued for an extremely strong connection between the economy and election outcomes, which itself suggests that voters have a very good sense of how the economy is doing.[1] While influential, it is worth pointing out that the forecasting literature generally comes to different conclusions—Lewis-Beck and Tien (2021) report a slightly lower R-Squared from a model that includes the economy and presidential approval. Moreover, Fair has been criticized for achieving the high explanatory power by repeatedly altering his model to reflect new election results (Bartels, 1997). The conclusion that American elections are highly determined by the economy is at odds with the comparative politics literature, with Powell and Whitten (1993) arguing that "cross-national aggregate analyses of 'economic voting' show only weak and inconsistent economic effects."

The focus on the recent economy is similarly not entirely without justification. Achen and Bartels (2016) argued that the recent economy (the second and third quarter before a presidential election) had more explanatory power than the economy over the presidential term. Much of the literature has adopted a very short (MacKuen, Erikson and Stimson, 2002) or moderately short (Powell and Whitten, 1993; Hellwig and Samuels, 2007; de Benedictis-Kessner and Warshaw, 2020) window as a convention. Here too, there has been some variation, with Aytac (2018) averaging the economy over the entire term of an incumbent and Hibbs (2000), Zaller (2004), and Achen and Bartels (2016) explicitly considering different time windows.

In this article, I strive to explicitly examine both of these implicit assumptions and mea-

[1] Fair's results imply an R-Squared of 80% in a model where the economy is used to explain the vote share of the incumbent President's party. Fair does not report the R-squared, but it can be inferred from the standard error of regressions of around 0.04 ($\hat{\sigma_\varepsilon}$) and the standard deviation of the dependent variable (s_y^2) using the formula, $R^2 = 1 - \frac{(N-K)\hat{\sigma}_\varepsilon^2}{(N-1)s_y^2}$.

sure whether voters, in aggregate, have a good sense of the overall economy. My analysis pools survey estimates of perceptions of the national economy over an almost 40 year period and compares these estimates to five measures of economic performance—growth (in GDP), unemployment, inflation, growth in disposable personal income, and stock market returns. My results suggest an extremely close alignment between the *long-term* economy and economic perceptions, which translates into only a moderately strong economic vote. When the appropriate window of time is used, neither President Bush (41) nor President Biden suffered from economic perceptions that were persistently lower than expectations based on economic performance. Moreover, if a shorter time window is used, a dramatic disconnect between the economy and voter perceptions of the economy is observed for both incumbents. This suggests that both supposed anomalies involve a partially correct analysis by media figures and politicians that is flawed because of the incorrect premise that voters react to the short-term economy.

2 Background

The mechanism for the economic vote is as follows: voters obtain information about the state of the economy from various sources. These sources include their personal experiences as well as information about the national economy. The voters' evaluation of the economy is then one of many factors the voters use to evaluate the candidates for office—when the voters evaluate that the economy preformed poorly, the voters will presumably punish the incumbent party. For this mechanism to work, the voter's evaluation of the economy must be tied the state of the national economy and voter's must condition their vote for incumbent parties on their evaluations of the economy.

Two theories of economic voting map roughly onto sources of information that voters have. Voters may personally experience the economy and punish incumbent government

based on this personal experience (as in *pocketbook voting*) or they may learn about the national economy through economic statistics, possibly indirectly through media coverage (as in *sociotropic voting*). These sources of information relate to a number of aspects of the economy—the voters' financial well being, the voters' employment opportunities, and changes in the worth of the voters' assets. These aspects could be characterized by a large number of economic statistics, but five are especially important in the literature on economic voting and in popular discussion of the economy—growth, unemployment, inflation, growth in income, and stock market returns. For each, voters may have direct or indirect knowledge of the economic statistics. For growth, direct knowledge could come in the form of reading that the economy grew by 4.7% in the third quarter. Indirect knowledge could come in the form of a media report that the economy was "booming", conveyed by a journalist who had direct knowledge of the economic statistic. For each of these, voters may also have some personal experience—they may have heard that their friend lost their job (unemployment) or they may have received a raise at work (growth).

Voters can use these various sources of knowledge to develop a sense of how the economy is doing. In doing so, they must decide how to weigh these different aspects (growth, unemployment, etc.) and over what time horizon to calculate them (unemployment this month? unemployment this year?). Voters may intend to evaluate the economy in one way, but may fail to implement their intensions.

I first consider how voters *should* evaluate the economy. It is also arguable that voters should use a relatively long window for assessing the economy. A voter may want to only retain an incumbent if that incumbent would effectively manage the economy during the next term. The voter may view the incumbent's economic record as a tool for inferring the incumbent's economic competence, which could then be used to forecast economic performance in the next term. Here, a window of time that is very short may provide a noisy signal of economic competence. Beyond this, if the public were to use a short period of time in eval-

uating the economy, public opinion would be susceptible to manipulation by the incumbent government—Achen and Bartels (2016) argue that incumbent governments, cognizant of an electorate that is focused on election-year growth, shift spending in a way that increases voters' disposable personal income in the run-up to the election. It could alternatively be argued that voters should use a relatively short window of time for assessing the economy. If the economic competence of incumbents evolves over time, or if incumbents learn on the job, a long term average of the economy may weigh information that is no longer relevant for forecasting future incumbent performance.

Empirically assessing what window of time voters should use is challenging. Hibbs (2000), for example, doesn't present an empirical justification and relies on a theoretical justification. Achen and Bartels (2016) provide evidence that undermines the use of short windows—economic performance is sufficiently noisy that a few quarters would provide a very noisy signal of economic competence. Healy and Lenz (2014) present experimental evidence that voters intend to use the economy over the entire term to evaluate incumbents.

Regardless of what window of time voters intend to use, they may be limited in their ability to obtain the relevant information or may not process it appropriately. A long time horizon may require voters to collect more information, which may be challenging to voters. Healy and Lenz (2014) alternatively argue that voters are present-focused because of cognitive limitations—while voters intend to judge an incumbent based on performance over the whole term, they fail at carrying out this intent because they rely on a heuristic which substitutes election year performance for cumulative performance. Implicit in this argument is that voters retain knowledge of multiple years of performance individually. In contrast to the "memory-based model", Lodge, McGraw and Stroh (1989) argue that voters update information "online", meaning that voters incorporate new information into an overall evaluation without retaining the information.

Using a long window of time is thus not necessarily inconsistent with voters of limited

cognitive ability or effort—there is reason to believe that forgetting can be difficult for voters. A common concern in survey research is that respondents have difficulty placing events in time (Fowler, 1995). For example, a survey respondent may be asked whether they purchased a refrigerator in the last six months and may respond positively when they purchased a refrigerator ten months ago. Respondents don't know when they purchased the refrigerator, but they just feel that it was recent. Without employing specific countermeasures, such as having respondents keep journals of behavior, the survey researcher is beholden to how things feel to the respondent. One particular manifestation of this problem shows up in the over-reporting of media consumption (Goldman and Warren, 2020), with Price and Zaller (1993) for example, reporting that respondents to the American National Election Study over-reported regularly listening to NPR by a factor of 6. Voters could use a longer time window than they intend because they have difficulty placing economic performance in time and may remember multiple years of economic performance.

A second aspect of sanctioning relates to the aspects of the economy that voters consider and the weight they place on them. Again, we can distinguish voters intent from voter behavior. For example, a one standard deviation increase in unemployment could hurt voters more than a one standard deviation increase in inflation, but voters may not be able to act on this due to informational or cognitive limitations. Voters may place more weight on inflation than unemployment because a one standard deviation increase in inflation feels worse than a one standard deviation in unemployment, or because information on inflation is more prevalent in their day to day lives.

The literature has touched on each of the three questions I seek to answer in this paper. Assessing whether voters know enough about the economy requires a measure of economic perceptions. The ICS (MacKuen, Erikson and Stimson, 2002; DeBoef and Kellstedt, 2004) is widely used because of its availability. The peculiarity of the components in the index suggests an alternative measure is preferable if the goal is to understand voters' perceptions

of the economy (Enns, Kellstedt and McAvoy, 2012). Much of the work using the ICS is interested in understanding whether economic sentiment reacts to non-economic factors—for example, DeBoef and Kellstedt (2004) are interested in political factors and Enns, Kellstedt and McAvoy (2012) are interested in partisanship. Determining whether voters know enough about the economy can be most directly ascertained from a model that includes only economic variables. MacKuen, Erikson and Stimson (2002) present one such model and suggest a strong relationship between the economy and economic sentiment, though given their application, they acknowledge that "an explanatory model... would want to be much more parsimonious.'

The question of the time window voters use to evaluate the economy is considered in Hibbs (2000), Zaller (2004), Healy and Lenz (2014), and Achen and Bartels (2016). The same articles, as well as the work of Fair (e.g. 1978) address the ability of the economy to explain election outcomes. All use American presidential elections to form their dependent variable. An advantage of using American elections is that they are able to capture the entire mechanism—the economy explains economic sentiment and economic sentiment explains election results. The disadvantage of using American elections is the very small sample sizes that result, with the largest sample size in these articles being 16. The small sample sizes necessarily lead to imprecise conclusions about the time window voters use and the explanatory power of the economy.

