Aggregate Earnings and Voter Preferences: Evidence from U.S. Presidential Election Prediction Markets

Taylor J. Wiesen*
University of Miami
School of Business Administration
t.wiesen@umiami.edu

February 1, 2016

Abstract:
This study uses election futures market data to provide the first empirical evidence that aggregate earnings conveys timely "election-relevant" information affecting voters' preferences during U.S. presidential election campaigns. I document that aggregate earnings news is associated with multiple facets of U.S. economic health affecting voter utility. I then use novel high-frequency data from the Iowa Electronic Political Prediction Market to document that aggregate earnings news (and cash flow news in particular) is significantly related to the expected outcomes of U.S. presidential elections.

JEL Classifications: D72; M41

Keywords: aggregate earnings; expected earnings; decision relevance; United States presidential elections; political prediction markets

*This paper is based on my dissertation at the University of Miami, School of Business Administration. I am grateful for the invaluable comments and guidance provided by my chair, Peter Wyoscki, as well as fellow committee members Dhananjay (DJ) Nanda, Andrew Leone, and David Kelly. I would also like to express gratitude to John Barrios, Khrystyna Bochkay, Roman Chychyla, Daniele Macciocchi, Miguel Minutti-Meza, Sundaresh Ramnath, Michael Willenborg and seminar participants at the University of Miami for helpful comments and suggestions. I acknowledge financial support from the University of Miami, School of Business Administration. Any errors are my own.

"Are you better off now than you were four years ago? Is it easier for you to go and buy things in the stores than it was four years ago? Is there more or less unemployment in the country than there was four years ago?"

Ronald Reagan, framing the 1980 presidential election as a referenda on incumbent President Jimmy Carter's economic record after four years in office[1]

1. Introduction

A recent literature on aggregate accounting information assesses the macroeconomic implications and information content of accounting numbers (Kothari et al., 2006; Ball et al., 2009; Cready and Gurun, 2010; Choi et al., 2014; Gallo et al., 2014; Konchitchki and Patatoukas, 2014a). Historically, aggregate economic conditions account for a good deal of the variation in candidate support in U.S. presidential election campaigns (Lewis-Beck and Stegmaier, 2000). Accordingly, the informativeness of accounting numbers conceivably extends beyond traditionally examined capital market outcomes to other fundamental economic decisions and outcomes such as voter choice. This study provides the first evidence on the informativeness of aggregate accounting information in an important real outcome setting – the expected outcomes of U.S. presidential election campaigns. Specifically, I assess whether aggregate accounting news is a timelier source of "election relevant" information in presidential elections relative to other sources of economic information. As such, my study explores whether aggregate earnings news helps explain U.S. presidential election outcomes.

To address this question, I combine measures of aggregate earnings with similarly high-frequency data from U.S. political prediction markets. I first establish that aggregate earnings captures timely information about the broader economic conditions affecting U.S. voters by empirically associating earnings news with future macroeconomic indicators. I then examine the relation between aggregate earnings news and contemporaneous changes in voters' electoral

[1] Reagan posed the question during his closing statement in the final presidential debate in 1980. (www.bloomberg.com/)

preferences as reflected in the Iowa Electronic political prediction market. I predict and find a positive association between earnings news and changes in the market's assessment that the incumbent party will retain the presidency. Furthermore, I show that this association is primarily driven by cash flow news corresponding with expectations about near term U.S. economic growth likely to benefit voters.

Decades of empirical and theoretical research in economics and political science has confirmed anecdotal claims made by campaigns and political pundits that aggregate economic conditions are a central, and sometimes decisive, determinant of electoral outcomes in the United States, particularly at the presidential level (Fair, 1978; Hibbs, 1986; Abramowitz, 1988).[2] Empirically, this suggests that information implicit in observable economic indicators can be used to proxy for voters' perceptions about the competence of the incumbent governing party. However, econometric limitations and differential macroeconomic concerns around election cycles has resulted in little agreement amongst scholars as to which economic indicators serve as either the best proxy of voters' assessments of economic performance or as a particular information source used to appraise a candidate or party's economic stewardship.

Traditionally, empirical work tackles the impact of economic conditions on elections using measures of fundamental economic conditions that are plagued by noise, calculated with a reasonable degree of measurement error, and/or lack timeliness. For instance, many popular fundamental macroeconomic measures, such as the Gross Domestic Product and unemployment rate are reported sporadically, reported with a good deal of lag, or subject to economically meaningful revisions in future periods (Gallo et al., 2014). Researchers must also be concerned

[2] In 1992, campaign strategist James Carville coined a slight variation of the phrase "it's the economy, stupid." At that time, Carville was attempting to emphasize the importance of the struggling economy in then-candidate Bill Clinton's 1992 presidential campaign.

with the overfitting of statistical models due to very few post-World War II presidential election outcome observations. This limits studies to one, possibly, two variables proxying for voters' economic concerns. Consequently, many empirical models are specified with variables which are generated using ad hoc statistical transformations or selected to achieve the best "fit" with the data (Erikson and Wlezien, 2008).

Aggregate accounting constructs, by contrast, possess a number of empirical and intrinsic properties which comprehensively proxy for a number of different aspects of economic activity including consumption, prices, investment, employment and wages, and general economic productivity (Konchitchki and Patatoukas, 2014a; Konchitchki and Patatoukas, 2014b; Ball and Sadka, 2015). Additionally, accounting numbers are more timely and lack the substantial revision plaguing other indicators in part because these numbers are generated and reported by individual firms (or by intermediaries following a particular firm or firms) on a regular basis and are not gathered by time and resource constrained governmental agencies. As a result, accounting information can provide a strong indication of what individuals concerned with the direction of economy are weighing in real-time. This does not imply that voters are necessarily informed about actual earnings numbers or forecasts. Rather, accounting information should reflect the aggregate economic conditions voters experience or observe around them.

Relatedly, positive aggregate earnings news is likely associated with positive shifts in economic demand, higher prices, higher output, or with future firm production and growth because these numbers reflect strategic decisions by sophisticated decision-makers in the context of both current and future macroeconomic assessments. These positive earnings innovations are also likely to lead to greater investment, and increased hiring and consumption, all real outcomes likely to contribute to overall voter utility. Therefore, aggregate accounting information can serve as a summary

measure that is informative not only about current conditions and trends but also about voters' prospective economic concerns related to anticipated future production, rising prices, or employment and wages.

A growing literature examines the macroeconomic content of aggregate accounting information. However, establishing the specific economic information embedded in aggregate accounting news remains an empirical question (Shivakumar, 2010; Ogneva, 2013). Thus, the first part of my study tests whether aggregate earnings information relates to various facets of economic activity. To test whether aggregate accounting measures are representative of the overall economy, and thus voters' general economic concerns, a measure of aggregate forecast revisions and a measure of realized aggregate earnings growth are associated with one- and two-month ahead levels and changes in six common but distinct macroeconomic indicators – unemployment, inflation, personal income, industrial production, consumer sentiment, and GDP growth. Generally, my findings imply that accounting measures are a timely, leading indicator of future economic activity. Collectively, these results support evidence in the prior literature on the macroeconomic information content and predictive ability of aggregate earnings measures (Choi et al., 2014; Gallo et al., 2014; Konchitchki and Patatoukas, 2014a).

Establishing an association between accounting information and future economic outcomes likely related to voter utility helps motivate my primary tests on the association between aggregate accounting information and changes in election expectations. Unlike most studies in economics and political science which use actual elections outcomes at the presidential level and afford researchers very few observations, I leverage election futures prices from political prediction markets. Specifically, I use changes in Iowa Electronic Markets (IEM, formerly Iowa Political Stock Market) consensus expectations to proxy for changes in voter preferences. The IEM

provides daily price data on the markets election expectations for the 1992-2012 presidential campaigns. This substantially increases the number of available observations over both public opinion surveys or realized electoral results, potentially allowing for more precise statistical inferences.

Yet, the IEM offers a number of advantages beyond additional data points. First, scholars have found that prediction market prices generate more accurate forecasts of actual election outcomes than poll-based forecasts (Rhode and Strumpf, 2004; Berg et al., 2008; Rothschild, 2009). Furthermore, in contrast with public opinion polling which indicate voter intentions at a particular point in time, prediction markets provide expectations about what will happen on election day.[3] Also, by reflecting consensus expectations about future outcomes, the IEM possesses certain parallels with capital markets. For instance, prediction market prices should efficiently incorporate all information in publicly polling plus private information from experts and political economy models (Kou and Sobel, 2004).[4] Thus, the theoretical value of turning to a market-based alternative to opinion polls is fairly straightforward – the prospect of arbitraging away the money of the relatively weak and uninformed traders attracts a set of politically sophisticated users to the market who, at any given point in time, ensure market prices reflect the best estimate of the probability of a given election outcome.

[3] In 1988, Gallup poll following the Democratic National Convention gave Governor Michael Dukakis a 17-point lead over Vice President George H.W. Bush, a lead far greater than conventional wisdom or the fundamentals would have indicated (Bush would later win the election by about seven percentage points). This illustrates one of the key problems with using a given poll for prediction purposes – that polls, in isolation, provide snapshots in time. Prediction markets should, in theory, see beyond any transitory "bounces" or biases in polling data.

[4] Some scholars have highlighted the drawbacks of the IEM including overestimation of likelihood of unlikely events (i.e., bias towards losers) or demographic bias of market participants. For example, Forsythe, et al. (1992) show that the individuals who participate in these markets are more likely to be white, higher income, conservative, and Republican. Forsythe et al. (1999) also show that traders in these markets tend to invest in the candidate or party they support. However, in spite of evidence that many traders invest in their favorites, these individuals do not drive the market. Instead, the market price is strongly influenced by a group of "marginal traders" with no preference bias in their portfolios. Marginal traders invest twice as much as average traders, making prices rather than taking them. Forsythe, et al. (1999) show that these traders correct imbalances that may be related to preference-oriented investment and help explain why the market price across several elections do not exhibit a particular partisan bias.

As such, the use of IEM data enables mapping of timely and high frequency aggregate earnings measures with high frequency changes in election probabilities. Hence, the second portion of my study examines how monthly aggregated earnings information correlates with monthly changes in market expectations about the incumbent party's probability of electoral success. Overall, univariate results attest to a positive association between aggregate earnings measures and changes in voter preferences. This result is consistent with the view that economic optimism (pessimism) helps (hinders) the incumbent party's election chances. My findings further imply that aggregate earnings capture news related to macroeconomic activity of concern to voters.

Yet, several factors potentially attenuate the association between aggregate earnings expectations and changes in voter preferences. Kothari et al. (2006) and Cready and Gurun (2010) document a negative association between contemporaneous aggregate earnings surprises and stock returns, suggesting that aggregate earnings convey discount rate news. In multivariate tests, empirical specifications controlling for changes in the price-earnings (PE) ratio are used to isolate the potentially offsetting impacts of discount rate news from innovations in cash flow news when assessing voters' economic concerns. Furthermore, one could argue that stock returns are a timelier source of information than earnings. Yet, more so than earnings, stock prices have timing implications extending far beyond the immediate time horizon of concern to voters. Equity prices are also more likely to be effected by investors' expectations about anticipated election outcomes. Nevertheless, I show that the election-relevant information content of aggregate earnings measures is incremental to that of the monthly return on the S&P 500 index. Overall, multivariate empirical specifications confirm that innovations in cash flow news appear to drive the positive association between changes in election expectations and changes in earnings news.

This study contributes to both the political economy literature on determinants of voter choice in presidential elections and the growing literature on aggregate accounting information. Importantly, this is the first attempt to link the two distinct literatures. Although prior economics and political science research documents a correlation between economic conditions and electoral outcomes, no attempt has been made to link accounting information with electoral outcomes. Nor has there been an attempt at articulating the benefits of accounting information over other macroeconomic fundamentals within such a context. Relatedly, my study is the first to introduce accounting elements into analyses explaining and understanding electoral outcomes. Documenting and understanding electoral determinants remains one of the most vital tasks in social science research given the far-reaching economic and social impacts of elected officeholders on regulatory oversight and policy.

In addition, my work is the first to document the determinants of changes in the consensus expectations of political prediction markets. Prior studies use prediction market expectations in deriving forecasts of expected final election outcomes (Rothschild, 2014). Others use prediction market prices explanatory variables, to proxy for uncertainty in the underlying political or policy environment (Goodell and Bodey, 2012). Yet, my examination is the first to provide empirical support on the effects of economic conditions on continual changes in prediction market prices using similarly high frequency data on economic/accounting news.

