1 Theory

The notion that citizens will evaluate the incumbent as a part of their voting decision goes is inevitably Downsian: a voter will choose the party that *maximizes* its utility income among the available alternative (1957, p. ch.3), and an appropriate estimation of utility requires a retrospective look at parties' performance. Utility has an unavoidable economic connotation, which is why retrospective voting literature has produced a large amount of work on the public's evaluation of politician's management of the economy. Economic voting research has long discussed if the economy truly explains voting behaviour, or if the economy is seen through partisan lens (Lewis-Beck, 2006; Lewis-Beck et al., 2008; Wlezien et al., 1997). Difficult identification challenges emerge from this type of performance models, given that multiple factors are endogenous to the public's perceptions of the economy and vote choice (Anderson, 2007; Kiewiet & Rivers, 1984). In any case, what the literature determines is that the economy is always a statistically significant *predictor* of voting behaviour, even if endogenous, which is why any formal model of voting behaviour includes some form of economic performance evaluation.

Most retrospective voting research in Latin America has focused on economic voting too, as well as on populism and the recent rise of leftist parties and populism (Benton, 2005; Lee, 2014; Murillo et al., 2010; Wiesehomeier & Doyle, 2013). The literature also finds no clear conclusions, with some evidence for Latin American voters behaving similar to developed country voters: evaluating incumbents prospectively at the beginning of the term and retrospectively

at the end of it. However, Veiga (2013) finds that usual macroeconomic variables are not reliable predictors of vote choice on Latin American countries from 1995 to 2010. Rather, social investment does show a significant effect on ruling party electoral outcomes (p.20). Regarding leftist parties and populism, evidence has shown that the early 2000's *pink tide* in Latin America may have been a result of retrospective voting and discontent with establishment parties (Wiesehomeier & Doyle, 2013).

The literature on presidential approval is adjacent to economic voting, since it has mostly focused on estimating *popularity functions* to determine the relationship between presidential popularity and other variables (Berlemann & Enkelmann, 2014). Macroeconomic variables such as inflation and unemployment have been found to significantly affect presidential approval in some cases, however, no definitive results have been found. Much like economic voting, this strand of research is highly dependent on context, and on the researcher's choice of variables, model specification, frequency, time frame, among others. Further, it has been shown that presidential approval likely does not follow a linear relationship, though most studies have used linear models to estimate popularity functions (p.52). (Donovan et al., 2020) show that presidential approval is also impacted by the public's partisan identity. Recent findings show that perceptions of corruption can act as significant predictors of presidential approval (Jung & Oh, 2020), especially in Latin America, where other work has shown a reduced importance of standard economic variables (Cerda & Vergara, 2023).

The debate which retrospective voting has gave rise to has incentivized for the use of advanced

causal inference and experimental techniques to overcome identification challenges. This renewed approach has allowed for a more precise understanding of the mechanisms behind retrospective voting, which involves the evolving literature on the mistakes that voters make when evaluating politicians' performance. This has went beyond the mere lack of knowledge about economic information, which is typically trivial considering that a voter need only consult his own economic situation. Rather, recent research has found that citizens tend to commit errors consistent with decision-making beyond political life.

One of the most discussed cognitive biases is recency bias, where voters place a disproportionate weight on recent events on recent events, for economic outcomes and beyond. Experimental studies have documented the existence of such bias and assigned it to cognitive bias rather than other factors (Hart & Matthews, 2023; A. Healy & Lenz, 2014). The implications of such bias highlight the importance of controlling for time trends in any empirical study of political behaviour. Further, the addvanced use of quasiexperiments has allowed the use of natural disasters to find how voters can be myopic: A. Healy & Malhotra (2009) show that after Hurricane Katrina, American voters rewarded incumbents for disaster relief spending, but not for disaster prevention spending before the disaster.