To address limitations in the literature, I rely on two dependent variables. First, I forgo the ICS or it's components for a direct measure of voter sentiment on the economy. I rely on pooling surveys that ask voters to rate the national economy on a four point scale. This avoids some of the strangeness of the ICS. Three of the items in the ICS relate to expectations for the future. Two of the items ask for change over a period of a year, which builds into the survey an answer that I would like the respondents to provide. The most relevant item uses a term—"business conditions"—which voters may not interpret to be asking the performance

of the national economy in general. My approach of aggregating items is most similar to Enns, Kellstedt and McAvoy (2012) and is motivated by the path-breaking work of Erikson, Wright and McIver (1993).

An advantage to using perceptions of the economy instead of American election outcomes is the precision it allows for. The ability to discriminate with statistical data depends on the number of observations, how correlated these observations are, and the population variance of the error term. Using monthly perceptions rather than once very four years elections dramatically increases the number of observations, though monthly observations are more correlated. The modeling error is inherently smaller as perceptions of the economy are more closely tied to the economy than election outcomes. Focusing solely on perceptions of the economy would leave me unable to address the second part of the mechanism however. I consider an international sample of elections to form the second dependent variable as it allows me to address the second part of the mechanism while maintaining the ability to distinguish between competing models with precision.

To focus squarely on the questions of interest, I consider five economic statistics aggregated into different time periods. Journalistic coverage is often focused on whatever data is newest, with many variables being available at the monthly level. I consider increasing aggregations all the way up to 5 years. The longer time windows approximate a voter using the entire term of an incumbent to evaluate the incumbent. One may ask however, why approximate? Indeed, in a robustness check, I consider aggregating economic data based the term of the incumbent candidate or party. My main specifications focus on fixed time windows because this is arguably a more realistic characterization of voter behavior. In this characterization, voter intend to use a relatively long window of time because (most) incumbents have been in office for a relatively long time, but voters don't bother or are unable to be precise about the exact timing of economic events relative to the incumbent's term.

3 Data

3.1 Sentiment on the Economy

To measure voter sentiment on the economy, I queried polls from the Roper Center's iPoll archive. I looked for items that measured sentiment of the mass public on how the national economy was performing. These are distinct from items that measured change in the national economy, items that measured predictions for the future national economy, and items that related to a respondent's personal financial situation. Predictions were less relevant because they only indirectly tapped what voters knew about economic performance. I choose items about levels rather than changes because they were less demanding on survey respondents in terms of placing events in time. The items I used did not impose a time period on the respondents (i.e. they did not ask respondents on how the national economy performed *over the last year*). A key goal of this article was to ascertain the window of time that voter's used in judging the economy and selecting survey questions that imposed a window of time would be contrary to this goal.

Searching the Roper's archive, I found over 2000 relevant polls for the time period ranging from March, 1976 through May 2024. The questions varied in terms of wording and the number of options given to voters. By far, the most common number of options was 4 (there was over 1,700 such polls) followed by 6 (there were about 250 such polls). The wordings for the 4 option polls were nearly identical. The only drawback to relying on the 4 option polls exclusively is that they only went back to December, 1985. The earlier polls had 2 or an odd-number of items, which made them difficult to combine into a single analysis. Including the 6 item polls provided little benefit as the wordings were somewhat different and the availability of the 6 item polls overlapped with time periods where many 4 option polls were available. For consistency, I based my results exclusively on the 4 option polls.

The 4 option polls asked specifically about how the national economy was doing. The

most common way this question was asked was "Would you describe the state of the nation's economy these days as: excellent, good, not so good, or poor?" The vast majority of the questions used exactly this wording. A handful did not specifically mention the national economy, and instead referred to "the economy". A handful of items substituted "only fair" for "not so good", leaving the other options the same. Since these items had the same meaning, they were pooled into a single measure. Based on this survey item, I calculated the percent of respondents who rated the economy as excellent or good.[2] I then used the Bayesian smoothing method of Jackman (2005) to convert this into a monthly time series.

3.2 Measuring the National Economy

I constructed five measures of the national economy. The first three were motivated by the extensive comparative politics literature on the economic vote (Powell and Whitten, 1993)—growth (in GDP), unemployment, and inflation. Quarterly estimates of the real gross domestic product where obtained from the Bureau of Economic Analysis. The quarterly growth rate was computed based on the percentage change in the real gross domestic product over subsequent quarters. Monthly data on unemployment and the consumer price index came from the Bureau of Labor Statistics. Inflation was calculated as a percentage change in the consumer price index.

I collected monthly data on real disposable personal income growth from the St. Louis Fed. Achen and Bartels (2016) argued that this was a more direct measure of the experience voters have with the economy as it adjusts for the taxes that voters pay and the transfers that voters receive. In Achen and Bartels's theory, voters are primarily pocketbook voters. They feel good when they have money to spend and reward incumbent governments when they feel good. In this conception, voters are potentially subject to manipulation by incumbent

[2] As an alternative measure, I assigned the numbers 1 through 4 to the quality categories (i.e. poor = 1, not so good = 2, etc.) and took the average value. The correlation between this measure and my chosen measure was 99.2% and the alternative measure led to nearly identical results.

governments who may temporarily reduce taxes and increase transfers at an opportune time (i.e. immediately preceding an election) and voters are not sophisticated enough to adjust for the fact that if their personal disposable income experiences such a bump immediately before an election, it may not portend good economic times if the incumbent is reelected. The inclusion of GDP growth in economic vote models is more closely tied to the sociotropic view where voters respond to the most widely reported economic statistics rather than their personal experiences. Unemployment and inflation would be suggested by both the pocketbook and sociotropic views.

I collected data on the S&P 500 index as a measure of stock market performance. Monthly stock market returns were constructed from the daily open and close values of the index. Stock market performance is widely reported in media coverage and U.S. Presidents have often taken credit for good stock market performance.

A key goal of this paper is to determine the window of time that voter's use in assessing the economy. It was thus necessary to aggregate these 5 measures into various time periods. I aggregated the data into monthly, quarterly, semi-yearly, yearly, 2 years, 3 years, 4 years, and 5 years. For all measures except economic growth and S&P 500 index growth, constructing the monthly measures was straightforward. For unemployment, quarterly unemployment in June 2000 (for example) would be the average of monthly unemployment in April 2000, May 2000, and June 2000. A similar approach was taken for other time periods. For inflation, quarterly inflation in June 2000 relied on the CPI from June 2000 and March 2000. The rate of inflation could then be calculated as $100 * (\text{June 2000 CPI}/\text{March 2000 CPI} - 1)$. A drawback of this approach is that in comparing coefficients between regressions using different time widows, the longer time windows would inherently lead to smaller coefficients for personal income growth. To aid in comparisons, I instead calculated quarterly inflation as the monthly inflation rate that would result in the CPI growing from March 2000 CPI to June 2000 CPI at the quarterly rate. This can be accomplished by taking the third root

in the expression, i.e. $100 * (\text{June 2000 CPI/March 2000 CPI} - 1)^{1/3}$. A similar adjustment was made for growth, personal income growth, and S&P 500 growth, for the quarterly as well as other time windows.

S&P returns were based on daily day. A monthly measure of S&P growth for June 2000 was based on comparing the open on the first trading day of June 2000 to the close on the last trading day of June 2000. Growth is inherently not measured on the monthly level, so for monthly growth, I substituted quarterly growth for monthly growth, adjusted to represent a monthly rate of growth.

3.3 International Data

Understanding how perceptions of the economy are affected by the economy is part of the large goal of understanding how the economy affects election outcomes. This might suggest using election outcomes as dependent variables, but there have only been so many U.S. presidential elections. Obtaining precision requires sample sizes higher than what can be obtained from such elections. To supplement the analysis, I collected election results and economic data from 24 OECD countries. The set of countries include long-standing democracies for which quality economic data can be obtained.[3] The data were used to construct the vote share of the incumbent prime minister's party. Economic data on growth, unemployment, and inflation were obtained from the OECD and the IMF. Personal income growth was not available for most countries. I omitted S&P 500 growth as a measure in the cross-national analysis because it was less appropriate outside of the U.S.—the S&P 500 index is based on stocks traded on American stock exchanges. Further information on the economic data can be obtained in Kayser and Peress (2022).

[3]The countries include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Turkey, the United Kingdom, and the United States. Switzerland was excluded from the analysis because of a semi-permanent agreement of the major parties to regularly cycle control of government.