The remainder of the paper is organized as follows. Section 2 summarizes relevant prior literature and presents theoretical justifications for the predicted association between voter preferences and accounting information. Section 3 describes the data sources and variable definitions to be used in subsequent analyses. Section 4 summarizes empirical tests and results. And, finally, Section 5, concludes.

2. Theoretical Framework and Hypothesis

2.1 Macroeconomic Voting

At least at the presidential level, there is general agreement in the economics and political science literatures that aggregate economic considerations frequently dominate voters' prospective and retrospective evaluations of candidates. These literatures present considerable evidence of a robust correlation between economic outcomes and voters' decision to retain incumbent party officeholders. Simply observing conditions surrounding even the earliest presidential elections would indicate that such a finding is both rationally and theoretically logical.

Nevertheless, Ray Fair's (1978) seminal work on presidential vote choice in the U.S. is the first to empirically and theoretical frame "economic voting" as being driven by utility maximization. This implies that voters support the incumbent party if the utility associated with that party exceeds the utility associated with the opposition. Simplistically, utilities are based on some set of readily observable prior outcomes or future projections, which voters use to infer useful information about unobservable post-election outcomes (Hibbs, 2006). Utility maximization implies that voters will support the incumbent party if observed or actual contemporaneous outcomes are viewed as more favorable in comparison to what the opposition's unobserved performance would likely have been or will be if elected (Wolfers, 2004). Future expectations about the utility acquired from the election of a particular candidate are conditioned by the combination of cumulative and prospective evaluations voters form about each party's candidate over time. Simply put, a voter who feels they are or will be better off financially, or who sees the nation as a whole as better off, will reward the incumbent party's candidate. Yet, frequently absent from this framework is the idea that voter's opportunity set includes more than a choice between two rival candidates or parties. For instance, voters can, and many do, simply chose not to vote.

Unfortunately, identifying, with specificity, which macroeconomic fundamentals voters consider to be relevant has been a challenge given the dangers of overfitting statistical models and heterogeneous economic concerns surrounding various elections. Some studies rely on real GDP growth, others on income growth, and others on subjective surveys (Holbrook, 1996; Campbell and Garand, 2000; Abramowitz, 2008; Campbell, 2008). In all, researchers have thousands of plausible economic variables to choose from.[5] Unfortunately, many of these variables in isolation exhibit only modest, and at times, inconsistent associations with actual election outcomes.

But, making broad inferences about the appropriateness of specific fundamental variables is difficult when the proxies being used are noisy and tested against very few observations. Most studies on presidential elections are limited to about sixteen post-World War II observations. Thus, researchers must avoid overfitting empirical models. As a consequence, many empirical models appear as if the researcher has searched for variables which best "fit" the data or used ad hoc statistical transformations to achieve the best "fit" with the data (Erikson and Wlezien, 2008).

Finally, measures of fundamental economic conditions are fraught with noise and/or calculated with a reasonable degree of measurement error.[6] Many popular economic variables are subject to revisions that can occur months or years after the fact and be economically large in magnitude.[7] Furthermore, many fundamental indicators are not reported in a timely fashion and are thus lagging as opposed to leading gauges of macroeconomic health. For instance, GDP is updated once per quarter even though economic downturns or upturns are often evident long before quarterly

[5] In fact, the Federal Reserve's Web site now publishes about 45,000 economic statistics.

[6] Justin Wolfers documents a GDP specific "first-quarter effect," in which first quarter GDP exhibits "by far" the weakest growth. This is despite the use of a seasonal adjustment algorithm which should produce no systematic differences in one quarter versus the others. This gives some indication that there may in fact be issues with the government's computation of GDP figures. (www.nytimes.com)

[7] In one recent instance, the GDP growth in the second quarter of 2015 was revised to 3.7 percent, up from the initial estimate of growth at a 2.3 percent clip. These severe revisions can potentially turn a quarter that was originally thought to provide average growth in to a recession, or vice versa.

indicators are finally reported and available for input into econometric models. Other timelier fundamentals, such as the unemployment rate, have implications for just a small number of voters, are subject to frequent revision, and, again, tend to be lagging rather than leading indications of economic activity.

Overall, this literature lends robust but flawed empirical and theoretical support to preconceived notions that macroeconomic conditions are an essential determinant of a particular candidate's electoral fortunes. Still, examinations of any statistical association between macroeconomic conditions or expectations and electoral outcomes would benefit from timely, higher frequency proxies for both constructs.

2.2 Accounting Information and the Macroeconomy

A small but growing segment of the accounting literature emphasizes how aggregate accounting information simultaneously functions as a timely record of prior performance and a leading indicator of future macroeconomic performance. This association is perhaps unsurprising given the dominant role of the private sector in the overall U.S. economy. Although accounting numbers tend to be thought of as a general recording of past business transactions and events and are, thus, predominantly historical, this retrospective property of accounting numbers still has important macroeconomic implications. Current or prior accounting performance provides leading indications about future economic performance because it exposes real events in firms. Current firm profitability is indicative of the profitability of future investments in property, plant and equipment, research and development, and human resources for the firm itself and for its competitors, suppliers, and other firms (Kothari et al., 2013; Ball and Sadka, 2015). Corporate earnings also indirectly affect firms' capital investments in the economy. Increases in corporate profitability results in lower lending risk and, consequently, greater investing due to a reduction in

financing frictions and an increase in the availability of funds from financial institutions (Hennessy et al., 2007; Lewellen and Lewellen, 2012).

At the aggregate level, Kothari et al. (2006) document that earnings surprises are negatively correlated with contemporaneous stock market returns. This relation is consistent with aggregate earnings expectations signaling an upward movement in future discount rates that appears to subsume shocks to expected future cash flows in aggregate stock returns. This finding, along with corroborating findings of Shivakumar (2007) and Cready and Gurun (2010), suggests that aggregate earnings convey inflation news.

Still, empirical evidence on the macroeconomic information content of aggregate accounting news extends beyond the inflation news component of earnings surprises. A number of studies expound upon the associations between earnings information and overall economic health. Patatoukas (2012) notes that the macroeconomic content of aggregate earnings surprises is not solely isolated to errors in GDP deflator forecasts, which capture inflation news, but extends to errors in real GDP growth forecasts. Konchitchki and Patatoukas (2014a) predict and find that aggregate accounting earnings growth is a leading indicator of future GDP growth given that corporate taxable income is one component of GDP. Furthermore, aggregate earnings seem to provide incremental predictive value over other macroeconomic indicators. Another study by Konchitchki and Patatoukas (2014b) shows that aggregated corporate profitability has value when predicting real GDP growth. This predictive value does not appear to be subsumed by stock market returns, suggesting that corporate performance is incrementally useful in forecasting real economic activity. Finally, Gallo et al. (2014) find that aggregate earnings growth can predict future changes in inflation and unemployment, but report mixed evidence regarding real GDP growth.

However, realized accounting numbers are not the only source of macroeconomic information. Earnings forecasts and guidance also contain economic news. Bonsall et al. (2013) present findings suggesting that earnings guidance from a few "bellwether" firms provides timely macroeconomic information. Moreover, this information is not isolated to a particular industry and seems to contain shocks to the broader economy. However, identifying which macroeconomic indicator(s) drive the information being conveyed by earnings guidance is an empirical question (Ogneva, 2013). Hess and Kreutzmann (2009) provide evidence that six macroeconomic indicators significantly impact analysts' earnings forecast revisions. Correspondingly, upward revisions in economic activity lead to significant upward revisions of analysts' earnings projections. These results provide evidence that analysts rationally incorporate macroeconomic information into their forecasts. Lastly, Choi et al. (2014) test whether analysts forecast revisions are reflective of the overall macroeconomy. They document a statistical association between forecast revisions and the macroeconomic indicators of GDP growth and changes in industrial production. Collectively, their findings suggest that forecast revisions are correlated with overall macroeconomic activity.

If, as this stream of literature suggests, aggregate earnings information is reflective of past, current, and future macroeconomic performance, then aggregate earnings expectations should provide insights into voter utility and choice. I extend the literature on aggregate accounting information by predicting that the incumbent party's likelihood of electoral success is positively associated with contemporaneous aggregate earnings news, in particular the cash flow news component of aggregate earnings.

From an empirical perspective, accounting information has a number intrinsic properties making it reflective of voter concerns. First, and perhaps most importantly, accounting information

potentially serves as a comprehensive proxy of a number of different facets of economic activity.[8] Valuably, it is not simply that accounting information comprehensively reflects a number of economic concerns impacting voter choice, but that it does so in a timely fashion. For instance, accounting data (be it reported numbers or forecasted expectations) are released and/or revised at higher frequency than government reported statistics thereby providing a timelier indication of what voters and more sophisticated observers of the economy are weighing in real time. Furthermore, because it can be hard to decipher which economic variables are most pertinent to voters in a particular election cycle, it is empirically advantageous to have a variable that comprehensively aggregates a number of potential voter concerns rather than arbitrarily selecting one. Thus, the use of timely, high-frequency accounting data can yield important statistical insights, particularly when paired with high-frequency data on tracking election probabilities.

3. Data and Variable Construction

3.1 Political Prediction Markets

Flexibility in market design structures has aided in formation and development of prediction markets. These markets exist to predict and provide payoffs on a variety of unknown future events, be it sporting outcomes, economic outcomes, Hollywood events, or other general current events. These markets afford a number of advantages. At a minimum, sophisticated prediction markets meet the standards of weak-form efficiency by rapidly reflecting new information (Wolfers and Zitzewitz, 2004). Furthermore, attempts at manipulation appear to fail and few arbitrage opportunities appear to exist (Camerer, 1998; Rhode and Strumpf, 2004). Additionally, high

[8] It is true that certain macroeconomic fundamentals tend to move in tandem (such as economic growth and unemployment) and, thus, the need to control for multiple economic fundamentals is perhaps somewhat redundant. However, during the recent economic crisis and corresponding election cycles, some of the traditional associations have not held (Erikson and Wlezien, 2012).

publicity, high entertainment value markets, like political markets, have more information enabling (potential) investor disagreement (Wolfers and Zitzewitz, 2004).

One of the most prominent prediction markets is the Iowa Electronic Market (IEM), created and operated by the University of Iowa. During the 1992 presidential election, IEM introduced its winner-take-all (WTA) market. This market developed as an alternative to traditional public opinion surveys for the purpose of predicting election outcomes (Forsythe et al., 1992). These contracts are used to measure the consensus expectations about a particular candidate's likelihood of victory and prices fluctuate in accordance with changes in those consensus expectations.[9] Under appropriate market efficiency assumptions, the value of a contract at a particular point in time should reflect the probability the candidate to whom the contract is linked will win the election (Roberts and Werner, 2014). Post election, the winning candidate's contract is worth one dollar and the losing candidates' contracts are worth nothing.[10] Appendix B provides additional information on the IEM.

Beyond offering the compelling market incentives to price correctly likely election outcomes, the price data generated by the market is available on a daily basis. At the presidential level, this dramatically increases the number of available observations over public opinion surveys or actual election results, potentially allowing for more precise statistical inferences. Still, the accuracy of prediction markets versus opinion polling has been thoroughly debated by researchers. Studies find that prediction market prices generate more accurate forecasts than poll-based forecasts in historical elections (Rhode and Strumpf, 2004; Berg et al., 2008; Rothschild, 2009). Furthermore, counter to prediction markets which provide expectations of what will happen on election day,

[9] These contracts operate under the assumption that investors are generally risk-neutral as the sums wagered in prediction markets are typically small. Given the small amounts wagered, it is reasonable to assume that investors are averse to any idiosyncratic risk involved (Wolfers and Zitzewitz, 2004).
[10] The IEM has a $500 limit on individual investments

public opinion polls are an indication of what election results may look like if the election were held on the polling dates. Finally, market prices should incorporate all the information in publicly available polls plus private information from experts and political economy models (Kou and Sobel, 2004). The value of using market-based alternatives to opinion polls for the purpose of predicting election outcomes is fairly straightforward. The money of the relatively weak and uninformed traders attracts a set of politically sophisticated traders to the market who ensure market prices that reflect the best estimate of the probability of a given election outcome at that point in time.