Events that are irrelevant have been shown to impact voter behaviour with causal arguments. Though disputed, Achen & Bartels (2017) famously presented evidence of shark attacks impacting Woodrow Wilson's vote share in 191. Further, A. J. Healy et al. (2010) find that football games can positively impact the vote share of incumbents, results also consistent with

irrelevant events impacting voting behaviour. Events that politicians have no control upon can impact their electoral outcomes if voters are assumed to be affected by mood in their performance judgments, which is a well-documented phenomenon in other fields. In an experimental setting, Schwarz & Clore (1983) show how inducing positive moods lead subjects to report more feelings of satisfaction relative to subjects which were induced negative moods. Most importantly, it was shown that *people in bad moods were more likely to search for information to explain their mood* relative to those in a happy mood. This is direct evidence for attribution errors: if an outside circumstance induces a negative mood, people may be more likely to attribute their mood to search for information that confirms their mood, rather than the other way around. Additionally, Bower (1981) show that people who were induced a mood were more likely to recall information that was congruent with their mood. This can confirm misattribution errors in voters, who may be more likely to recall negative information about politicians if they are in a bad mood, and vice versa.

While daily weather conditions have not been studied in political science, other fields have studied the impact of weather on life satisfaction and other variables, with results mostly showing significant impacts. Notably, Keller et al. (2005) find that pleasant weather (higher temperature or barometric pressure) in has a positive impact on mood in an observational study in the United States, and it also impacts how individuals may process information. Kämpfer & Mutz (2013) and Kämpfer & Mutz (2013) find conflicting results of the impact of sunnier days on life satisfaction using survey data from Germany. Lucas & Lawless (2013) does not

find reliable evidence of weather impacting life satisfaction using U.S. survey data.

Barrington-Leigh (2008) finds a positive effect of sunnier days on trust in neighbours using Canadian survey data. Further, Barrington-Leigh & Behzadnejad (2017) find that temporary rainfall variations have a significant, yet small negative impact in life satisfaction for Canadian survey-respondents, notably on individuals with poor health and women. Lignier et al. (2023) find that higher temperatures in prolonged dry temperatures have a negative impact on life satisfaction in Australia. Beyond life satisfaction, Deller & Michels (2022) show that cloudy days have a significant impact on the way that managers evaluate subordinates across field experiments in the United States. Additionally, Quijano-Ruiz (2023), using the same CPC daily weather data for Ecuador, finds an effect of daily temperature changes on self-rated health for female survey respondents only.

The causal mechanism, which is supported by psychology theory from Schwarz & Clore (1983) and Bower (1981), is that weather impacts mood, which then causes citizens to attribute their moods to external circumstances. If Ecuadorian survey respondents consider higher temperatures to be "bad weather", their mood can be negatively impacted, making them more likely to negatively evalute the president as a result of their discomfort. This corresponds to what is described by Schwarz & Clore (1983): voters attribute their mood to a external situation (the question being asked by the interviewer) and may even justify it by searching for negative events that confirm their mood, as proposed by Bower (1981).

In summary, retrospective voting literature has had an economic focus, which underscores the

importance of controlling for economic perceptions in any formal empirical model of political behaviour. The Latin American context has shown some degree of resemblance to developed countries, but also some differences, notably in how certain ideological factors may moderate political behaviour to larger extent than developed countries. Presidential approval rating is extensive and has provided many recommendations for the estimation of popularity functions, notably the incorporation of nonlinearities. However, this may not be possible or applicable in all contexts due to data availability. Cognitive biases have been shown to be persistent in many settings, with a clear importance of a recency bias, emphasizing the importance of controlling for time trends in models. My theory on the impact of weather on presidential approval is supported by a growing literature on the impact of weather on mood and life satisfaction, which has shown mostly significant impacts of "better" weather on mood, life satisfaction, and other variables. The causal mechanism is supported by psychological theory, which has shown that mood can impact the way that individuals process information, and how they attribute their mood to external circumstances.