



Economic Crises, Subjective Well-Being, and Vote Switching: The Case of Brazil's 2018 Presidential Election

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Abstract

This paper examines the influence of the 2015 economic crisis on subjective well-being (SWB) and the withdrawal of support for the incumbent party during the 2018 presidential election in Brazil. Using Gallup World Poll data and a post-election national survey conducted by the Center for Studies on Public Opinion, we find that the economic crisis influenced through different channels both SWB and vote switching. Worsening personal economic circumstances explain the decline in SWB in the aftermath of the crisis, while deteriorating perceptions about the economy explain the vote switching during the presidential election in 2018. Leadership disapproval played a role in both, but to different degrees. One possible explanation for the limited effect of personal economic circumstances on voting behavior in Brazil is that those who were most severely affected by the economic downturn, specifically the poorest individuals in the country, did not see voting for Bolsonaro as a feasible or desirable choice.

Keywords Subjective well-being · Elections · Economic crisis · Expectations · Brazil

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1 Introduction

Brazil made steady improvements in its experienced welfare during the past half a century (Helliwell et al., 2015). Whereas in 1960 the average Brazilian evaluated their life with a score of 4.6 out of 10 on the Cantril ladder, by 2011 this value increased to 7.1.,¹² This increase in subjective well-being (SWB) reflected rising per capita incomes, especially during the Golden Decade (2003–2014), when poverty and inequality also substantially declined, and millions joined the ranks of the middle class. Democratic reforms, following the abolition of the military regime in 1985, improved social and political inclusion, civic engagement, and human rights (Neri, 2009; Touchton et al., 2017; Wampler et al., 2019).

The economic crisis in the mid-2010s halted the virtuous cycle between economic development and improvements in subjective well-being. Economic growth collapsed from above 7% in the beginning of the decade to -3.5% in 2015 and then recovered to only about 1% in 2018–19. As average per capita income declined from close to US\$16,000 in 2013 to about US\$14,600 in 2018, so did Brazil's average SWB, dropping by 12.7% to reach 6.2 in 2018 (Fig. 1). Correspondingly, the percentage of thriving Brazilians (scoring 7 or higher in terms of SWB) decreased from 65% in 2013 to 49% in 2018, according to the Gallup World Poll. A similar decrease is observed when we use alternative SWB measures, including the Affect Balance Scale in the Gallup World Poll and data from the Latinobarómetro.³

In this paper, we explore channels through which the economic crisis of 2015 affected subjective well-being (SWB) in Brazil and voting behavior during the 2018 presidential election. Our analysis extends the literature on subjective well-being and voting behavior,

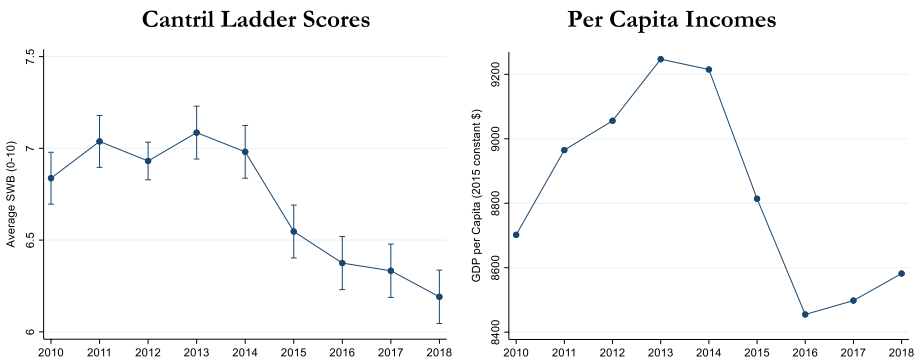


Fig. 1 SWB and per capita income trends in Brazil (2010–2018). Sources Gallup World Poll for SWB and World Bank for GDP per Capita (2015 Constant US\$). Notes SWB graph: $M=9,981$. 95% confidence intervals shown. Sampling weights used. All interviews in 2015 were held in October/November

¹ The scores are the answers to the Cantril ladder question ‘Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?’.