To discern the impact of aggregate earnings on electoral probabilities, I leverage this price data from the IEM WTA market. This market covers the 1992, 1996, 2000, 2004, 2008, and 2012 presidential elections. Because empirical analyses are conducted at the calendar month level, daily closing prices are used to compute the monthly percentage change (or return) in the incumbent president's party's probability of retaining the presidency from the beginning of the month to the end of the month.[11] Formally, the monthly change is computed as follows:

$$\Delta Prob\_Inc\_Win_t = \frac{Incumbent\ Party\ Price_t - Incumbent\ Party\ Price_{t-1}}{Incumbent\ Party\ Price_{t-1}}$$

3.2 Aggregate Earnings Measures

To assess the electoral-relevance of accounting information, I use two aggregate earnings proxies. These variables contain both retrospective and prospective economic implications.

Aggregate Earnings Expectations: I use aggregated revisions in analysts' forecasts as a measure aggregate earnings expectations. These revisions potentially capture immediate pre- or post-election market-wide economic expectations. Additionally, forecast revisions are an attractive way

[11] Due to potential noise in IEM daily prices and to afford significant time for the incorporation of relevant accounting information, changes are computed using the average of the incumbent party candidate's daily closing prices for the last week of month *t* and the first week of the following month, *t+1*.

to measure earnings news because they are timely with respect to news (Choi et al., 2014). This study focuses on earnings news derived from monthly consensus forecasts of one-year-ahead earnings. Whether the actual annual earnings are announced prior to election day or sometime thereafter, these analysts' forecasts reflect both realized prior information (in the sense that revisions impound the actual performance realizations of prior quarterly earnings numbers) and any revisions in response to changes in expected future market-wide conditions.

I obtain firm-level forecast data from the Institutional Brokers' Estimate System (IBES) summary file. In a specific month, I include a firm in the aggregate measure if it meets the following requirements – (i) the firm has recorded IBES data on the number of monthly shares outstanding, (ii) the firm has Compustat identifier information, (iii) the firm has a consensus earnings per share (EPS) forecast in the IBES summary file for the prior month to allow computation of monthly forecast revisions.

I follow an approach similar to the one employed by Choi et al. (2014). (i) To compute firm-level earnings expectations, the average firm-level EPS consensus forecasts for months *t* and *t-1* are multiplied by the number of shares outstanding from the prior month, *t-1*.[12] (ii) The sum across all the firms in the sample is computed to derive a market-wide earnings expectation for each month. Formally, (i) and (ii) yield the following:

$$Aggregate\ Fct_{t} = \Sigma(Avg.\ Consensus\ EPS\ Fct_{i,t} * Shares\ Outstanding_{i,t-1})$$

$$Aggregate\ Fct_{t-1} = \Sigma(Avg.\ Consensus\ EPS\ Fct_{i,t-1} * Shares\ Outstanding_{i,t-1})$$

(iii) The month-to-month percentage change in market wide expectations is computed to measure forecast revisions. The process is as follows:

[12] Results are quantitatively and qualitatively similar if the median consensus forecast is substituted for the average consensus forecast.

$$Fct\_Revision_t = \frac{Aggregate\ Fct_t - Aggregate\ Fct_{t-1}}{Aggregate\ Fct_{t-1}}$$

Change in Aggregate Earnings: I employ a measure of aggregate realized earnings news using quarterly earnings before extraordinary items available from Compustat. Unfortunately, sample composition resulting from the clustering of earnings periods (around March, June, September, and December quarter ends) constricts time-series analyses and leads to a sample of firm performance that is potentially unrepresentative of the broader economic concerns facing voters. To rectify this issue, I construct a monthly measure of firm-level earnings using linear interpolation of firm's quarterly earnings figures. At the firm level, I follow a linear interpolation method identical to the one used in earnings data compiled by Robert Shiller.[13] Linear interpolation unfortunately requires "look ahead" to the subsequent quarter to derive interpolated figures. Since my concern is with documenting associations between aggregate earnings shocks and retrospective voter choice and not predicting election outcomes, I do not believe this "look ahead" is much of a detriment in my setting. After generating monthly firm-level earnings estimates, the sum across all the firms in the sample is computed to derive a measure of aggregate earnings for each month. Finally, I calculate the monthly percentage change in aggregate-level earnings as follows:

$$\Delta Earnings_t = \frac{Earnings_t - Earnings_{t-1}}{Earnings_{t-1}}$$

3.3 Macroeconomic Indicators

The first portion of my study documents an association between aggregate accounting measures and future levels of and changes in economic performance. To facilitate comparisons, all

[13] Shiller computes earnings figures using S&P four-quarter totals for the quarter since 1926, with linear interpolation to monthly figures. Available for download at http://www.econ.yale.edu/~shiller/data.htm. The use of Shiller's earnings figures in place of Compustat figures yields qualitatively similar (though weaker) results.

associations are examined using monthly data on several economic indicators defined below.[14] The rationale behind the selection of these indicators is twofold. First, many of these indicators are weighted heavily by investors and economists when gauging the country's economic performance and forming expectations about future governmental monetary policy. These indicators also reflect different aspects of the economy without much overlap. Second, prior academic election models frequently use a number of these indicators in empirical analyses.

Unemployment: The civilian unemployment rate represents the number of unemployed as a percentage of the labor force and is published monthly by the US Bureau of Labor Statistics (BLS). It is often argued that voters choose the candidates and officeholders best suited to "create jobs." Consequently, researchers often turn to the change in the election year unemployment rate to explain election outcomes at both the national and state level (Kramer, 1971; Hibbs, 1986).

Inflation: Prices have implications on citizens' demand for goods and consumption making inflation one the most visible economic measures, particularly given its influence on monetary policy. Therefore, I use the year-over-year percent growth in Consumer Price Index released by the BLS in a particular month. The CPI is indicative of both prices paid by consumers and the buying habits of these consumers. Importantly, food and fuel prices, which are particularly salient to voters, are reflected in the CPI. This measure has been used as an explanatory variable in some of the most notable election models and also exhibits a generally strong correlation with political outcomes (Fair, 1996).

Industrial Production: The industrial production index is the government's broadest measure of output in manufacturing and related fields like mining, electric, and gas. It is generally timed well

[14] Time-series data on the monthly unemployment rate, consumer price index, industrial production index, and personal income were collected using the Federal Reserve Bank of St. Louis' Economic Research website (https://research.stlouisfed.org)

to the business cycle and is compiled on a monthly basis by the Board of Governors of the Federal Reserve System. The index brings attention to short-term changes in industrial production and measures movements in production activity and fundamental developments in the macroeconomy. Growth in the production index from month to month is an indicator of growth in an industry.

Personal Income: Personal income reflects the different income streams coming to voters. It includes income received in wages and bonuses from employment, stock dividends, and rental income. Personal income is reported on a monthly, seasonally adjusted basis by the US Bureau of Economic Analysis (BEA). When forced to choose an economic indicator, many researchers opt to use this variable in eleation models given its documented statistical power (Kramer, 1971; Tufte, 1979; Hibbs, 1986; Peltzman, 1987 Wolfers, 2004).

Consumer Confidence: I use the Michigan Consumer Confidence Index as a prospective measure of citizens' economic sentiment. This index is calculated monthly by the Michigan Consumer Research Center. It is based on survey responses of 500 telephone participants to questions about participants' current and prospective financial and economic well-being. Electoral studies using this measure show that prospective personal finances are a statistically significant predictor of presidential vote intention (Lewis-Beck and Stegmaier, 2000).

Gross Domestic Product: Reported by the BEA, GDP is a key summary statistic of overall economic activity and traditionally the most important variable in analyses of economic growth (Konchitchki and Patatoukas, 2014a). As such, it is also commonly used by researchers in election prediction models (Fair, 1978; Lewis-Beck and Rice, 1984; Erikson, 1989). Like earnings, GDP is generated on quarterly basis. Thus, to facilitate comparisons with aggregate earnings and IEM prices, monthly GDP estimates are generated using a linear interpolation method analogous to the one used to generate monthly earnings figures.

3.4 Other Variables

Price-Earnings Ratio: The PE ratio divides the company's share price by the company's annual earnings. My study relies on data on composite price from the inflation-adjusted Standard and Poor's (S&P) Composite Stock Price Index divided by the corresponding a ten-year trailing moving average of aggregate earnings of companies in the corresponding S&P index as compiled by Robert Shiller. The PE ratio can be seen as a gauge of expectations that incorporates assessments of both future risk and future growth rates. Monthly movements in PE ratios reflect variation in discount rates, which embed both risk premiums and growth opportunities and reflect the cash-flow and earnings generating capacity of firms. Using Shiller's data, I compute the monthly change in PE ratio to proxy for discount rate news (Pettit and Westerfield, 1972; Campbell et al., 2010). I use the change in the PE ratio to isolate discount rate news from cash flow news when assessing voters' economic concerns.

Monthly Stock Returns: One could argue that equity prices are a preferable source of economic information than earnings when trying to assess "macroeconomic voting." However, returns may endogenously reflect market expectations about anticipated election results. This type of endogeneity is less of a concern when using one-year ahead aggregate earnings forecasts (or some similar measure) as the policy impacts from the election of a particular candidate are unlikely manifest in immediate earnings realizations. Also, stock prices likely reflect expectations about future cash flows for periods extending far beyond the president's four-year (or even eight-year) term in office. Nevertheless, I control for the information content of shocks to equity prices. To do so, my main regressions use the CRSP S&P 500 monthly index return.[15]

[15] Results are also robust to the use of equal- or value-weighted monthly index returns on the NYSE.

Changes in Presidential Approval Ratings: Many studies geared to forecasting election outcomes include presidential approval ratings as a regressor (Abramovitz, 1988; Erikson, 1989; Erikson and Wlezien, 1996). Approval ratings and other poll readings of voter sentiments provide information on the electorates' attitudes about the incumbent President, their party, and candidates in elections. Furthermore, changes in these ratings correspond shocks in voters' assessment of presidential performance, which may or may not relate to corresponding economic events. For example, scandal or war-induced deterioration of presidential support would be reflected in approval rating polls.

4. Results

The following section discusses my empirical findings on association between aggregate accounting information, macroeconomic indicators, and changes in anticipated election outcomes.

4.1 Aggregate Accounting Measures and Future Macroeconomic Information

My first set of tests is concerned with documenting whether accounting information is a timely indicator of future macroeconomic activity. To match the measurement and frequency of the accounting measures, I test these associations using economic indicators available on a monthly basis. Specifically, aggregate accounting measures calculated in month t are associated with future monthly economic performance in $t+k$, where $k = \{1, 2\}$. The sample period is January 1990 to December 2012. I choose this time period to overlap with subsequent electoral analyses that cover the 1992 to 2012 presidential campaigns. It also ensures that the lower quality IBES data of earlier time periods is excluded from the analyses.

Table 1 presents summary statistics for the 276 monthly observations. In Table 2, I present summary correlations to determine if there are consistent patterns and relations among the two measures of aggregate earnings news and the six economic indicators. For brevity, only the

correlations between the two accounting measures and future economic activity are shown. Generally, correlations are in the expected direction. Accounting information is (generally) negatively associated with future unemployment and, counterintuitively with levels of industrial production and personal income in the case earnings change measure and, with both aggregate forecast revisions and earnings changes, changes in consumer sentiment (though these unpredicted correlations lack significance). Accounting measures are generally positively related to future inflation and industrial production, personal income, and consumer sentiment (though the later indicator displays a statistically significant correlation with only the aggregate forecast revision measure). Finally, aggregate earnings measures display a positive association with monthly percentage change in GDP. Overall, the aggregate earnings revision measure tends to exhibit stronger statistical relations with future economic activity then the aggregate earnings change variable.

To further examine the informativeness of accounting measures on future economic activity, I test whether aggregate accounting measures are associated with the six economic indicators for one-month or two-month ahead horizons using the following regression models:

$$Econ_{t+k} = \delta_0 + \delta_1 \Delta Acc_t + \delta_2 Econ_t + \mu \quad (1)$$

$$\Delta Econ_{t+k} = \delta_0 + \delta_1 \Delta Acc_t + \delta_2 \Delta Econ_t + \mu \quad (2)$$

where ΔAcc_t is the current aggregate accounting measure, represented by either monthly percentage change in earnings forecasts or monthly growth in in aggregate earnings, $Econ_t$ is the current monthly level or change in specific macroeconomic indicator, $Econ_{t+k}$ is the monthly future level or change in specific macroeconomic indicator, where $k = \{1, 2\}$.