4 Analysis

4.1 Perceptions of the Economy

In Table 1, I report the results of a series of regressions where the monthly percent perceiving the economy as excellent or good is the dependent variable and various measures of the economy are the independent variables.[4] The economic measures capture different windows of time that voters may use in evaluating the state of the economy. I measured the best fitting model using the R-squared. Here, the number of parameters is being held constant across models, so using adjusted R-squared, AIC, or, BIC would lead to the same ordering of model fit. The single best fitting model uses 3 years of economic data to predict economic sentiment. The R-squared for this model is 84.6% which is strikingly high—apparently, (aggregate) voter sentiment on the economy tracks the economy very closely. The coefficients on the best fitting model have the expected signs and all but personal income growth are statistically significant, with the other four measures significant at the 0.1% level.

Time Window:	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Independent Variables:								
Intercept	0.784***	0.795***	0.805***	0.826***	0.760***	0.695***	0.642***	0.486***
	(0.077)	(0.075)	(0.073)	(0.068)	(0.071)	(0.069)	(0.084)	(0.122)
Growth	0.015	0.069	0.181+	0.494***	0.974***	1.351***	1.567***	1.844***
	(0.074)	(0.090)	(0.108)	(0.112)	(0.125)	(0.133)	(0.195)	(0.267)
Unemployment	-0.074***	-0.077***	-0.080***	-0.084***	-0.079***	-0.068***	-0.057***	-0.033*
	(0.012)	(0.011)	(0.011)	(0.009)	(0.007)	(0.007)	(0.009)	(0.014)
Inflation	-0.044	-0.088+	-0.183**	-0.425***	-0.646***	-0.906***	-1.146***	-1.330***
	(0.032)	(0.046)	(0.057)	(0.095)	(0.118)	(0.127)	(0.150)	(0.184)
Pers. Income Growth	0.004	0.020	0.061+	0.097*	0.137*	0.068	-0.028	-0.038
	(0.004)	(0.016)	(0.034)	(0.039)	(0.069)	(0.101)	(0.182)	(0.261)
S&P 500 Growth	0.004*	0.012**	0.022***	0.029***	0.041***	0.056***	0.081***	0.093***
	(0.002)	(0.004)	(0.006)	(0.008)	(0.009)	(0.010)	(0.017)	(0.023)
N	460	460	460	460	460	460	460	460
R-Squared	0.439	0.485	0.559	0.691	0.812	0.846	0.827	0.745

Table 1: Percent Perceiving a Good Economy vs. the Economy — Newey-West standard errors in parentheses. $^{+}p < .10$,$^{*}p < .05$,$^{**}p < .01$,$^{***}p < .001$.

[4] Newey and West (1987) standard errors were used to account for serial correlation in the error terms.

	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Month		0.99/0.07+	0.69/0.03*	0.13/0.00**	0.00**/0.00***	0.00**/0.00***	0.00**/0.00***	0.01*/0.00***
Quarter	0.99/0.07+		0.95/0.02*	0.24/0.00**	0.00**/0.00***	0.00**/0.00***	0.00**/0.00***	0.01**/0.00**
Semi-year	0.69/0.03*	0.95/0.02*		0.50/0.00**	0.00**/0.00***	0.00**/0.00***	0.00**/0.00***	0.01**/0.02*
Year	0.13/0.00**	0.24/0.00**	0.50/0.00**		0.03*/0.02*	0.01*/0.00**	0.02*/0.01**	0.01*/0.37
2 Years	0.00**/0.00***	0.00**/0.00***	0.00**/0.00***	0.03*/0.02*		0.56/0.07+	0.37/0.54	0.13/0.07+
3 Years	0.00**/0.00***	0.00**/0.00***	0.00**/0.00***	0.01*/0.00**	0.56/0.07+		0.73/0.24	0.12/0.01**
4 Years	0.00**/0.00***	0.00**/0.00***	0.00**/0.00***	0.02*/0.01**	0.37/0.54	0.73/0.24		0.49/0.00**
5 Years	0.01*/0.00***	0.01**/0.00**	0.01**/0.02*	0.01*/0.37	0.13/0.07+	0.12/0.01**	0.49/0.00**	

Table 2: Result of Vuong Tests between Competing Models for Percent Perceiving the Economy as Good — In each entry, two p-values are given. The first p-value is from a test of whether the parameter for the row and column model is in the overlapping region and the second p-value is from a test of whether the row and column models fit equally well. $^{+}p < .10,^{*}p < .05,^{**}p < .01,^{***}p < .001$.

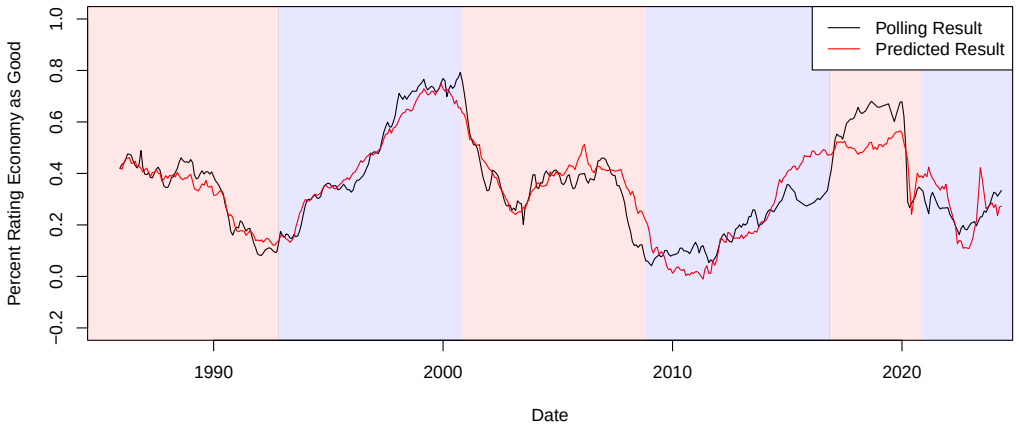

Figure 1: *Polling Result vs. Predicted Polling Result using 3-Year Averages of Economic Statistics*

Some of the model fits were relatively similar. To determine if I could statistically distinguish the various model fits, I applied a Vuong non-nested model test (Vuong, 1989) to every pair of models. To account for time-series dependence in the error terms, I computed the covariance matrices in the Vuong test using the method of Newey and West (1987), as developed in Marcellino and Rossi (2008). These results are reported in Table 2.[5] I could not reject the null hypothesis that the 2 year, 3 year, and 4 year models fit equally well. The 2 year, 3 year, and 4 year models could be statistically distinguished from all the models with shorter time windows, but could not be distinguished from the 5 year model. My results can thus be summarized as follows: in reporting their views on the economy, voters in aggregate look back to at least 2 years and as many as 5 years of economic data.

In Figure 1, I report the time series for actual economic sentiment and predicted economic sentiment, where the prediction is based on the best fitting model from Table 1. The shading

[5]As described in Vuong (1989), the test for overlapping models involves first testing if the parameter is in the overlapping region and then (if the parameter is not in the overlapping region) testing if the models fit equally well. Distinguishing between the models involves rejecting at both stages, so we can only conclude that model A fits better than model B if the measured fit of model A is better and the p-values from both stages are below some threshold.

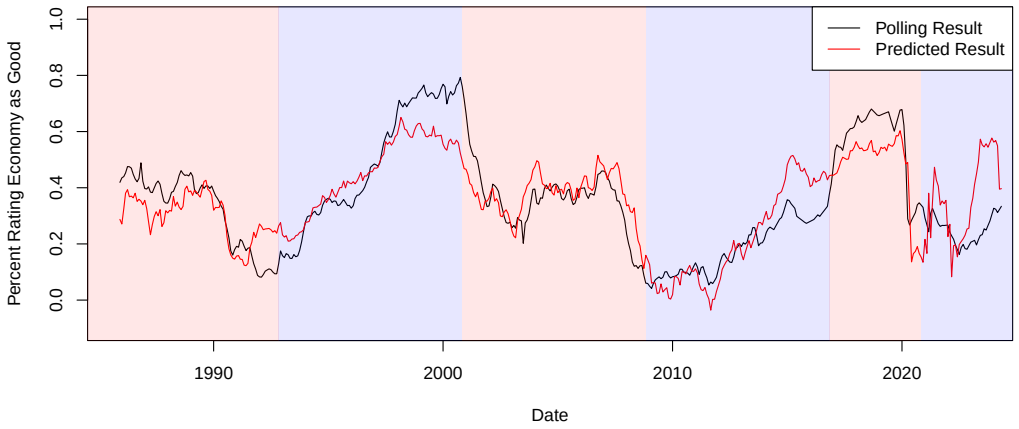

Figure 2: *Polling Result vs. Predicted Polling Result using 1-Year Averages of Economic Statistics*

Figure 3: *Polling Result vs. Predicted Polling Result using Monthly Economic Statistics*

in the figure indicates the incumbent party, as demarcated by elections. As we can see (and consistent the very high R-Squared), predicted sentiment follows actual sentiment extremely closely. The fit does however get noticeably worse towards the end of the series. To quantify this, I calculated the standard deviation of the residuals for each president. For Reagan, Bush (41), and Clinton, the standard deviation was 3 or 4%. For Bush (41), the standard deviation was around 6%. For Obama, Trump, and Biden, it was between 7% and 9%. This error in the later part of the series could still be considered small since the measure ranges from about 5% to 80% positive, but the error for the later presidents 2 to 2.5 times larger than the earlier presidents in our series.[6]

The patterns of errors are interesting as well—during the later part of Obama's term, sentiment is lower than would be predicted by the state of the economy. For most of Trump's term, sentiment is higher than would be predicted based on the state of the economy. The predicted sentiment for Biden exhibits the most complexity—sentiment is first lower than would be predicted, then higher than would be predicted, the briefly lower than would be predicted, and very recently higher than would be predicted.