² We use subjective well-being or experienced quality of life interchangeably with “happiness”, defined as the “degree to which an individual judges the overall quality of his/her own life-as-a-whole favorably” (Veenhoven, 1984, Chapter 2).

³ See Supplemental Material A for further information.

which is relatively new and includes studies by Liberini et al. (2017), Nowakowski (2021), Ward et al. (2021) and Burger and Eiselt (2023), to name a few. In the case of Latin America, Bravo (2016) finds a strong correlation between SWB and the likelihood that the incumbent will win the elections, based on data from Latinobarómetro. He concludes that in elections held across Latin America between 1992 and 2013 support for left-wing parties was higher when the more dissatisfied voters were under a right-wing incumbent regime.

We also build on the literature that studies the factors explaining election outcomes in Brazil. According to Rennó (2020), resentment against the ruling Partido dos Trabalhadores (antipetismo), cultural backlash, the demand for law and order amidst spiking crime, economic liberalism, and rejection of the social policies of the ruling party explain the election outcome. The Partido dos Trabalhadores was resented as it was blamed for the economic crisis and the rise in corruption and crime in the country (Hunter & Power, 2019). Finally, we are also informed by the literature on the relationship between SWB and social unrest (e.g., Abi-Nasif et al., 2021; Arampatzi et al., 2018; Witte et al., 2020).

We contribute to these literatures by showing that the economic crisis in 2015 influenced through different channels both SWB and the withdrawal of support for the incumbent party during the 2018 presidential election. Using data from the Gallup World Poll and a post-election national survey by the Center for Studies on Public Opinion, we find that the deterioration of personal economic circumstances (i.e., the rise in self-centred discontent) is associated with the decline in SWB but not vote switching, while worsening perceptions about the economy (i.e., the rise of economy-centred discontent) matter for vote switching, but not SWB. A decline in leadership approval matters for vote switching and to some extent for SWB. Our results are in line with the findings of Rennó (2020) and support the notion that voters in Brazil punished the incumbent party based on their disappointment with the party's leadership and their perceptions about the state of the economy, rather than their own personal economic situation. One possible explanation for why changes in personal economic circumstances have less impact on voting behavior in Brazil is that those who were most severely affected by the economic downturn (i.e., the poorest in Brazil) did not see voting for Bolsonaro as a realistic or desirable option. While SWB has been linked to voting behavior and other political outcomes like peaceful protests following crises, this paper shows that the mechanisms through which these negative shocks affect SWB and voting outcomes can be very different, depending on the country-specific context.

The remainder of this paper is organized as follows. Section 2 discusses the conceptual framework and the literature with a specific focus on Brazil. Section 3 presents the data, variables, and empirical strategy. Section 4 discusses the empirical results. Section 5 offers a summary, caveats, and a discussion of policy implications.

2 Conceptual Framework

Our analysis is guided by a conceptual framework, depicted in Fig. 2, which links economic crises to changes in personal economic circumstances, general macroeconomic circumstances, and leadership approval, and subsequently to changes in subjective well-being dynamics and voting behavior. We motivate the framework and elaborate on each of the links in it, building upon the theory and empirical evidence in the literature.