These models use ordinary least squares regressions and I base my statistical inferences on Newey and West (1987) heteroskedasticity- and autocorrelation-consistent standard errors. This

procedure is an appropriate choice for this setting because it accounts for heteroskedasticity and time-series correlation in the residuals. Following Konchitchki and Patatoukas (2014a), I set the lag length for the Newey and West (1987) procedure equal to the integer portion of $T^{0.25}$, where T is the number of observations used in the regressions. Because there are 276 observations in these regressions, I set the lag length equal to four.

Table 3 reports results from the regression models of future levels of economic activity on aggregate accounting measures described in Equation (1). Table 4 reports results using the changes specification in Equation (2). Results are generally consistent with the univariate evidence and corresponding predictions. Panel A of Tables 3 and 4 reports that both aggregate earnings measures are significantly negatively associated with future unemployment levels and changes, respectively. Generally, Panel B of Table 3 (4) reports that aggregate earning measures are significantly positively related to future inflation levels (changes), though only the aggregate revisions measure is significant in Table 4, Panel B. Both measures show a positive and significant association with future levels and changes in industrial production. Relatedly, the earnings variables are positively related to two-month ahead level or change in real personal incomes. Levels and changes in future consumer sentiment display limited to no statistical association with the aggregate earnings measures or the coefficient often has the opposite of the predicted sign. Finally, Table 4, Panel F, reports the association between aggregate earnings and future GDP growth. Aggregate earnings growth is significantly related to one- and two-month ahead GDP growth (forecast revisions display no statistical relation with GDP growth), although these coefficients are essentially zero.

Collectively, these empirical findings indicate that current aggregate earnings are a timely reflection of different facets of future macroeconomic conditions. This does not necessarily imply that accounting information is predictive of any one economic indicator or characteristic.

However, it does, at a minimum, show that aggregate earnings numbers capture information about broader economic performance. As a result, earnings information may serve as a timely, comprehensive reflection of the economic conditions voters observe around them, conditions which potentially influence voters' preference for one candidate over another.

4.2 Aggregate earnings expectations and Changes in Voter Preferences

Given that aggregate earnings correlate with future economic outcomes, this section explores the contemporaneous association between aggregate earnings measures and market assessments of voters' support for incumbent party presidential candidates. If, as prior literature indicates, voters' preferences are influenced by aggregate economic conditions, then changes in aggregate earnings should be positively related to changes in the incumbent party's probability of victory. To test this association, I use monthly changes in IEM WTA contracts on incumbent party's probability in retaining the presidency. These contracts cover six election cycles from 1992 to the 2012 campaign.

Table 5 reports summary statistics for the 78 monthly observations used in this analysis. On average, there is a one percent month-to-month decline in the incumbent party's likelihood of victory (median, no change). For the sample months, the mean change in PE ratio is -0.09 (median 0.17). The average monthly S&P 500 index return is zero (median 0.01). While the mean and median change in monthly earnings forecast revisions are -0.01. Relatedly the average monthly change in aggregate realized earnings is also -0.03 (median 0.00). On average, the incumbent president's monthly approval rating does not change. Finally, averages of monthly changes in five of the six economic indicators for this 78 month sample are similar to those reported in Table 1 for the much larger sample. The exception is the change in consumer confidence, which is significantly more negative for this sample (-0.20 versus -0.06 for the larger sample).

I provide univariate evidence of an association between contemporaneous aggregate earnings and changes in IEM prices in Table 6. The correlation between the forecast revision variable and election expectations is positive and significant with a Pearson correlation of 0.39. The correlation between changes in realized earnings and IEM probabilities is 0.58. These correlations are consistent with the hypothesis that positive earnings news improves the incumbent party's reelection chances. Changes in voter preferences are also strongly positively related to discount rate news (or changes in the PE ratio) and monthly stock returns. This indicates that decreases in discount rates positively impact the incumbent party's election chances. Since earnings convey news about cash flows and discount rates, the relation between the cash flow innovations and voter preferences may be attenuated due to the countervailing effects of discount rate news. As such, I turn to multivariate tests controlling for the impacts of discount rate news and other factors.

To examine the relevance of aggregate earnings expectations on election probabilities, I estimate the following general model:

$$\Delta Prob\_Inc\_Win_t = \beta_0 + \beta_1 \Delta Acc_t + \beta_2 Controls + \varepsilon \quad (3)$$

where ΔAcc_t represents the aggregate accounting measure. This model is estimated (i) using only the Acc_t variable, (ii) using the Acc_t and ΔPE_t variables, (iii) using the Acc_t and $Return_t$ variables (iv) using Acc_t, ΔPE_t, and $\Delta Approval_t$ variables, and (v) using Acc_t, $Return_t$, and $\Delta Approval_t$ variables. Because monthly data is likely to autocorrelationed, statistical inferences are based on the use of robust standard errors which are clustered by election cycle.

Table 7 reports all results from the estimation of Equation (3). Column 1 of Panel A regresses the change in monthly probability of incumbent party victory, $\Delta Prob\_Inc\_Win_t$, on changes in contemporaneous aggregate earnings forecasts, $Fct\_Revision_t$. The coefficient on $Fct\_Revision_t$ is positive and significant and corroborates univariate findings reported in Table 6. Aggregate

earnings expectations alone appears to explain just over fourteen percent of the variation in voter choice. Column 2 of Panel A controls for the potential countervailing effects of discount rate news. The coefficient on the discount rate news proxy is, as predicted, positive and significant implying that voters respond adversely to increases in inflation. Importantly, after controlling for news on discount rates, the coefficient on the aggregate earnings expectations variable remains positive and significant suggesting that innovations in cash flow news drive the association with voter preferences.

Column 3 of Panel A in Table 7 adds a control for the contemporaneous monthly index return on the S&P 500. The coefficient on the stock return variable is positive and strongly significant. However, the aggregate forecast revisions appear to convey incrementally relevant information above the information content reflected in returns as the $Fct\_Revision_t$ variable remains significantly positive. Finally, Columns 4 and 5 of Panel A include changes in the incumbent president's approval rating. This regressor is designed to capture the electorates' attitudes about the incumbent President and their party. Any growth in approval rating is likely to reflect voters' appraisal of presidential response(s) to events both within and outside the president's control, which may or may not relate to shocks to economic conditions. In Panel A, this variable lacks significance. However, the introduction of this variable does not impact the significance or direction of the coefficients on the $Fct\_Revision_t$, ΔPE_t, or $Return_t$ variables. Panel B of Table 7 reports results using realized monthly earnings changes, $\Delta Earnings_t$. Inferences related to election-relevance of aggregate earnings remains qualitatively similar to those reported in Panel A, though the discount rate news proxy is now insignificant. The explanatory power of realized earnings changes is also higher than that of the forecast revisions, with $\Delta Earnings_t$ alone explaining just over thirty-two percent of the variation in voter choice.

Table 8 examines the incremental informativeness of aggregate earnings on voter choice after controlling for changes in six economic statistics. In column 1, I regress changes in the probability of incumbent party victory on the six macroeconomic indicators excluding the aggregate earnings, change in PE variables, and stock return variables. The coefficients on change in inflation, change and change in consumer sentiment are statistically significant (the coefficient on GDP growth is significant if change in industrial production is omitted from the regression). This specification yields an adjusted R-squared value of 7.9 percent.

Columns 2 and 3 add the aggregate earnings forecast and change in aggregate realized earnings, repectively, as additional regressors to the specification in column 1. The coefficient on the aggregate earnings variables remains positive and significant indicating that, after controlling for changes in other facets of economic activity, aggregate earnings information remains incrementally relevant in explaining changes in election probabilities. The explanatory power of the model is also improved, from 7.9 percent in column 1 to 15.0 percent and 29.7 in columns 2 and 3, respectively. Columns 4-7 add either the change in PE ratio or monthly index return to the model. In spite of the introduction of these variables, the aggregate earnings variables remain incrementally informative.

5 Additional Tests

5.1 Sample Composition and Changes in Voter Preferences

It is likely that the performance of certain firms is more indicative of voters economic concerns or sentiments. To explore how different sample compositions relate to monthly changes in voter preferences, I examine the relation between market prediction market prices and firms in the S&P 500 versus non-S&P 500 firms. *Ex ante*, one might expect a stronger association between S&P 500 firms and electoral preferences as these firms are likely to be major drivers of overall economic

activity, and the accounting performance of these firms is likely indicative of the performance of similarly positioned smaller firms.

Table 9 presents the correlations between changes in the probability of incumbent party victory and aggregate total earnings, aggregate S&P 500 earnings, and aggregate non-S&P 500 earnings for both the analysts forecasts and realized earnings growth variables. Interestingly, for both variables, the correlations between changes in voter preferences and non-S&P 500 firms is stronger than the correlation between S&P 500 firms and prediction market prices (0.32 versus 0.29 for the aggregate earnings forecast and 0.59 versus 0.42 for the aggregate earnings growth variable). It is possible that the S&P 500 has a higher composition of industries whose performance maybe less salient or "election relevant" to voters, such as financial service, healthcare, and technology firms. Furthermore, S&P 500 firms may be more geographically concentrated then the broader cross-section of firms. This statistical disparity may also explain the differences in explanatory power between the two earnings variables documented in Table 7 since firms with analysts following tend to be larger and these larger firms display a weaker statistical association with the likelihood of incumbent party retention. Untabluated multivariate tests also show that, for both aggregate earnings measures, only non-S&P 500 firms display a positive and statistically significant association with changes in voter preferences. However, the driver(s) of these different associations warrants further exploration.

5.2 Informational Efficiency of the Iowa Electronic Market

Since Beaver et al. (1980), capital markets research in accounting has explored the informational efficiency of past equity prices with respect to earnings information (Kothari and Sloan, 1992; Kothari and Zimmerman, 1995; Kothari, 2001). These studies find that prices "lead" earnings because earnings are comprised of both surprise and stale components, the later of which

should already be reflected in equity prices (Collins et al., 1994; Kothari and Zimmerman, 1995). Whether the theoretical implications of this literature also extend to the elections futures market remains an open question. Therefore, to test the information efficiency of the IEM, I estimate the following regression model:

$$\Delta Prob\_Inc\_Win_{t/t-3} = \beta_0 + \beta_1 \Delta Acc_t + \beta_2 Controls + \varepsilon \quad (4)$$

where $\Delta Prob\_Inc\_Win_{t/t-3}$ is the percentage change from month *t-3* to *t* in the incumbent party candidate's IEM price. It should be noted that the sample size is slightly smaller for these tests.

Table 10 presents results from the estimation of Equation (4). In general, the results obtained show informational timeliness between returns in the IEM and aggregate earnings. Column 1 of Panels A and B shows that aggregate earnings measures retain the positive and significant association with the market's expectations regarding election outcomes for the longer return period. With the exception of aggregate forecast revisions in column 3, this finding remains robust to the introduction of either the changes in PE ratio or index return variables. Furthermore, the coefficient and R-squared values reported in this table are larger than those reported for the analogous empirical specification reported in Table 7, where changes in IEM expectations are measured contemporaneously against the aggregate earnings variables. In all, these results indicate that IEM traders appear to anticipate some of the economic information content contained in future aggregate earnings.

6. Conclusion

Documenting and understanding the determinants of voter choice is one of the most important tasks in social science research given the far-reaching economic and social impacts of elected officeholders on regulatory oversight and policy. No study can comprehensively explain or predict something as variable and dynamic as voters' choice for president. But there can be little doubt

that economic concerns influence voter decisions. Therefore, finding measures that capture a comprehensive cross-section of voters' economic concerns can yield important statistical insights on associations with electoral outcomes. My study provides the first empirical evidence of a positive association between aggregate earnings information and changes in election futures market expectations in presidential campaigns. As such, this suggests one setting in which aggregate earnings expectations advantageously conveys timely, high-frequency "election-relevant" macroeconomic information compared to conventionally used economic indicators. First, I show that aggregate accounting measures are correlated with multiple facets of future economic activity that potential influence voters' perceptions of aggregate economic conditions. After establishing this relation, I use monthly changes in election prediction market probabilities to show that innovations in cash flow news appear to drive the positive association between changes in election expectations and changes in earnings news.

This study is not immune to some of the criticisms levied against prior research. Although, through the use of the IEM, sample sizes have been greatly improved over those of similar studies, the number of observations remains small. This fact, coupled with noise in both accounting and IEM measures, means that I can only comment on the strong statistical associations I document between the two constructs and I make no assertions regarding causality. Nevertheless, these findings do provide insights and motivation for research linking voter choice with accounting information. Accounting studies traditionally examine the impacts of the political environment on accounting information or regulation. My findings indicate that accounting is informative in the other direction, signifying that the broad macroeconomic information content of aggregate accounting information can be relevant in assessing voter preferences. Future studies can leverage this finding in similar settings.