In Figure 2, I examined the predictions of a model based on a yearly window. This captures what we would have observed had we followed a conventional time window. Here, the predicted sentiment follows polled sentiment closely, though less closely than predicted sentiment based on 3 years worth of data. During the Biden administration, these two series diverge dramatically, with predicted sentiment higher than polled sentiment. Using yearly economic data, it appears that the disconnect between polling and the economy was historically large during the Biden administration (though recently, sentiment has been improving and predicted sentiment has been declining leading to a lessening disconnect). The same figure provides an explanation for this—the Biden administration has experienced

[6] I also performed a test of the difference of variances that accounted for time series dependency. The variances for Reagan, Bush (41), and Clinton where statistically distinguishable from the variances for Obama, Trump, and Biden.

larger economic fluctuations than any other administration in our analysis. A model which substitutes 1 year of economic data for 3 years of economic data (which I argued best captures voter behavior) will perform worse when the economy is fluctuating widely.

In Figure 3, I examined the predictions based on a monthly window. Here, the divergence between the series is even more dramatic—for most of Biden's term, predicted sentiment is much higher than polled sentiment. The patterns in Figures 2 and 3 largely explains the widespread media belief that voters are judging the economy as poor when the economy is well performing. In a sense, the media conventional wisdom is correct—the economy is good and the voters are judging it as poor. However, the economy is good *now*. My analysis suggests that while the media tend to be very present focused, voters are not, judging the economy as poor because while it is good now, it has been poor over the last few years.

	Monthly	**Yearly**	**3 Years**
Growth	0.4	7.7	12.2
Unemployment	-12.6	-13.4	-9.5
Inflation	-1.6	-9.6	-17.4
Pers. Income Growth	0.5	2.0	0.7
S&P 500 Growth	1.6	3.7	3.7

Table 3: Effect of a One Standard Deviation Change of Each Economic Measure on the Percent Perceiving the Economy as Good

Two factors help explain the difference in predictions between the long term model and medium and short term models. First, the economy was relatively poor in beginning of the Biden administration—yearly and monthly measures focus only on the improved economy while the longer term measures still weighs the poor economy in the beginning of the Biden administration. Second, the models based on monthly data overwhelmingly use unemployment to predict sentiment while the longer term measures place a nearly equal weight on growth and unemployment, and places about as much weight on inflation as growth and unemployment combined (the effect sizes are reported in Table 3). Unemployment has been the best measure for the Biden administration, being about one standard deviation better (i.e. lower) for most of his term. Inflation has been the worst measure for the Biden admin-

istration. Growth and personal income growth have vacillated from good to bad, while S&P 500 growth has vacillated from good to average. These patterns are illustrated in Table 4 using 3-year aggregates (the aggregates suggested by the best fitting model). Table A.1 in Appendix A reports the patterns using monthly data—with exception of unemployment, the economic measures are unstable from month to month. This suggest one possible explanation for why perceptions of the economy respond to the long-term economy—keeping track of the short term economy would pose an extreme informational challenge for voters, requiring polled sentiment to vacillate widely from month to month. With the exception of unemployment, it is arguably unrealistic to expect that voters would be sufficiently competent in placing events in time to enable economic sentiment to follow the short term economy.

Similar factors explain the supposed disconnect between polled sentiment and the economy during the Bush (41) administration. The economy was poor throughout much of his term, though improved somewhat during the last year of his administration. The year and monthly models suggest that polled sentiment was below what the economy would suggest, but using the 3 year model, sentiment tracks the economy almost perfectly. In both cases, one can understand the frustration of the administrations for being punished for an economy that had begun to improve, but the tendency of voters to punish (or reward) incumbents for the economy early in a President's term is a widespread pattern rather than an anomaly.

4.2 Election Outcomes

I next considered a direct check of whether voters actually act on the perceptions that I measured. To overcome the problem of relatively few elections, I considered a cross-national test. My data encompasses legislative elections in 24 OECD countries. The dependent variable is based on the vote share of the incumbent prime minister's party. The economic variables include growth, unemployment, and inflation. In addition to the economic measures, the models also include country fixed effects. The results are reported in Tables 4 and 5. The

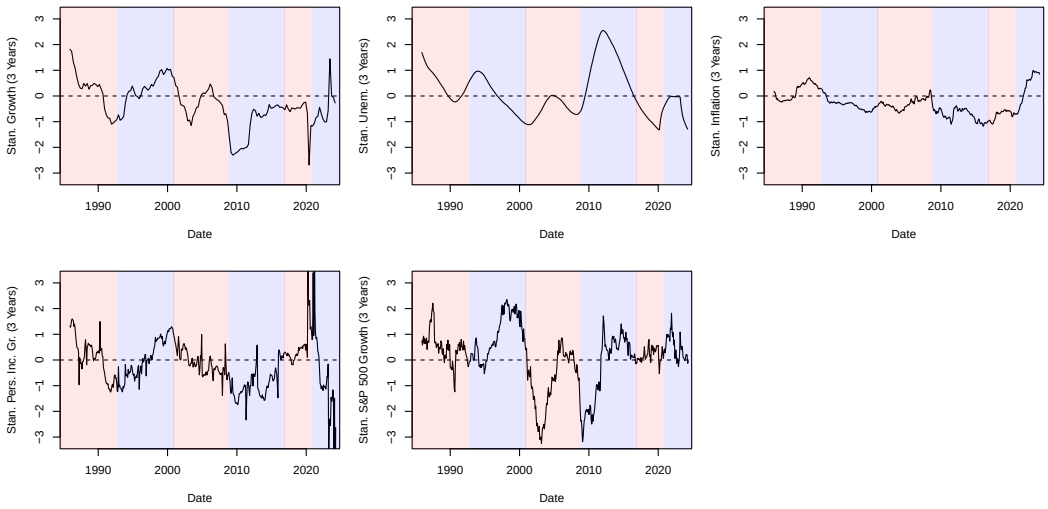

Figure 4: *Standardized Economic Measures over a 3-Year Period*

Time Window:	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Independent Variables:								
Constant	42.011***	41.501***	40.604***	39.205***	36.041***	34.126***	32.358***	30.343***
	(2.029)	(2.013)	(1.977)	(1.924)	(2.017)	(2.062)	(2.132)	(2.205)
Growth	1.184	2.407+	4.823**	7.591***	15.378***	20.235***	23.556***	27.372***
	(1.267)	(1.250)	(1.819)	(2.242)	(2.588)	(2.536)	(2.723)	(3.141)
Unemployment	-0.735***	-0.705***	-0.648***	-0.576***	-0.376**	-0.223	-0.076	0.029
	(0.165)	(0.162)	(0.156)	(0.148)	(0.138)	(0.145)	(0.156)	(0.170)
Inflation	-0.206	0.003	0.270	0.207	0.075	-0.113	-0.109	0.042
	(0.582)	(0.552)	(0.459)	(0.488)	(0.741)	(0.934)	(0.974)	(0.844)
N	360	360	360	360	360	360	360	360
R-Squared	0.540	0.544	0.549	0.556	0.592	0.602	0.614	0.621

Table 4: Vote Share of the Incumbent Prime Minister's Party vs. the Economy — Country fixed effects were included in the model, but omitted form the table. Robust standard errors in parentheses. $^{+}p < .10,^{*}p < .05,^{**}p < .01,^{***}p < .001$.

single best fitting model uses a window of 5 years. A series of Vuong tests indicate that each of the models using windows of 2 through 5 years beat all the models with shorter time windows. None of the models using between 2 and 5 years of economic data are statistically distinguishable from each other. In the best fitting model, only growth is statistically significant, though the 2 year model (which could not be statistically distinguished from the 5 year model) has unemployment also statistically significant. Consistent with the other results in this paper, the results suggest that voters use a fairly large time window in sanctioning incumbent governments for their economic performance.

For completeness, I also examined the vote share for incumbent U.S. President's as the dependent variable, to highlight that the questions of interest cannot be answered using so little data. The results are presented in Tables A.1 and A.2 in Appendix A. Reading the results at face value, the model using 2 years of data is the best fitting model. However, no pair of models can be statistically distinguished from each other. This must be tempered with the fact that the analysis relies on a sample size of only 22 data points, which is small enough that there will be variability in the R-squared as a measure of model performance and where the asymptotic approximation which the Vuong test rests on may be poor.[7]

Returning to the comparative analysis, the explanatory power of the economy can be measured by comparing the model fit reported in Table 4 to the fit of a model with only country fixed effects. The R-squared of such a model is 50.3%. The best fitting model thus contributes about 11 percentage points to the explanatory power. This is similar in magnitude to the R-squared one would obtain in a model without fixed effects. The best fitting model in this case (also the 5 year model) has an R-squared of 10.0%. I found that the overall explanatory power of the economy in predicting election results is modest, a result consistent with findings in the comparative politics literature (Powell and Whitten, 1993).

[7]To achieve a sample size of 22 elections, I used lower frequency data (i.e. quarterly or yearly) when monthly data was not available. Using only high frequency data led to a smaller sample size and similar ambiguity.

	Month	**Quarter**	**Semi-year**	**Year**	**2 Years**	**3 Years**	**4 Years**	**5 Years**
Month		0.33/0.39	0.19/0.22	0.08+/0.16	0.01**/0.00**	0.01**/0.00***	0.00**/0.00***	0.00***/0.00***
Quarter	0.33/0.39		0.10/0.31	0.05*/0.24	0.00**/0.00**	0.00**/0.00***	0.00***/0.00***	0.00***/0.00***
Semi-year	0.19/0.22	0.10/0.31		0.05+/0.41	0.00**/0.01**	0.01**/0.00***	0.00**/0.00***	0.00***/0.00***
Year	0.08+/0.16	0.05*/0.24	0.05+/0.41		0.01**/0.02*	0.01**/0.00**	0.00**/0.00***	0.00***/0.00***
2 Years	0.01**/0.00**	0.00**/0.00**	0.00**/0.01**	0.01**/0.02*		0.00**/0.32	0.00***/0.11	0.00***/0.08+
3 Years	0.01**/0.00***	0.00**/0.00***	0.01**/0.00***	0.01**/0.00**	0.00**/0.32		0.00***/0.16	0.00***/0.12
4 Years	0.00**/0.00***	0.00***/0.00***	0.00**/0.00***	0.00**/0.00***	0.00***/0.11	0.00***/0.16		0.00***/0.31
5 Years	0.00***/0.00***	0.00***/0.00***	0.00***/0.00***	0.00***/0.00***	0.00***/0.08+	0.00***/0.12	0.00***/0.31	

Table 5: Result of Vuong Tests between Competing Models for Incumbent Prime Minister Party's Vote Share — In each entry, two p-values are given. The first p-value is from a test of whether the parameter for the row and column model is in the overlapping region and the second p-value is from a test of whether the row and column models fit equally well. $^{+}p < .10,^{*}p < .05,^{**}p < .01,^{***}p < .001$.

4.3 Robustness Checks

Having presented the main set of results, I now report a number of robustness checks with tables and figures reported in Appendix A. My main models used recent data to fit the models. Perhaps these models only found a lack of a disconnect between recent polling on the economy and the recent performance of the economy because they were fit using the recent data. Ordinary least squares may seek to find exactly those parameters that minimize the disconnect, perhaps by placing more weight on inflation, the worst measure for the Biden administration. If this case, any push back against the media narrative of a disconnect would be less convincing. To address this, I repeated the analysis fitting the models with only data from before 2020 (before the recent inflationary period). The results are reported in Tables A.3 and A.4 and in Figure A.2. Here, I obtain nearly identical results. This suggest that patterns of public opinion measures from before the current inflationary period and prior to the Biden administration do a good job of explaining polling on the economy during the Biden administration. I performed a similar check for the supposed disconnect during the Bush (41) administration with results reported in Tables A.6 and A.7 and in Figure A.3, with the results again nearly identical.

I next considered a number of pet theories that journalists have proposed to explain the supposed disconnect between polling on the economy and the economy. These pet theories have generally postulated that a particular aspect of the economy hurts voters more than the common measures and that these measures at the same time exhibited worse performance over the Biden administration. The journalistic accounts do not show that voters are reactive to these alternative measures or that these measures explain the discrepancy in any statistical model, but simply show that the measure has performed worse. One such account suggests that mortgage rates remain elevated. Given the importance of mortgage rates in the prospect of purchasing a home, voters are particularly sensitive to mortgage rates. In Table A.8, I include mortgage rate in the various models. Mortgage rates are only statistically significant

in the 5 year model (and marginally significant in the 1 year model), while the 3 year model remains the best fitting model. Table A.9 reports marginal effects for a one standard deviation change in each of the economic variables. In the best fitting model, mortgage rates have a small effect size. Ultimately, including mortgage rates in the model leaves my conclusions in tact—voters are responsive to the relatively long term economy.

A second theory suggest that voters are particularly sensitive to food inflation and that food inflation has remained high even as overall inflation has decreased. I present results including food inflation in Table A.10. Food inflation is statistically significant in many of the models, though it is only marginally significant in the best fitting model. Food corresponds to about 10% of spending—the coefficients imply that if food inflation increases by one percent, the percent perceiving the economy as good decreases by 0.1 * 0.629 + 0.265 = 0.323. If a different category of goods that made up 10% of spending experienced an additional one percent inflation, the percent perceiving the economy as good would decrease by 0.1 * 0.629 = 0.063. The ratio of effects is quite large at 5.21, though the 90% confidence interval for the ratio ranges from -0.45 to 10.87, indicating that there is considerable uncertainty about the degree to which voters are particularly sensitive to food inflation. Figure A.4 presents the predictions from the best fitting model. Here, we see few changes from previously reported results. Based on this, it remains plausible that consumers are particularly sensitive to food inflation, but food inflation does not play much of a role in explaining the disconnect. Models focused on the immediate economy perform much worse than models focusing on the long term economy even when food inflation is included in the model.

My main specification used constant windows to explain perceptions of the economy. A window of 3 years could be viewed as a good approximation for a president's term a few month before the election, but it is not a good approximation in the first few months of a presidents term. One could instead imagine that voters use a president's term as a guide, judging the economy using only a few months very early in the term and using almost 4

years late in the term. While attractive, there are informational reasons to doubt that voters engage in this behavior—it would require voters to be very good at placing events in time. Nonetheless, I check these alternative specifications here. I consider two different ways to delineate a president's term—I use the election month as a boundary and I use the inauguration month as a boundary. A drawback of both of these approaches is that very early in the president's term, it suggests that voters will use a very small number of months. I thus generated two additional measures that use the president's term, but default to using one year of data at a minimum. These results are reported in Table A.11. Compared to the best fitting models in Table 1, I find that the models that incorporate the president's term fit worse. The results thus suggest that in evaluating the economy, voters use around 3 years of data, even if this involves blaming an incumbent party for the performance of their predecessor.

One could argue that the models that consider the percent perceiving the economy as good is not the ideal place to look for term effects because the survey item doesn't directly ask about the incumbent and the connection is only implied by the fact incumbents are often blamed for the economy. In Table A.12, I present a similar analysis for an international dataset of election outcomes. Column (1) reports baseline results for the slightly different sample based on a 5 years of economic data. Column (2) instead considers economic data for the incumbent party's tenure in office. For example, if the British Labour was up for election in June 2001, after having taken control of parliament from the Conservatives in May, 1997, the Labour party would have been in power for 49 months and the economic variables would be calculated over these 49 months. Similarly, if the Japanese Liberal Democratic party was up for election in February 1990, having governed since December 1954, their tenure would be 423 months. Given the potential absurdity of voters holding parties accountable over such a long period of time, column (3) caps the amount of time to 5 years. Column (4) also imposes a minimum amount of time for calculating the economic data of 1 year. The results

in the table suggest that a 5 year average performs as well as the models that consider the term of the incumbent party. What is apparent from these models is that voters use a relative long window of time in evaluating the economic performance of incumbent parties. Given the relatively similar fits, what is less clear is whether voters purposely use a long window of time because they believe it is appropriate to use the entire term, or accidently use a long window of time even though this could involve rewarding or punishing an incumbents for the performance of their predecessors.

5 Conclusion

In this article, I demonstrated three things. First, voters, in aggregate, have a good sense of the relative performance of the economy. Second, voters' aggregate sense of the economy is based on a long window of time—somewhere between two and five years. Third, this good aggregate sense of the state of the economy translates into an only moderately strong economic vote. All three findings are contrary to a conventional wisdom that exists in media coverage of the economy which holds that voters are unknowledgable, voters are myopic, and elections are heavily determined by the economy. Building on those assumptions, media coverage has often observed departures from those presumptions and treated those departures as anomalies. Prominent examples include supposed anomalies during the Bush (41) and Biden administrations. In both cases, it was argued that voters failed to notice that the economy had improved (with inaccurate media coverage sometimes blamed), leading to incumbents being unfairly punished. My results indicate that voters reacting slowly to changes in economic conditions is not an anomaly, but the normal state of things.