References

Abramowitz, A., 1988, An Improved Model for Predicting Presidential Election Outcomes. Political Science and Politics 21, 843–847.

Abramowitz, A., 2008. Forecasting the 2008 Presidential Election with the Time-for-Change Model. Political Science and Politics 41, 691–95.

Ball, R. Brown, P., 1968. An Empirical Evaluation of Accounting Income Numbers. Journal of Accounting Research 6, 159-178.

Ball, R., Sadka, G., 2015. Aggregate Earnings and Why They Matter. Journal of Accounting Literature 34, 39–57.

Beaver, W., Lambert, R., Morse, D., 1980. The Information Content of Security Prices. Journal of Accounting and Economics 2, 3-28.

Berg, J., Nelson, F., Reitz, T., 2008. Prediction Market Accuracy in the Long Run. International Journal of Forecasting 24, 285-300.

Bloom, H., Price, H., 1975. Voter Response to Short-Run Economic Conditions: the Asymmetric Effect of Prosperity and Recession. American Political Science Review 69, 1240-1254.

Bonsall, S., Bozanic, Z., Fischer, P., 2013. What Do Management Earnings Forecasts Convey About the Macroeconomy? Journal of Accounting Research 51, 225-266.

Burden, B., Wichowsky, A., 2014. Economic Discontent as a Mobilizer: Unemployment and Voter Turnout. Journal of Politics 76, 887–898

Camerer, C., 1998. Can Asset Markets be Manipulated? A Field Experiment with Racetrack Betting. Journal of Political Economy 106, 457-482.

Campbell, J., Garand, J. 2000. Before the Vote: Forecasting American National Elections. Thousand Oaks, CA: Sage.

Campbell, J., 2008. The American Campaign: U.S. Presidential Campaigns and the National Vote, 2nd edition. College Station, TX: Texas A&M University Press.

Campbell, J., Polk, C., Vuolteenaho, T., 2010. Growth or Glamour? Fundamentals and Systematic Risk in Stock Returns. Review of Financial Studies 23, 305-344.

Choi, J., Kalay, A., and Sadka, G., 2014. Earnings News, Expected Earnings and Aggregate Stock Returns. University of Chicago, Working Paper.

Collins, D., Kothari, S.P., Shanken, J., Sloan, R., 1994. Lack of Timeliness and Noise as Explanations for the Low Contemporaneous Return-Earnings Association. Journal of Accounting and Economics 18, 289-324.

Cready, W., Gurun, U., 2009. Market Return and Aggregate Earnings News. University of Texas at Dallas, Working paper.

Cready, W., Gurun, U., 2010. Aggregate Market Reaction to Earnings Announcements. Journal of Accounting Research 48, 289-334.

Downs, A., 1957. An Economic Theory of Political Action in a Democracy. Journal of Political Economy 65, 135-150.

Ellahie, A., 2014. Firm Fundamentals and Sensitivity to Aggregate Earnings Growth. London Business School, Working paper.

Erikson, R., 1990. Economic Conditions and the Congressional Vote: A Review of the Macrolevel Evidence. American Journal of Political Science 34, 373-399.

Erikson, R., Wlezien, C., 2008a. Are Political Markets Really Superior to Polls as Election Predictors? Public Opinion Quarterly 72, 190–215.

Erikson, R., Wlezien, C., 2008b. The Economy and the Presidential Vote: What Leading Indicators Reveal well in Advance. International Journal of Forecasting 24, 218-226.

Fair, R., 1978. The Effect of Economic Events on Votes for President. Review of Economics and Statistics 60, 159-173,

Fair, R., 1996. Econometrics and Presidential Elections. Journal of Economic Perspectives 10, 89-102.

Fair, R., 2009. Presidential and Congressional Vote-Share Equations. American Journal of Political Science 53, 55–72.

Ferejohn, J., 1986. Incumbent performance and electoral control. Public Choice 50, 5–25.

Forsythe, R., Nelson, F., Wright, J., 1992. Anatomy of an experimental political stock market. American Economic Review 82, 1142-1161.

Forsythe, R., Rietz, T., Ross, T., 1999. Wishes, Expectations and Actions: Price Formation in Election Stock Markets. Journal of Economic Behavior and Organization 39, 83-110.

Gallo, L., Hann, R., Li, C., 2014. Aggregate Earnings Surprises, Monetary Policy, and Stock Returns. University of Maryland, Working paper.

Gkougkousi X., 2014. Aggregate Earnings and Corporate Bond Markets. Journal of Accounting Research 52, 75-106.

Goodell, J., Bodey, R., 2012. Price-Earnings Changes during US Presidential Election Cycles: Voter Uncertainty and other Determinants. Public Choice 150, 633-650.

Guenther, D., Young, D., 2000. The Association between Financial Accounting Measures and Real Economic Activity: A Multinational Study. Journal of Accounting and Economics 29, 53-72.

Hann, R., Ogneva, M., Sapriza, H., 2012. Forecasting the Macroeconomy: Analysts versus Economists. University of Maryland, Working paper.

Healy, A., Lenz, G., 2014. Substituting the End for the Whole: Why Voters Respond Primarily to the Election-Year Economy. American Journal of Political Science 58, 31–47.

Hennessy, C., Levy, A., Whited, T., 2007. Testing Q-Theory with Financing Frictions. Journal of Financial Economics 83, 691–717.

Hess, D., Kreutzmann, D., 2009. Earnings Expectations and Macroeconomic Conditions. University of Cologne, Working paper.

Hibbs, D., 1986. Political Parties and Macroeconomic Policies and Outcomes in the United States. American Economic Review 76, 66-70.

Hibbs, D., 1994. The Partisan Model of Macroeconomic Cycles: More Theory and Evidence for the United States. Economics and Politics 6, 1-23.

Hibbs, D., 2000. Bread and Peace Voting in U.S. Presidential Elections. Public Choice 104, 149-180.

Hibbs, D., 2006. Voting and the Macroeconomy. In: B. Weingast and D. Wittman (eds.), The Oxford Handbook Of Political Economy, Oxford University Press.

Hirshleifer, D., Hou, K., Teoh, S., 2009. Accruals, Cash Flows, and Aggregate Stock Returns. Journal of Financial Economics 91, 389-406.

Holbrook, T., 1996. Do Campaigns Matter? Thousand Oaks, CA: Sage.

Hummel, P., Rothschild, D., 2013. Fundamental Models for Forecasting Elections. Google, Working paper.

Kido, N., Petacchi, R., Weber, J., 2012. The Influence of Elections on the Accounting Choices of Governmental Entities. Journal of Accounting Research 50, 443-476.

Knight, B., 2004. Are Policy Platforms Capitalized into Equity Prices? Evidence from the Bush/Gore 2000 Presidential Election. National Bureau of Economic Research, Working paper.

Konchitchki, Y., Patatoukas, P., 2014a. Accounting Earnings and Gross Domestic Product. Journal of Accounting and Economics 57, 76–88

Konchitchki, Y., Patatoukas, P., 2014b. Taking the Pulse of the Real Economy Using Financial Statement Analysis: Implications for Macro Forecasting and Stock Valuation. The Accounting Review 89, 669-694.

Kothari, S.P., 1992. Price-Earnings Regressions in the Presence of Prices Leading Earnings. . Journal of Accounting and Economics 15, 173-202.

Kothari, S.P., 2001. Capital Markets Research in Accounting. Journal of Accounting and Economics 31, 105–231.

Kothari, S.P., Lewellen, J., Warner, J., 2006. Stock Returns, Aggregate Earnings Surprises, and Behavioral Finance. Journal of Financial Economics 79, 537–568.

Kothari, S.P., Shivakumar, L., Urcan, O., 2013. Aggregate Earnings Surprises and Inflation Forecasts. Massachusetts Institute of Technology, Working paper.

Kothari, S.P., Sloan, R., 1992. Information in Prices about Future Earnings. Journal of Accounting and Economics 15, 143-171.

Kothari, S.P., Zimmerman, J., 1995. Price and Return Models. Journal of Accounting and Economics 20, 155-192.

Kou, S, Sobel, M., 2004. Forecasting the Vote: A Theoretical Comparison of Election Markets and Public Opinion Polls. Political Analysis 12, 277–295.

Kramer, G., 1971. Short-Term Fluctuations in U.S. Voting Behavior, 1896-1964. American Political Science Review 71, 131-43.

Kramer, G., 1983. The Ecological Fallacy Revisited: Aggregate- versus Individual-level Findings on Economics and Elections, and Sociotropic Voting. The American Political Science Review 77, 92-111.

Lewellen, J., Lewellen, K., 2012. Investment and Cashflow: New evidence. Dartmouth University, Working paper.

Lewis-Beck, M., Stegmaier, M., 2000. Economic Determinants of Electoral Outcomes. Annual Review of Political Science 3, 183-219.

Mattozzi, A., 2004. Can We Insure Against Political Uncertainty? Evidence from the U.S. Stock Market. California Institute of Technology, Working paper.

Newey, W., West, K., 1987. A Simple, Positive Semi-definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix. Econometrica, 55, 703–708.

Ogneva, M., 2013. Discussion of What Do Management Earnings Forecasts Convey About the Macroeconomy? Journal of Accounting Research 51, 267-279.

Patatoukas, P., 2014a. Detecting news in aggregate accounting earnings: implications for stock market valuation. Review of Accounting Studies 19, 134–160.

Patatoukas, P., 2014b. On the "Great Disconnect" Between Stock Returns and GDP Growth Forecast Errors: Implications for Interdisciplinary Capital Markets Research in Accounting. University of California at Berkeley, Working paper.

Peltzman, S., 1987. Economic Conditions and Gubernatorial Elections. American Economic Review 77, 293-297.

Pettit, R., Westerfield, R., 1972. A Model of Capital Asset Risk. The Journal of Financial and Quantitative Analysis 7, 1649-1668.

Ramanna, K., Roychowdhury, S., 2010. Elections and Discretionary Accruals: Evidence from 2004. Journal of Accounting Research 48, 445-475.

Rhode, P., Strumpf, K., 2004. Historical Presidential Betting Markets. Journal of Economic Perspectives, 18, 127-141.

Roberts, B., Werner, T., 2014. Measuring Corporate Political Sensitivity. University of Texas at Austin, Working paper.

Rogoff, K., Sibert, A., 1988. Elections and Macroeconomic Policy Cycles. Review of Economic Studies 55, 1-16.

Rothschild, D., 2009. Forecasting Elections: Comparing Prediction Markets, Polls, and their Biases. Public Opinion Quarterly 73, 895–916.

Rothschild, D., 2014. Combining Forecasts for Elections: Accurate, Relevant, and Timely. Microsoft Research, Working paper.

Shivakumar, L., 2004. Aggregate Earnings, Stock Market Returns and Macroeconomic Activity: A Discussion of 'Does Earnings Guidance Affect Market Returns? The Nature and Information Content of Aggregate Earnings Guidance'. Journal of Accounting and Economics 44, 64–73

Stigler, G., 1973. General Economic Conditions and National Elections. American Economic Review 63, 160-67.

Wisniewski, T., Lightfoot, G., Lilley, S., 2012. Speculating on Presidential Success: Exploring the Link between the Price-Earnings Ratio and Approval Ratings. Journal of Economics and Finance 36, 106-122.

Wolfers, J., Zitzewitz, E., 2004. Prediction Markets. Stanford University, Working paper.

Wolfers, J., Zitzewitz, E., 2007. Prediction Markets in Theory and Practice. National Bureau of Economic Research, Working paper.

Wolfers, J., 2007. Are Voters Rational? Evidence from Gubernatorial Elections. University of Pennsylvania, Working Paper.

Table 1: Aggregate Earnings and Macroeconomic Information
Descriptive Statistics

	N	*Mean*	*Std. Dev.*	*p25*	*Median*	*p75*
$Fct\_Revision_t$	276	-0.01	0.01	-0.01	-0.01	0.00
$\Delta Earnings_t$	276	-0.01	0.52	-0.04	0.00	0.04
$Unemployment_t$	276	6.07	1.62	4.80	5.60	7.00
$\Delta Unemployment_t$	276	0.01	0.16	-0.10	0.00	0.10
$Inflation_t$	276	2.72	1.26	2.03	2.78	3.31
$\Delta Inflation_t$	276	-0.01	0.42	-0.21	-0.01	0.20
Ind_Prod_t	276	87.29	13.19	75.05	92.28	96.52
ΔInd_Prod_t	276	0.13	0.60	-0.14	0.20	0.48
$Personal\_Income_t$	276	49.20	7.61	41.47	50.74	56.33
$\Delta Personal\_Income_t$	276	0.09	0.35	-0.02	0.09	0.19
$Consumer\_Sent_t$	276	86.41	13.29	76.15	88.45	94.70
$\Delta Consumer\_Sent_t$	276	-0.06	4.20	-2.45	-0.25	2.35
GDP_Growth_t	276	0.00	0.00	0.00	0.00	0.00

Note: This table presents summary statistics on aggregate accounting measures and future levels or changes in economic output. The sample period covers 1990-2012. $Fct\_Revision_t$ equals the monthly percentage change in aggregate analyst forecasts. $\Delta Earnings$ is the monthly percentage change in aggregate-level earnings. *Unemployment* is the monthly level in the unemployment rate. $\Delta Unemployment$ is the monthly change in the unemployment rate. *Inflation* is the monthly level in year-over-year percent growth in CPI. $\Delta Inflation$ is the monthly change in year-over-year percent growth in CPI. *Ind_Prod* is the monthly level in the industrial production index. ΔInd_Prod is the monthly change in the industrial production index. *Personal_Income* is the monthly level in real personal income. $\Delta Personal\_Income$ is the monthly change in real personal income. *Consumer_Sent* is the monthly level in the Michigan Consumer Confidence Index of citizens' economic sentiment. $\Delta Consumer\_Sent$ is the monthly change in the Michigan Consumer Confidence Index of citizens' economic sentiment. *GDP_Growth* is the monthly change in real Gross Domestic Product.

Table 2: Aggregate Earnings and Macroeconomic Information
Pearson correlations among accounting measures and future economic outcomes

	$Fct\_Revision_{t}$	$\Delta Earnings_{t}$
$Unemployment_{t+1}$	-0.06	0.03
$\Delta Unemployment_{t+1}$	-0.37 ***	-0.15 **
$Unemployment_{t+2}$	-0.09	0.01
$\Delta Unemployment_{t+2}$	-0.32 ***	-0.14 **
$Inflation_{t+1}$	0.05	0.02
$\Delta Inflation_{t+1}$	0.27 ***	0.20 ***
$Inflation_{t+2}$	0.09	0.03
$\Delta Inflation_{t+2}$	0.15 **	0.05
Ind_Prod_{t+1}	0.27 ***	-0.04
ΔInd_Prod_{t+1}	0.40 ***	0.27 ***
Ind_Prod_{t+2}	0.29 ***	-0.02
ΔInd_Prod_{t+2}	0.31 ***	0.23 ***
$Personal\_Income_{t+1}$	0.18 ***	-0.05
$\Delta Personal\_Income_{t+1}$	0.07	0.01
$Personal\_Income_{t+2}$	0.20 ***	-0.05
$\Delta Personal\_Income_{t+2}$	0.20 ***	0.13 **
$Consumer\_Sent_{t+1}$	0.24 ***	0.09
$\Delta Consumer\_Sent_{t+1}$	-0.04	-0.04
$Consumer\_Sent_{t+2}$	0.22 ***	0.09
$\Delta Consumer\_Sent_{t+2}$	-0.06	0.01
GDP_Growth_{t+1}	0.32 ***	0.20 ***
GDP_Growth_{t+2}	0.24 ***	0.21 ***

Note: This table presents bivariate correlations between aggregate accounting measures and future levels or changes in economic output. The sample period covers 1990-2012. $Fct\_Revision_{t}$ equals the monthly percentage change in aggregate analyst forecasts. $\Delta Earnings$ is the monthly percentage change in aggregate-level earnings. *Unemployment* is the monthly level in the unemployment rate. $\Delta Unemployment$ is the monthly change in the unemployment rate. *Inflation* is the monthly level in year-over-year percent growth in CPI. $\Delta Inflation$ is the monthly change in year-over-year percent growth in CPI. *Ind_Prod* is the monthly level in the industrial production index. ΔInd_Prod is the monthly change in the industrial production index. *Personal_Income* is the monthly level in real personal income. $\Delta Personal\_Income$ is the monthly change in real personal income. *Consumer_Sent* is the monthly level in the Michigan Consumer Confidence Index of citizens' economic sentiment. $\Delta Consumer\_Sent$ is the monthly change in the Michigan Consumer Confidence Index of citizens' economic sentiment. *GDP_Growth* is the monthly change in real Gross Domestic Product. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3: Regressions of Future Levels of Macroeconomic Information on Aggregate Earnings

Panel A: Association between aggregate accounting measures and future level of unemployment (monthly)

	Prediction	*Unemployment* $_{t+1}$		*Unemployment* $_{t+2}$	
$Fct\_Revision_t$	-	-4.07 ***		-0.05 **	
		(0.00)		(0.04)	
$\Delta Earnings_t$	-		-0.51 **		-0.09 *
			(0.02)		(0.06)
Unemployment $_t$	+	1.00 ***	1.00 ***	1.00 ***	0.99 ***
		(0.00)	(0.00)	(0.00)	(0.00)
Intercept	?	-0.00	-0.01	0.02	0.05
		(0.98)	(0.75)	(0.57)	(0.32)
Adj. R^2 *(%)*		99.2%	99.1%	99.1%	97.9%
N		276	276	276	276

Panel B: Association between aggregate accounting measures and future level of inflation (monthly)

	Prediction	$Inflation_{t+1}$		$Inflation_{t+2}$	
$Fct\_Revision_t$	+	7.66 ***		11.55 ***	
		(0.00)		(0.00)	
$\Delta Earnings_t$	+		0.95 ***		0.18 ***
			(0.00)		(0.01)
$Inflation_t$	+	0.95 ***	0.16 ***	0.85 ***	0.85 ***
		(0.00)	(0.00)	(0.00)	(0.00)
Intercept	?	0.20 ***	0.14	0.48 ***	0.40 ***
		(0.01)	(0.07)	(0.00)	(0.00)
Adj. R^2 *(%)*		90.0%	89.6%	73.4%	72.2%
N		276	276	276	276

Panel C: Association between aggregate accounting measures and future level of industrial production (monthly)

	Prediction	Ind_Prod_{t+1}		Ind_Prod_{t+2}	
$Fct\_Revision_t$	+	18.88 ***		34.09 ***	
		(0.00)		(0.00)	
$\Delta Earnings_t$	+		0.31 ***		0.57 ***
			(0.00)		(0.00)
Ind_Prod_t	+	0.99 ***	1.00 ***	0.98 ***	0.99 ***
		(0.00)	(0.00)	(0.00)	(0.00)
Intercept	?	1.13 ***	0.49 ***	2.23 ***	1.04 ***
		(0.00)	(0.01)	(0.00)	(0.00)
Adj. R^2 *(%)*		99.8%	99.8%	99.6%	99.5%
N		276	276	276	276

Panel D: Association between aggregate accounting measures and future level of personal income (monthly)

	Prediction	*Personal_Income* $_{t+1}$		*Personal_Income* $_{t+2}$	
Fct_Revision$_t$	+	1.80		7.05 ***	
		(0.24)		(0.00)	
ΔEarnings$_t$	+		0.01		0.10 **
			(0.74)		(0.04)
Personal_Income $_t$	+	1.00 ***	1.00 ***	1.00 ***	1.00 ***
		(0.00)	(0.00)	(0.00)	(0.00)
Intercept	?	0.09	0.05	0.32	0.12
		(0.58)	(0.76)	(0.14)	(0.54)
Adj. R^2 *(%)*		99.8%	99.8%	99.6%	99.6%
N		276	276	276	276

Panel E: Association between aggregate accounting measures and future level of consumer sentiment (monthly)

	Prediction	*Consumer_Sent* $_{t+1}$		*Consumer_Sent* $_{t+2}$	
Fct_Revision$_t$	+	0.95		-8.20	
		(0.96)		(0.74)	
ΔEarnings$_t$	+		-0.19		-0.01
			(0.61)		(0.99)
Consumer_Sent $_t$	+	0.95 ***	0.95 ***	0.91 ***	0.90 ***
		(0.00)	(0.00)	(0.00)	(0.00)
Intercept	?	4.14 **	4.05 **	7.93 ***	8.18 ***
		(0.01)	(0.02)	(0.00)	(0.00)
Adj. R^2 *(%)*		90.2%	90.2%	81.4%	81.4%
N		276	276	276	276

Note: This table presents the estimation of Equation (1) on the associations between future levels in economic output and aggregate accounting measures. The sample period covers 1990-2012. *Fct_Revision*$_t$ equals the monthly percentage change in aggregate analyst forecasts. *ΔEarnings* is the monthly percentage change in aggregate-level earnings. *Unemployment* is the monthly level in the unemployment rate. *Inflation* is the monthly level in year-over-year percent growth in CPI. *Ind_Prod* is the monthly level in the industrial production index. *Personal_Income* is the monthly level in real personal income. *Consumer_Sent* is the monthly level in the Michigan Consumer Confidence Index of citizens' economic sentiment. Standard errors are estimated using Newey-West adjustment for autocorrelation. In parentheses, p-values are presented. *GDP_Growth* is the monthly change in real Gross Domestic Product. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Regressions of Future Changes in Macroeconomic Information on Aggregate Earnings

Panel A: Association between aggregate accounting measures and future changes in unemployment (monthly)

	Prediction	*ΔUnemployment* $_{t+1}$		*ΔUnemployment* $_{t+2}$	
Fct_Revision$_t$	-	-3.95 ***		-2.61 ***	
		(0.00)		(0.00)	
ΔEarnings$_t$	-		-0.04 *		-0.03
			(0.06)		(0.04)
ΔUnemployment $_t$	+	0.03	0.15 *	0.22 ***	0.29 ***
		(0.69)	(0.08)	(0.00)	(0.00)
Intercept	?	-0.02 **	0.01	-0.01	0.01
		(0.04)	(0.41)	(0.20)	(0.49)
Adj. R^2 *(%)*		13.4%	8.1%	3.6%	9.7%
N		276	276	276	276

Panel B: Association between aggregate accounting measures and future changes in inflation (monthly)

	Prediction	*ΔInflation*$_{t+1}$		*ΔInflation*$_{t+2}$	
Fct_Revision$_t$	+	4.04 **		5.57 ***	
		(0.03)		(0.01)	
ΔEarnings$_t$	+	0.33 ***	0.07	-0.10	0.05
		(0.00)	(0.12)	(0.13)	(0.13)
ΔInflation$_t$	+		0.36 ***		-0.05
			(0.00)		(0.52)
Intercept	?	0.02	-0.01	0.03	-0.01
		(0.37)	(0.79)	(0.29)	(0.68)
Adj. R^2 *(%)*		16.0%	15.0%	2.5%	0.0%
N		276	276	276	276

Panel C: Association between aggregate accounting measures and future changes in industrial production (monthly)

	Prediction	*ΔInd_Prod*$_{t+1}$		*ΔInd_Prod*$_{t+2}$	
Fct_Revision$_t$	+	15.11 ***		9.56 **	
		(0.00)		(0.01)	
ΔEarnings$_t$	+	0.10	0.28 ***	0.22 ***	0.23 ***
		(0.39)	(0.00)	(0.00)	(0.00)
ΔInd_Prod$_t$	+		0.20		0.28 ***
			(0.11)		(0.00)
Intercept	?	0.24 ***	0.11 **	0.18 ***	0.10 ***
		(0.00)	(0.02)	(0.00)	(0.01)
Adj. R^2 *(%)*		16.0%	10.4%	13.2%	12.5%
N		276	276	276	276

Panel D: Association between aggregate accounting measures and future changes in personal income (monthly)

	Prediction	*ΔPersonal_Income* $_{t+1}$		*ΔPersonal_Income* $_{t+2}$	
Fct_Revision$_t$	+	1.92		4.86 **	
		(0.18)		(0.01)	
ΔEarnings$_t$	+		0.00		0.09 ***
			(0.97)		(0.01)
ΔPersonal_Income $_t$	+	-0.08	-0.08	-0.05	-0.02
		(0.63)	(0.66)	(0.59)	(0.83)
Intercept	?	0.12 ***	0.10 ***	0.14 ***	0.10 ***
		(0.00)	(0.00)	(0.00)	(0.00)
Adj. R^2 (%)		0.5%	0.1%	3.4%	1.1%
N		276	276	276	276