One interpretation of my results is that voters use a long window of time in evaluating incumbents because they intend to hold the incumbent responsible for performance over the incumbent's term. In fact, Hibbs (2000) and Achen and Bartels (2016) take the position that

this is what voters should do—the economy is noisy in the short term, so a long window is necessary for fairly assessing an incumbent's performance. Moreover, Healy and Lenz (2014) present evidence that voters intend to hold governments accountable for their entire term. While voters (in aggregate) have the knowledge necessary for creating a strong economic vote, the fact that elections are multifaceted prevents this. Ensuring that strong (poor) economic performance always translates into strong (poor) electoral performance for incumbents would require voters to ignore the policy positions of the candidates, their party affiliations, the foreign policy performance of the incumbents, and many other factors.

This is not the only interpretation consistent with my results however. Voters may arrive at a long window of time accidentally. Survey respondents have been continuously shown to be poor in placing events in time (Fowler, 1995). Much as if a voter is asked whether they watched a television show in the last week and instead report whether they watched the television show in the last month, voters may attempt to report the economy over the period of a year, but incorrectly place events from 3 years ago within that year. Providing a short term account of the economy may be particularly challenging to voters because remarkable events informing them of the economy (receiving a raise or hearing of a friend who lost their job) may only happen so often. In this interpretation, the long window of time voters use is a happy accident.

Or maybe the accident is not so happy. An third interpretation would quibble with Hibbs (2000) and Achen and Bartels's (2016) position that voters should use the entire term to judge an incumbent. Incumbents may take a while to learn to navigate government bureaucracy and improving the economy may require slowly replacing executive branch employees or passing legislation. Was it reasonable for voters to punish President Bush (41) for a recession that was on the mend? It is reasonable for voters to hold President Biden responsible for a recovery from a pandemic that was not immediate? I demonstrate that voter perceptions of the economy closely follow the economy and that voters do not heavily discount the past, but

this article (and the economic vote literature thus far) has not provided a definitive answer on how voters should sanction incumbents.

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A Online Appendix: Additional Tables and Figures

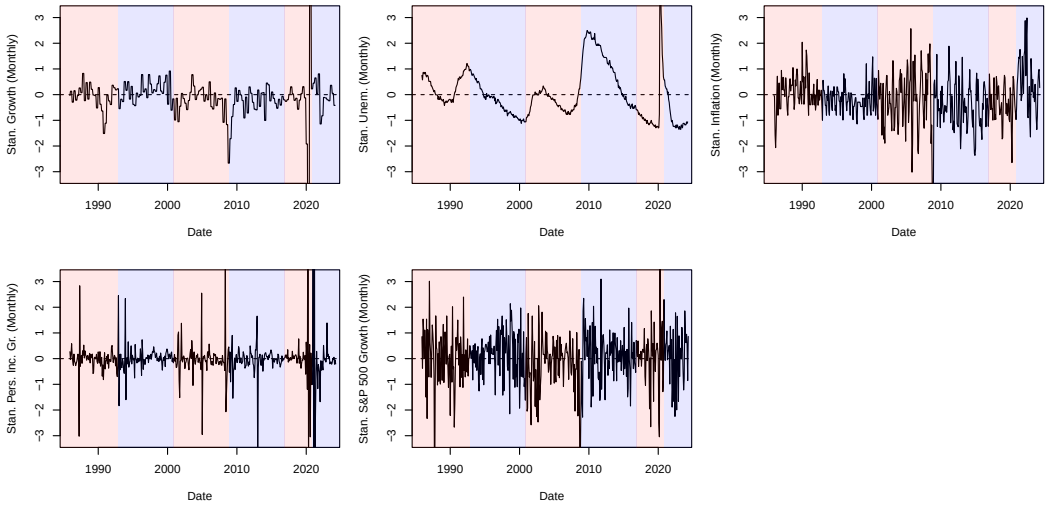

Figure A.1: *Standardized Monthly Economic Measures*

Time Window:	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Independent Variables:								
Intercept	0.505***	0.498***	0.512***	0.496***	0.496***	0.483***	0.476***	0.467***
	(0.021)	(0.023)	(0.033)	(0.027)	(0.020)	(0.027)	(0.027)	(0.038)
Growth	0.014	0.024	0.054+	0.034	-0.017	-0.083	-0.150	-0.141
	(0.048)	(0.045)	(0.031)	(0.037)	(0.039)	(0.059)	(0.093)	(0.137)
Unemployment	0.002	0.001	-0.001	-0.004	-0.004	0.002	0.004*	0.005*
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Inflation	0.041	0.006	-0.051	-0.027	-0.033	-0.026	-0.029	-0.035
	(0.034)	(0.061)	(0.066)	(0.045)	(0.038)	(0.041)	(0.052)	(0.070)
Pers. Income Growth	0.028	0.059*	0.085***	0.188**	0.288***	0.270*	0.350*	0.299
	(0.021)	(0.023)	(0.022)	(0.058)	(0.087)	(0.110)	(0.168)	(0.251)
S&P 500 Growth	-0.004	0.001	-0.001	0.002	0.003	0.000	-0.001	0.012
	(0.002)	(0.005)	(0.005)	(0.006)	(0.009)	(0.021)	(0.012)	(0.016)
N	22	22	22	22	22	22	22	22
R-Squared	0.302	0.270	0.450	0.576	0.620	0.451	0.441	0.309

Table A.1: Percent Voting for the Incumbent President's Party vs. the Economy — Robust standard errors in parentheses. $^{+}p < .10,^{*}p < .05,^{**}p < .01,^{***}p < .001$.

	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Month		0.21/0.83	0.09+/0.42	0.08+/0.12	0.18/0.04*	0.35/0.33	0.28/0.44	0.58/0.96
Quarter	0.21/0.83		0.25/0.17	0.14/0.08+	0.21/0.04*	0.36/0.29	0.30/0.40	0.47/0.84
Semi-year	0.09+/0.42	0.25/0.17		0.24/0.23	0.24/0.22	0.32/1.00	0.20/0.96	0.29/0.47
Year	0.08+/0.12	0.14/0.08+	0.24/0.23		0.07+/0.62	0.19/0.30	0.16/0.32	0.21/0.08+
2 Years	0.18/0.04*	0.21/0.04*	0.24/0.22	0.07+/0.62		0.46/0.03*	0.24/0.04*	0.35/0.00**
3 Years	0.35/0.33	0.36/0.29	0.32/1.00	0.19/0.30	0.46/0.03*		0.62/0.88	0.87/0.03*
4 Years	0.28/0.44	0.30/0.40	0.20/0.96	0.16/0.32	0.24/0.04*	0.62/0.88		0.38/0.11
5 Years	0.58/0.96	0.47/0.84	0.29/0.47	0.21/0.08+	0.35/0.00**	0.87/0.03*	0.38/0.11	

Table A.2: Result of Vuong Tests between Competing Models for the Vote Share of the Incumbent President's Party — In each entry, two p-values are given. The first p-value is from a test of whether the parameter for the row and column model is in the overlapping region and the second p-value is from a test of whether the row and column models fit equally well. $^{+}p < .10,^{*} p < .05,^{**} p < .01,^{***} p < .001$.

Time Window:	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Independent Variables:								
Intercept	0.909***	0.892***	0.872***	0.843***	0.724***	0.650***	0.612***	0.511***
	(0.063)	(0.061)	(0.060)	(0.063)	(0.072)	(0.062)	(0.071)	(0.106)
Growth	0.246***	0.307***	0.381***	0.520***	0.814***	0.865***	0.717*	0.893+
	(0.068)	(0.081)	(0.106)	(0.141)	(0.192)	(0.212)	(0.285)	(0.496)
Unemployment	-0.099***	-0.098***	-0.096***	-0.092***	-0.077***	-0.063***	-0.053***	-0.035**
	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)	(0.006)	(0.007)	(0.013)
Inflation	-0.017	-0.046	-0.125*	-0.303**	-0.533***	-0.836***	-1.073***	-1.225***
	(0.023)	(0.040)	(0.061)	(0.115)	(0.138)	(0.144)	(0.159)	(0.198)
Pers. Income Growth	0.003	0.026	0.077+	0.158*	0.322**	0.553***	0.739***	0.663
	(0.005)	(0.020)	(0.046)	(0.078)	(0.116)	(0.144)	(0.223)	(0.416)
S&P 500 Growth	0.002*	0.008**	0.017***	0.029***	0.044***	0.073***	0.111***	0.133***
	(0.001)	(0.002)	(0.004)	(0.007)	(0.010)	(0.011)	(0.019)	(0.028)
N	409	409	409	409	409	409	409	409
R-Squared	0.704	0.722	0.752	0.788	0.825	0.870	0.865	0.775

Table A.3: Percent Perceiving a Good Economy vs. the Economy, Pre-2019 Data — Newey-West standard errors in parentheses. $^{+}p < .10$,* $p < .05$,** $p < .01$,*** $p < .001$.