Panel E: Association between aggregate accounting measures and future changes in consumer sentiment (monthly)

	Prediction	*ΔConsumer_Sent* $_{t+1}$		*ΔConsumer_Sent* $_{t+2}$	
Fct_Revision$_t$	+	-10.56		-18.17	
		(0.56)		(0.34)	
ΔEarnings$_t$	+		-0.31		0.10
			(0.45)		(0.76)
ΔConsumer_Sent $_t$	+	-0.02	-0.01	-0.12 **	-0.12 **
		(0.80)	(0.82)	(0.04)	(0.04)
Intercept	?	-0.15	-0.07	-0.21	-0.07
		(0.61)	(0.79)	(0.47)	(0.79)
Adj. R^2 (%)		-0.6%	-0.6%	1.2%	0.6%
N		276	276	276	276

Panel F: Association between aggregate accounting measures and future changes in GDP (monthly)

	Prediction	*ΔConsumer_Sent* $_{t+1}$		*ΔConsumer_Sent* $_{t+2}$	
Fct_Revision$_t$	+	0.01		0.00	
		(0.13)		(0.61)	
ΔEarnings$_t$	+		0.00 **		0.00 ***
			(0.02)		(0.00)
GDP_Growth$_t$	+	0.80 ***	0.81 ***	0.63 ***	0.62 ***
		(0.00)	(0.00)	(0.00)	(0.00)
Intercept	?	0.00 ***	0.00 ***	0.00 ***	0.00 ***
		(0.00)	(0.00)	(0.00)	(0.00)
Adj. R^2 (%)		66.9%	66.9%	40.2%	40.9%
N		276	276	276	276

Note: This table presents the estimation of Equation (2) on the associations between future changes in economic output and aggregate accounting measures. The sample period covers 1990-2012. *Fct_Revision*$_t$ equals the monthly percentage change in aggregate analyst forecasts. *ΔEarnings* is the monthly percentage change in aggregate-level earnings. *ΔUnemployment* is the monthly change in the unemployment rate. *ΔInflation* is the monthly change in year-over-year percent growth in CPI. *ΔInd_Prod* is the monthly change in the industrial production index. *ΔPersonal_Income* is the monthly change in real personal income. *ΔConsumer_Sent* is the monthly change in the Michigan Consumer Confidence Index of citizens' economic sentiment. Standard errors are estimated using Newey-West adjustment for autocorrelation. In parentheses, p-values are presented. *GDP_Growth* is the monthly change in real Gross Domestic Product. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Aggregate Earnings, Macroeconomic Information, and Changes in the Probability of Incun Party Victory in U.S. Presidential Elections

Descriptive Statistics

	N	*Mean*	*Std. Dev.*	*p25*	*Median*	*p75*
$\Delta Prob\_Inc\_Win_t$	78	-0.01	0.12	-0.05	0.00	0.06
$Fct\_Revision_t$	78	-0.01	0.01	-0.01	-0.01	0.00
$\Delta Earnings_t$	78	-0.03	0.15	-0.05	0.00	0.02
ΔPE_t	78	-0.09	0.88	-0.35	0.17	0.49
$Return_t$	78	0.00	0.04	-0.01	0.01	0.03
$\Delta Approval_t$	78	0.00	0.02	-0.01	0.00	0.01
$\Delta Unemployment_t$	78	0.00	0.16	-0.10	0.00	0.10
$\Delta Inflation_t$	78	-0.01	0.41	-0.21	-0.05	0.19
ΔInd_Prod_t	78	0.08	0.70	-0.14	0.09	0.50
$\Delta Personal\_Income_t$	78	0.07	0.39	-0.05	0.09	0.18
$\Delta Consumer\_Sent_t$	78	-0.20	3.82	-2.50	-0.45	2.50
GDP_Growth_t	78	0.00	0.00	0.00	0.00	0.00

Note: This table presents summary statistics of the aggregate earnings news and election variables. The sample period covers the 1992, 1996, 2000, 2004, 2008, a nd 2012 presidential elections. $\Delta Prob\_Inc\_Win_t$ is the monthly change in the probability of incumbent party victory compiled using Iowa Electronic Market winner-take-all contracts. $Fct\_Revision_t$ equals the monthly percentage change in aggregate analyst forecasts . $\Delta Earnings_t$ is the monthly percentage change in aggregate-level earnings. ΔPE_t equals the monthly change in price-earnings ratio derived from data reported on the website of Robert Shiller. $Return_t$ is the monthly index return on the S&P 500. $\Delta Approval_t$ is the monthly change in the incumbent president's average approval rating. $\Delta Unemployment_t$ is the monthly change in the unemployment rate. $\Delta Inflation_t$ is the monthly change in year-over-year percent growth in CPI. ΔInd_Prod_t is the monthly change in the industrial production index. $\Delta Personal\_Income_t$ is the monthly change in real personal income. $\Delta Consumer\_Sent_t$ is the monthly change in the Michigan Consumer Confidence Index of citizens' economic sentiment. GDP_Growth_t is the monthly change in real Gross Domestic Product.

Table 6: Aggregate Earnings, Macroeconomic Information, and Changes in the Probability of Incumbent Party Victory in U.S. Presidential Elections

Pearson correlations among aggregate earnings, election, and economic variables

		1	2	3	4	5	6	7	8	9	10	11	12
1	$\Delta Prob\_Inc\_Win_t$	1.00											
2	$Fct\_Revision_t$	0.39 ***	1.00										
3	$\Delta Earnings_t$	0.58 ***	0.55 ***	1.00									
4	ΔPE_t	0.43 ***	0.26 **	0.56 ***	1.00								
5	$Return_t$	0.41 ***	0.26 **	0.52 ***	0.74 ***	1.00							
6	$\Delta Approval_t$	0.27 **	0.12	0.19 *	0.20 *	0.21 *	1.00						
7	$\Delta Unemployment_t$	-0.19	-0.12	-0.31 ***	-0.24 **	-0.25 **	0.14	1.00					
8	$\Delta Inflation_t$	0.16	0.11	0.28 **	0.05	0.08	-0.04	0.06	1.00				
9	ΔInd_Prod_t	0.10	0.23 **	0.03	0.05	0.14	0.06	-0.18	0.07	1.00			
10	$\Delta Personal\_Income$	-0.07	0.06	-0.01	0.19 *	0.17	-0.01	0.04	-0.31 ***	0.10	1.00		
11	$\Delta Consumer\_Sent_t$	0.21 *	0.12	0.30 ***	0.29 **	0.12	0.13	-0.12	-0.11	-0.25 **	0.03	1.00	
12	GDP_Growth_t	0.28 **	0.40 ***	0.53 ***	0.37 ***	0.44 ***	0.17	-0.44 ***	0.04	0.51 ***	0.07	0.07	1.00

Note: This table presents bivariate correlations between variables. The sample period covers the 1992, 1996, 2000, 2004, 2008, and 2012 presidential elections. $\Delta Prob\_Inc\_Win_t$ is the monthly change in the probability of incumbent party victory compiled using Iowa Electronic Market winner-take-all contracts. $Fct\_Revision_t$ equals the monthly percentage change in aggregate analyst forecasts. $\Delta Earnings_t$ is the monthly percentage change in aggregate-level earnings. ΔPE_t equals the monthly change in price-earnings ratio derived from data reported on the website of Robert Shiller. $Return_t$ is the monthly index return on the S&P 500. $\Delta Approval_t$ is the monthly change in the incumbent president's average approval rating. $\Delta Unemployment_t$ is the monthly change in the unemployment rate. $\Delta Inflation_t$ is the monthly change in year-over-year percent growth in CPI. ΔInd_Prod_t is the monthly change in the industrial production index. $\Delta Personal\_Income_t$ is the monthly change in real personal income. $\Delta Consumer\_Sent_t$ is the monthly change in the Michigan Consumer Confidence Index of citizens' economic sentiment. GDP_Growth_t is the monthly change in real Gross Domestic Product. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7: Regressions of Monthly Changes in the Probability of Incumbent Party Victory in U.S. Presidential Elections o Aggregate Earnings and Controls

Panel A: Association between changes in voter preferences and aggregate earnings revisions

	Prediction	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
$Fct\_Revision_t$	+	5.20 ***	3.98 **	4.07 ***	3.82 **	3.92 ***
		(0.01)	(0.03)	(0.01)	(0.02)	(0.01)
ΔPE_t	+		0.05 **		0.04 **	
			(0.02)		(0.03)	
$Return_t$	+			1.02 ***		0.92 ***
				(0.00)		(0.00)
$\Delta Approval_t$	+				1.05	1.06
					(0.18)	(0.14)
Intercept	?	0.02	0.02 **	0.01	0.02 **	0.01
		(0.12)	(0.03)	(0.21)	(0.02)	(0.17)
Adj. R^2 *(%)*		14.3%	24.9%	23.4%	26.6%	25.2%
N		78	78	78	78	78

Panel B: Association between changes in voter preferences and aggregate earnings growth

	Prediction	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
$\Delta Earnings_t$	+	0.49 ***	0.42 ***	0.42 ***	0.40 ***	0.41 **
		(0.00)	(0.00)	(0.01)	(0.00)	(0.01)
ΔPE_t	+		0.02		0.02	
			(0.34)		(0.39)	
$Return_t$	+			0.45		0.38
				(0.21)		(0.27)
$\Delta Approval_t$	+				0.92	0.92
					(0.19)	(0.16)
Intercept	?	0.01	0.00	0.00	0.00	0.00
		(0.70)	(0.67)	(0.90)	(0.70)	(0.92)
Adj. R^2 *(%)*		32.5%	33.3%	34.6%	33.2%	34.4%
N		78	78	78	78	78

Note: This table reports the estimation of Equation (3) on relation between changes in Iowa Electronic Market election expectations and aggregate earnings. The sample period covers the 1992, 1996, 2000, 2004, 2008, a nd 2012 presidential elections. $\Delta Prob\_Inc\_Win_t$ is the monthly change in the probability of incumbent party victory compiled using Iowa Electronic Market winner-take-all contracts. $Fct\_Revision_t$ equals the monthly percentage change in aggregate analyst forecasts. $\Delta Earnings_t$ is the monthly percentage change in aggregate-level earnings. ΔPE_t equals the monthly change in price-earnings ratio derived from data reported on the website of Robert Shiller. $Return_t$ is the monthly index return on the S&P 500. $\Delta Approval_t$ is the monthly change in the incumbent president's average approval rating. Standard errors are clustered by election cycle. In parentheses, p-values are presented. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8: Regressions of Monthly Changes in the Probability of Incumbent Party Victory in U.S. Presidential Elections on Aggregate Earnings, Macroeconomic Indicators, and Controls

Association between changes in voter preferences, aggregate earnings, and economic indicators

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
$Fct\_Revision_t$		4.08 **		3.62 *		3.73 *	
		(0.05)		(0.09)		(0.06)	
$\Delta Earnings_t$			0.54 ***		0.47 ***		0.48 **
			(0.01)		(0.01)		(0.03)
ΔPE_t				0.05 **	0.03		
				(0.04)	(0.18)		
$Return_t$						0.99 **	0.57
						(0.02)	(0.15)
$\Delta Unemployment_t$	-0.05	-0.07	-0.00	-0.04	0.01	-0.04	0.00
	(0.59)	(0.60)	(0.98)	(0.76)	(0.95)	(0.70)	(0.96)
$\Delta Inflation_t$	0.05 **	0.04 **	-0.02	0.02	-0.02	0.02 *	-0.02
	(0.04)	(0.02)	(0.45)	(0.21)	(0.46)	(0.08)	(0.45)
ΔInd_Prod_t	0.00	-0.00	0.03	0.01	0.03	0.00	0.03
	(0.92)	(0.93)	(0.24)	(0.79)	(0.23)	(0.81)	(0.24)
$\Delta Personal\_Income_t$	-0.01	-0.02	-0.03 **	-0.04 **	-0.04 **	-0.04 ***	-0.04 ***
	(0.42)	(0.10)	(0.05)	(0.02)	(0.04)	(0.00)	(0.01)
$\Delta Consumer\_Sent_t$	0.01 **	0.01 **	0.00	0.00 **	0.00	0.00 *	0.00
	(0.05)	(0.03)	(0.35)	(0.02)	(0.43)	(0.08)	(0.38)
GDP_Growth_t	12.00	6.13	-7.41	0.92	-8.08	-0.61	-9.30
	(0.26)	(0.63)	(0.60)	(0.95)	(0.56)	(0.97)	(0.53)
Intercept	-0.02 *	0.01	0.02	0.02	0.00	0.02	-0.00
	(0.65)	(0.45)	(0.17)	(0.29)	(0.81)	(0.41)	(0.83)
Adj. R^2 *(%)*	7.9%	15.0%	29.7%	22.8%	31.1%	22.2%	31.2%
N	78	78	78	78	78	78	78