	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Month		0.99/0.04*	0.79/0.02*	0.38/0.01**	0.10+/0.00**	0.02*/0.00**	0.01**/0.00***	0.08+/0.11
Quarter	0.99/0.04*		0.96/0.03*	0.54/0.01*	0.12/0.01*	0.03*/0.00**	0.01**/0.00**	0.08+/0.23
Semi-year	0.79/0.02*	0.96/0.03*		0.84/0.06+	0.16/0.04*	0.03*/0.01**	0.02*/0.00**	0.06+/0.58
Year	0.38/0.01**	0.54/0.01*	0.84/0.06+		0.43/0.17	0.09+/0.02*	0.08+/0.01*	0.09+/0.73
2 Years	0.10+/0.00**	0.12/0.01*	0.16/0.04*	0.43/0.17		0.63/0.02*	0.34/0.10+	0.13/0.18
3 Years	0.02*/0.00**	0.03*/0.00**	0.03*/0.01**	0.09+/0.02*	0.63/0.02*		0.48/0.80	0.09+/0.01*
4 Years	0.01**/0.00***	0.01**/0.00**	0.02*/0.00**	0.08+/0.01*	0.34/0.10+	0.48/0.80		0.37/0.00***
5 Years	0.08+/0.11	0.08+/0.23	0.06+/0.58	0.09+/0.73	0.13/0.18	0.09+/0.01*	0.37/0.00***	

Table A.4: Result of Vuong Tests between Competing Models for Percent Perceiving the Economy as Good, Pre-2019 Data — In each entry, two p-values are given. The first p-value is from a test of whether the parameter for the row and column model is in the overlapping region and the second p-value is from a test of whether the row and column models fit equally well. $^{+}p < .10,^{*} p < .05,^{**} p < .01,^{***} p < .001$.

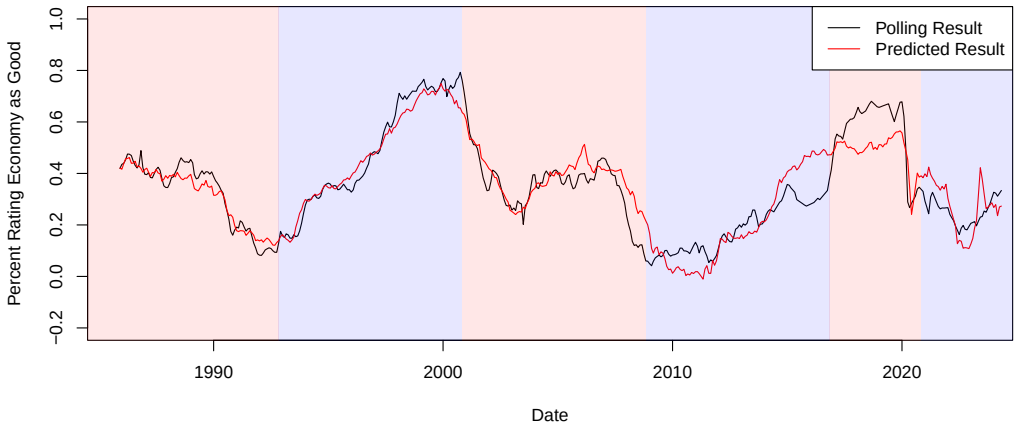

Figure A.2: *Sentiment vs. Predicted Sentiment, Model Fit on Pre-2019 Data*

	Monthly	**Yearly**	**3 Years**
Growth	6.9	8.1	7.8
Unemployment	-17.0	-14.7	-8.8
Inflation	-0.6	-6.8	-16.0
Pers. Income Growth	0.5	3.3	5.6
S&P 500 Growth	0.8	3.7	4.8

Table A.5: Effect of a One Standard Deviation Change of Each Economic Measure on the Percent Perceiving the Economy as Good, Pre-2019 Data

Time Window:	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Independent Variables:								
Intercept	0.772***	0.782***	0.788***	0.805***	0.762***	0.711***	0.647***	0.466***
	(0.078)	(0.076)	(0.074)	(0.067)	(0.075)	(0.074)	(0.089)	(0.128)
Growth	0.013	0.064	0.180	0.525***	0.951***	1.304***	1.505***	1.802***
	(0.071)	(0.089)	(0.114)	(0.132)	(0.152)	(0.151)	(0.201)	(0.280)
Unemployment	-0.070***	-0.073***	-0.076***	-0.080***	-0.078***	-0.070***	-0.058***	-0.033*
	(0.012)	(0.011)	(0.010)	(0.009)	(0.007)	(0.007)	(0.009)	(0.014)
Inflation	-0.040	-0.080	-0.170**	-0.431***	-0.648***	-0.920***	-1.097***	-1.199***
	(0.034)	(0.050)	(0.063)	(0.114)	(0.149)	(0.174)	(0.196)	(0.233)
Pers. Income Growth	0.004	0.020	0.063+	0.106*	0.132+	0.051	-0.045	-0.027
	(0.004)	(0.016)	(0.036)	(0.042)	(0.077)	(0.109)	(0.187)	(0.260)
S&P 500 Growth	0.004*	0.013**	0.023***	0.028**	0.044***	0.059***	0.087***	0.095***
	(0.002)	(0.005)	(0.007)	(0.008)	(0.009)	(0.010)	(0.017)	(0.024)
N	412	412	412	412	412	412	412	412
R-Squared	0.418	0.466	0.544	0.688	0.803	0.837	0.818	0.730

Table A.6: Percent Perceiving a Good Economy vs. the Economy, Excluding George H.W. Bush Administration Data — Newey-West standard errors in parentheses. $^{+}p < .10,^{*}p < .05,^{**}p < .01,^{***}p < .001$.

	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Month		0.99/0.04*	0.79/0.02*	0.38/0.01**	0.10+/0.00**	0.02*/0.00**	0.01**/0.00***	0.07+/0.11
Quarter	0.99/0.04*		0.96/0.03*	0.54/0.01*	0.12/0.01*	0.03*/0.00**	0.01**/0.00**	0.07+/0.23
Semi-year	0.79/0.02*	0.96/0.03*		0.84/0.06+	0.16/0.04*	0.03*/0.01**	0.02*/0.00**	0.06+/0.58
Year	0.38/0.01**	0.54/0.01*	0.84/0.06+		0.43/0.17	0.09+/0.02*	0.08+/0.01*	0.09+/0.73
2 Years	0.10+/0.00**	0.12/0.01*	0.16/0.04*	0.43/0.17		0.63/0.02*	0.34/0.10+	0.13/0.18
3 Years	0.02*/0.00**	0.03*/0.00**	0.03*/0.01**	0.09+/0.02*	0.63/0.02*		0.48/0.80	0.09+/0.01*
4 Years	0.01**/0.00***	0.01**/0.00**	0.02*/0.00**	0.08+/0.01*	0.34/0.10+	0.48/0.80		0.37/0.00***
5 Years	0.07+/0.11	0.07+/0.23	0.06+/0.58	0.09+/0.73	0.13/0.18	0.09+/0.01*	0.37/0.00***	

Table A.7: Result of Vuong Tests between Competing Models for Percent Perceiving the Economy as Good, Pre-2019 Data — In each entry, two p-values are given. The first p-value is from a test of whether the parameter for the row and column model is in the overlapping region and the second p-value is from a test of whether the row and column models fit equally well. $^{+}p < .10,^{*} p < .05,^{**} p < .01,^{***} p < .001$.

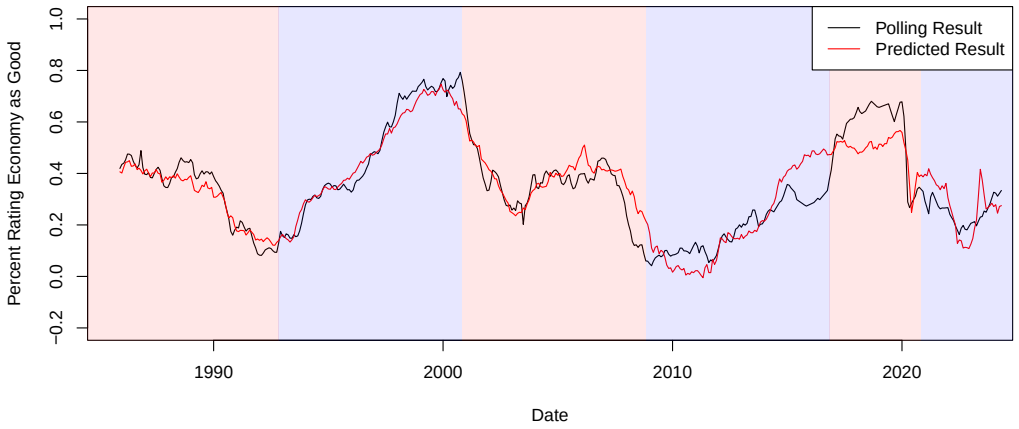

Figure A.3: *Sentiment vs. Predicted Sentiment, Model Fit Excluding George H.W. Bush Administration Data*