Note: This table reports the estimation of Equation (3) on relation between changes in Iowa Electronic Market election expectations, aggregate earnings, and economic statistics. The sample period covers the 1992, 1996, 2000, 2004, 2008, a nd 2012 presidential elections. $\Delta Prob\_Inc\_Win_t$ is the monthly change in the probability of incumbent party victory compiled using Iowa Electronic Market winner-take-all contracts. $Fct\_Revision_t$ equals the monthly percentage change in aggregate analyst forecasts. $\Delta Earnings_t$ is the monthly percentage change in aggregate-level earnings. ΔPE_t equals the monthly change in price-earnings ratio derived from data reported on the website of Robert Shiller. $Return_t$ is the monthly index return on the S&P 500. $\Delta Approval_t$ is the monthly change in the incumbent president's average approval rating. $\Delta Unemployment_t$ is the monthly change in the unemployment rate. $\Delta Inflation_t$ is the monthly change in year-over-year percent growth in CPI. ΔInd_Prod_t is the monthly change in the industrial production index. $\Delta Personal\_Income_t$ is the monthly change in real personal income. $\Delta Consumer\_Sent_t$ is the monthly change in the Michigan Consumer Confidence Index of citizens' economic sentiment. Standard errors are clustered by election cycle. In parentheses, p-values are presented. GDP_Growth_t is the monthly change in real Gross Domestic Product.***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9: Aggregate Earnings Disaggregation and Changes in the Probability of Incumbent Party Victory in U.S. Presidential
Pearson correlations among aggregate earnings and election variables

		1	*2*	*3*	*4*	*5*	*6*	*7*
1	$\Delta Prob\_Inc\_Win_t$	1.00						
2	$Fct\_Revision_t$	0.39 ***	1.00					
3	$Fct\_Revision_t$ *- S&P 500 Firms*	0.29 ***	0.76 ***	1.00				
4	$Fct\_Revision_t$ *- non-S&P 500 Firms*	0.32 ***	0.81 ***	0.25 **	1.00			
5	$\Delta Earnings_t$	0.58 ***	0.55 ***	0.55 ***	0.34 ***	1.00		
6	$\Delta Earnings_t$ *- S&P 500 Firms*	0.42 ***	0.43 ***	0.50 ***	0.22	0.85 ***	1.00	
7	$\Delta Earnings_t$ *- non-S&P 500 Firms*	0.59 ***	0.53 ***	0.50 ***	0.35 ***	0.97 ***	0.71 ***	1.00

Note: This table presents bivariate correlations between variables. The sample period covers the 1992, 1996, 2000, 2004, 2008, and 2012 presidential elections. $\Delta Prob\_Inc\_Win_t$ is the monthly change in the probability of incumbent party victory compiled using Iowa Electronic Market winner-take-all contracts. $Fct\_Revision_t$ equals the monthly percentage change in aggregate analyst forecasts. $Fct\_Revision_t$ *- S&P 500* equals the monthly percentage change in aggregate analyst forecasts for S&P 500 firms. $Fct\_Revision_t$ *- non-S&P 500* equals the monthly percentage change in aggregate analyst forecasts for firms not in the S&P 500 index. $\Delta Earnings_t$ is the monthly percentage change in aggregate-level earnings for S&P 500 firms. $\Delta Earnings_t$ *- S&P 500* is the monthly percentage change in aggregate-level earnings. $\Delta Earnings_t$ *- non-S&P 500* is the monthly percentage change in aggregate-level earnings for firms not in the S&P 500 index. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 10: Regressions of Three-Month Change in the Probability of Incumbent Party Victory in U.S. Presidential Elections on Aggregate Earnings and Controls

Panel A: Association between changes in voter preferences and aggregate earnings revisions

	Prediction	*(1)*	*(2)*	*(3)*
$Fct\_Revision_t$	+	7.87 **	5.83 *	6.24
		(0.02)	(0.07)	(0.13)
ΔPE_t	+		0.07 ***	
			(0.00)	
$Return_t$	+			1.25 *
				(0.05)
Intercept	?	0.08	0.07	0.06
		(0.21)	(0.19)	(0.31)
Adj. R^2 *(%)*		17.3%	28.2%	32.2%
N		66	66	66

Panel B: Association between changes in voter preferences and aggregate earnings growth

	Prediction	*(1)*	*(2)*	*(3)*
$\Delta Earnings_t$	+	0.63 ***	0.51 ***	0.56 **
		(0.00)	(0.00)	(0.02)
ΔPE_t	+		0.04 **	
			(0.05)	
$Return_t$	+			0.49
				(0.41)
Intercept	?	0.05	0.05	0.04
		(0.27)	(0.23)	(0.30)
Adj. R^2 *(%)*		32.4%	33.6%	32.3%
N		66	66	66

Note: This table reports the estimation of Equation (4) on relation between changes in Iowa Electronic Market election expectations and aggregate earnings. The sample period covers the 1992, 1996, 2000, 2004, 2008, and 2012 presidential elections. $\Delta Prob\_Inc\_Win_{t/t-3}$ is the change from month *t-3* to *t* in the probability of incumbent party victory compiled using Iowa Electronic Market winner-take-all contracts. $Fct\_Revision_t$ equals the monthly percentage change in aggregate analyst forecasts . $\Delta Earnings_t$ is the monthly percentage change in aggregate-level earnings. ΔPE_t equals the monthly change in price-earnings ratio derived from data reported on the website of Robert Shiller. $Return_t$ is the monthly index return on the S&P 500. Standard errors are clustered by election cycle. In parentheses, p-values are presented. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Appendix A
Empirical work on "economic voting"

Author(s)	*Economic Variable(s) Used*
Kramer (1971)	Election year personal income; unemployment
Tufte (1978)	Election year personal income
Fair (1978)	GNP; inflation rate
Hibbs (1982)	Geometric average of past income
Lewis-Beck & Rice (1984)	GNP
Peltzman (1987)	Income; Inflation rate
Erikson (1989)	GNP; Income
Wlezien & Erikson (1996)	Statistical combination of leading indicators
Holbrook (1996)	Personal finances

Note: This table reports highly cited studies in both economics and political science on the topic of "economic voting." The corresponding economic indicator(s) used in the study is provided.

Appendix B
Political Prediction Markets

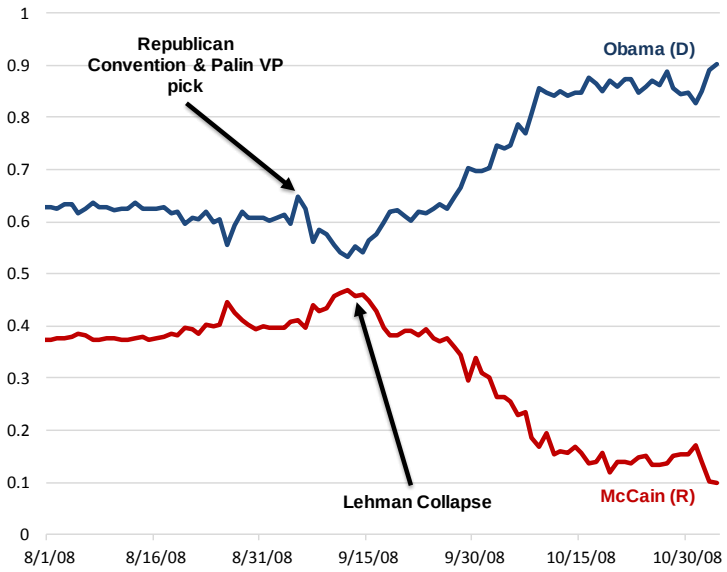
The Iowa Electronic Market (IEM)

The Iowa Electronic Market is a prediction market operated by the University of Iowa. These markets are small-scale, real-money futures markets where contract payoffs depend on the occurrence of certain economic and political events. The IEM is the oldest continuously running prediction market on politics in the U.S.

The IEM is open to traders worldwide. Traders can open accounts for $5 to $500. They then use their funds to buy and sell contracts. Traders therefore have the opportunity to profit from their trades but must also bear the risk of losing money. The IEM is operated as a not-for-profit venture. No commissions or transactions fees are charged, and the method of issuing contracts and making final payoffs on these contracts ensures that the IEM does not realize financial profits or suffer losses from market transactions.

The IEM launched a vote-share market in 1988. In 1992, it introduced a winner-takes-all (WTA) market. This type of market trades binary options which pay, for example, one dollar if the chosen candidate wins and nothing otherwise. Thus, an investor who pays $0.60 for a Democrat to Win contract, and holds the contract through Election Day, earns $0.40 if the Democrat wins and loses $0.60 if the Democrat loses. The trader should be willing to pay up to the price that equals their estimated probability of the Democrat winning the election. The market price is the value at which, if a marginal investor were willing to buy above it, investors would sell the contract and drive the price back down to that market price (and vice-versa if an investor were willing to sell below it); thus, the price is an aggregation of the subjective probability beliefs of all investors (Rothschild, 2009).

The following graph reports daily prices for the IEM WTA market for the 2008 election campaign from August 2008 to November 2008. It illustrates how market prices react to both political (e.g., the Republican Convention) and economic events (e.g., the Lehman Collapse and Great Recession).



Advantages and Biases of Election Futures Markets' Data

As noted, the IEM has a $500 limit on individual investments, potentially limiting efficiency of the market. Other comparable markets do not feature such dollar limitations. However, empirical evidence documents that these markets, regardless of structure, exhibit similar degrees of informational efficiency and accuracy. Researchers highlight the transaction and opportunity costs of investing in prediction markets. These studies document how investors in prediction markets behave as if they were risk-loving (Manski, 2006; Wolfers and Zitzewitz, 2007).

The WTA market tends to overestimate the degree to which unexpected or longshot events can overtake the market's expectation of the point spread. In other words, the market greatly overvalues longshots. For instance, throughout most of Bill Clinton's two victorious presidential

campaigns, the Iowa market overestimated the Republican nominee's chance of catching up compared to what a reasonable interpretation of the election fundamentals would suggest (Erikson and Wlezien, 2008).

Interestingly, the degree to which market prices deviate from the correct vote share or outcome varies from election cycle to election cycles. Prediction market's worst performances tend to be concentrated in the early years. For the Iowa Electronic Market, in 1992, the WTA market's first year, the market waited for a Republican trend that never arrived. In tossup elections, whenever the poll projection wandered far from a tossup, the market price would typically be, correctly, more in the direction of an even split.

Advantageously, sophisticated prediction markets meet the standards of weak-form efficiency by rapidly reflecting new information (Wolfers and Zitzewitz, 2004). Furthermore, attempts at manipulation appear to fail and few arbitrage opportunities appear to exist (Camerer, 1998; Rhode and Strumpf, 2004). Additionally, high publicity, high entertainment value markets, like political markets, have more information enabling (potential) investor disagreement (Wolfers and Zitzewitz, 2004).

One might object to using election futures markets data because they believe it is subject to partisan or participant bias because the universe of market participants is limited. The potential for partisan bias exists due the demographic composition of market participants. For example, the individuals who participate in these markets are more likely to be white, higher income, conservative, and Republican (Forsythe et al., 1992). Also traders in these markets tend to be biased towards the candidate or party they support (Forsythe et al., 1999). However, a growing literature demonstrates that there is no partisan bias in the market price, suggesting that election futures markets are more reliable than polls for predicting election outcomes. For example, the

election-eve IEM forecast has a lower mean prediction error than polls in fifteen elections for which data on both exist. Also, when comparing major poll predictions of US Presidential election outcomes to prices in the prediction market, the IEM was closer to the election outcome 76% of the time and was not susceptible to predictable surges and declines that were observed in polling data (Berg et al. 2008). The literature on these markets suggests that futures prices are currently the best available data for measuring election expectations. Thus, given that market prices are informed by both polls and additional information beyond the polls, it is widely believed that markets are superior to the polls for forecasting elections (Erikson and Wlezien, 2008a). Market participants can take into account other information that extends beyond the public's current period preferences. In fact, they have the incentive to do so.