Time Window:	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Independent Variables:								
Intercept	0.740***	0.756***	0.775***	0.810***	0.768***	0.696***	0.675***	0.627***
	(0.094)	(0.090)	(0.083)	(0.074)	(0.072)	(0.070)	(0.090)	(0.121)
Growth	0.008	0.057	0.160	0.453***	0.905***	1.295***	1.456***	1.418***
	(0.072)	(0.088)	(0.106)	(0.109)	(0.128)	(0.134)	(0.198)	(0.316)
Unemployment	-0.074***	-0.077***	-0.081***	-0.087***	-0.082***	-0.069***	-0.061***	-0.050***
	(0.012)	(0.011)	(0.011)	(0.009)	(0.008)	(0.007)	(0.010)	(0.014)
Inflation	-0.045	-0.095*	-0.205***	-0.472***	-0.693***	-0.945***	-1.257***	-1.717***
	(0.032)	(0.045)	(0.054)	(0.084)	(0.104)	(0.133)	(0.188)	(0.242)
Pers. Income Growth	0.004	0.018	0.052+	0.074+	0.106	0.077	-0.062	-0.162
	(0.004)	(0.015)	(0.032)	(0.039)	(0.065)	(0.124)	(0.189)	(0.232)
S&P 500 Growth	0.004*	0.014**	0.024***	0.032***	0.045***	0.058***	0.087***	0.113***
	(0.002)	(0.004)	(0.006)	(0.008)	(0.009)	(0.009)	(0.018)	(0.024)
Mortgage Rate	0.007	0.007	0.008	0.008+	0.006	0.003	0.005	0.018*
	(0.006)	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.008)
N	457	457	457	457	457	457	457	457
R-Squared	0.453	0.502	0.578	0.711	0.818	0.848	0.830	0.759

Table A.8: Percent Perceiving a Good Economy vs. the Economy (Model Including Mortgate Rates) — Newey-West standard errors in parentheses. $^{+}p < .10,^{*}p < .05,^{**}p < .01,^{***}p < .001$.

	Monthly	**Yearly**	**3 Years**
Growth	0.2	7.1	11.7
Unemployment	-12.7	-13.9	-9.6
Inflation	-1.6	-10.6	-18.1
Pers. Income Growth	0.5	1.5	0.8
S&P 500 Growth	1.7	4.1	3.8
Mortgage Rate	2.4	2.7	0.9

Table A.9: Effect of a One Standard Deviation Change of Each Economic Measure on the Percent Perceiving the Economy as Good, Pre-2019 Data

Time Window:	Month	Quarter	Semi-year	Year	2 Years	3 Years	4 Years	5 Years
Independent Variables:								
Intercept	0.872***	0.884***	0.882***	0.870***	0.765***	0.681***	0.637***	0.486***
	(0.076)	(0.071)	(0.065)	(0.061)	(0.067)	(0.061)	(0.078)	(0.115)
Growth	-0.013	0.033	0.140	0.401***	0.922***	1.313***	1.587***	1.937***
	(0.066)	(0.080)	(0.093)	(0.097)	(0.131)	(0.144)	(0.201)	(0.275)
Unemployment	-0.079***	-0.082***	-0.085***	-0.087***	-0.078***	-0.065***	-0.055***	-0.030*
	(0.011)	(0.010)	(0.009)	(0.008)	(0.007)	(0.006)	(0.008)	(0.014)
Inflation	-0.016	-0.045	-0.107*	-0.253*	-0.437*	-0.629**	-0.978***	-1.019**
	(0.022)	(0.032)	(0.050)	(0.120)	(0.180)	(0.201)	(0.242)	(0.351)
Pers. Income Growth	0.005	0.019	0.056+	0.107**	0.133+	0.053	-0.066	-0.170
	(0.004)	(0.014)	(0.030)	(0.036)	(0.070)	(0.118)	(0.183)	(0.232)
S&P 500 Growth	0.003*	0.011**	0.019**	0.027***	0.037***	0.053***	0.077***	0.084**
	(0.002)	(0.004)	(0.006)	(0.008)	(0.008)	(0.010)	(0.017)	(0.026)
Food Inflation	-0.240**	-0.238**	-0.227**	-0.198*	-0.189+	-0.265+	-0.186	-0.347
	(0.083)	(0.081)	(0.083)	(0.092)	(0.097)	(0.143)	(0.188)	(0.263)
N	456	456	456	456	456	456	456	456
R-Squared	0.516	0.560	0.622	0.731	0.823	0.856	0.833	0.756

Table A.10: Percent Perceiving a Good Economy vs. the Economy (Model Including Food Inflation) — Newey-West standard errors in parentheses. $^{+}p < .10,^{*}p < .05,^{**}p < .01,^{***}p < .001$.

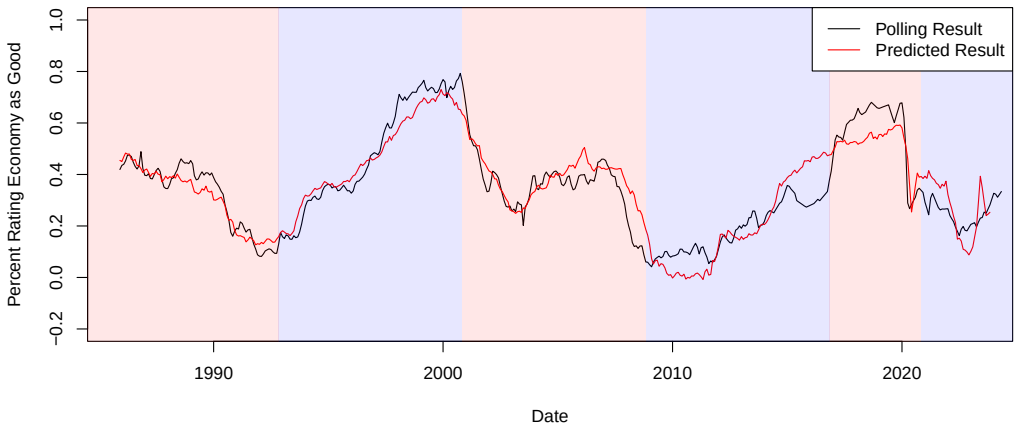

Figure A.4: *Sentiment vs. Predicted Sentiment, Model Including Food Inflation*

	(1)	(2)	(3)	(4)
Term Delineator:	Election	Inauguration	Election	Inauguration
One Year Min. of Econ. Data Used:			X	X
Independent Variables:				
Intercept	0.684***	0.655***	0.648***	0.687***
	(0.080)	(0.081)	(0.054)	(0.074)
Growth	1.365***	1.282***	1.240***	1.249***
	(0.230)	(0.236)	(0.182)	(0.214)
Unemployment	-0.065***	-0.060***	-0.065***	-0.070***
	(0.011)	(0.011)	(0.007)	(0.009)
Inflation	-0.570***	-0.503***	-0.632***	-0.579***
	(0.081)	(0.074)	(0.095)	(0.120)
Pers. Income Growth	-0.026+	0.012	0.241***	0.095
	(0.015)	(0.009)	(0.051)	(0.074)
S&P 500 Growth	-0.009	-0.007	0.026+	0.025+
	(0.009)	(0.011)	(0.014)	(0.014)
N	460	460	460	460
R-Squared	0.624	0.648	0.743	0.739

Table A.11: Percent Perceiving a Good Economy vs. the Economy (Specifications Based on the President's Term) — Newey-West standard errors in parentheses. $^{+}p < .10, ^{*}p < .05, ^{**}p < .01, ^{***}p < .001$.

	(1)	(2)	(3)	(4)
Independent Variables:				
Constant	30.927***	31.931***	32.824***	33.139***
	(2.457)	(2.295)	(2.252)	(2.267)
Growth	26.181***	23.330***	21.666***	20.961***
	(3.881)	(3.332)	(3.092)	(3.204)
Unemployment	0.058	-0.041	-0.072	-0.095
	(0.178)	(0.154)	(0.153)	(0.151)
Inflation	-0.984	-1.641	-1.659	-1.609
	(1.231)	(1.184)	(1.205)	(1.230)
N	330	330	330	330
R-Squared	0.630	0.630	0.629	0.624

Table A.12: Vote Share of the Incumbent Prime Minister's Party vs. The Economy (Specifications Based on the Party's Tenure) — Model (1) uses a five year average for the economic variables. Model (2) uses the entire tenure of the incumbent prime minister's party. Model (3) modifies model (2) by using at most 5 years of economic data. Model (4) modifies model (3) by using at least 1 year of economic data. $^{+}p < .10,^{*}p < .05,^{**}p < .01,^{***}p < .001$.