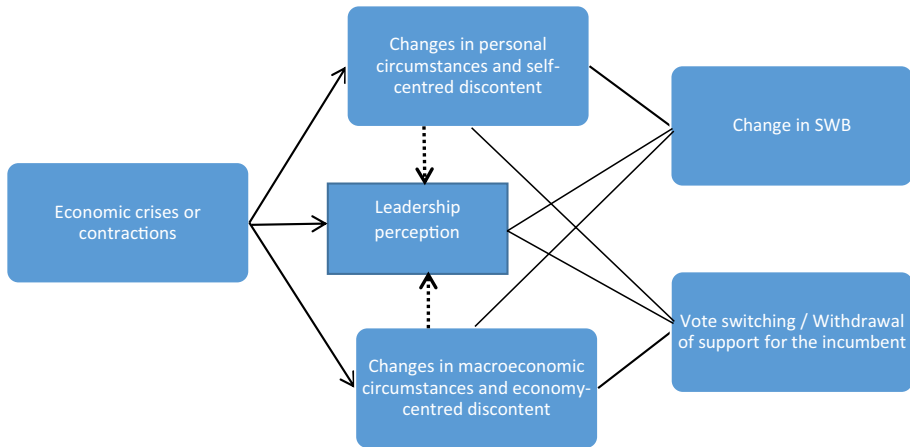


Fig. 2 Conceptual framework: economic crises, grievances, changes in SWB and vote switching

2.1 Economic Crises, Grievances, and SWB

The link between economic crises and SWB deserves special attention. As shown by De Neve et al. (2018), SWB tends to be much more sensitive to growth contractions than expansions. In times of crises, countries can experience a serious erosion in SWB, although some countries are more resilient than others (see e.g., Helliwell et al., 2021) because the negative impact of an economic crisis on SWB can be alleviated by institutional and social trust (Helliwell et al., 2014), the presence of unemployment support programs and employment protection legislation (Morgan & O'Connor, 2021), and good governance (Arampatzi et al., 2019).

Montagnoli and Moro (2018) identify *two main channels* through which economic contractions negatively affect SWB. First, such events are typically accompanied by *changes in personal (economic) circumstances* due to rising unemployment and personal indebtedness, deteriorating wages, and increased reliance on social safety nets and public services, which tend to be insufficient and/or of poor quality in many developing countries. Decreased satisfaction with personal (economic) circumstances can be perceived as a form of *self-centred discontent* that can affect SWB. In Latin America, crises have led to persistent employment losses and reduction in formal job creation, permanent scarring of some workers, especially the low-skilled, and downturns that take longer to reverse due to the less competitive market structure in the region (Silva et al., 2021). Furthermore, economic crises are often periods during which inflation spikes and tax revenues decline, putting pressure on policy makers to cut public spending precisely when demand for public services and social programs escalates.

Second, crises can not only have a direct effect on an individual's SWB, but also an indirect psychological effects on an individual's SWB due to increased uncertainty, fear and a loss of trust in the economy (Graham, 2010; Deaton, 2012). Indeed, *changes in macroeconomic circumstances* can result in loss of hope and trust in the economy and create *macroeconomic-centred discontent*. Hence, a crisis is not only able to affect one's personal economic circumstances and feelings of personal financial insecurity, but also one's expectations about the economy, which in turn can also negatively affect SWB (Giebler et al.,

2021). In other words, crises can induce a level of discomfort that reduces SWB beyond the psychological costs resulting from changes in one individual's objective circumstances and personal economic outlook. In addition, people may blame the leadership for not doing enough to stave off the crisis or may disagree with the measures taken by a government to fight a crisis, *resulting in a trust in leadership and leadership disapproval*.

In Brazil, we expect both the change in personal and macroeconomic circumstances to play an important role in explaining the decline in SWB since 2015. First, the economic contraction impoverished millions of Brazilians and increased inequality (World Bank, 2017) at a time when public spending was cut to address the deteriorating country's finances (Góes & Karpowicz, 2017). Thus, the recession was particularly detrimental to the poor and ultra-poor (Wang & Sun, 2020), whose life had improved in the 2000s. Most notably, the percentage of people that felt that their own living standards are worsening increased from less than 20% in 2011 to almost 60% in 2016 (see Fig. 3A). Second, the crisis had larger macroeconomic consequences that made people worry about the future of the economy and that fuelled grievances. The percentage of people with worsening expectations about the local economy started to steadily increase in the first half of the 2010s, escalated after 2014 (Fig. 3B). In parallel, during the same period there was substantial erosion in government approval (Fig. 3C) and trust in political institutions (Fig. 3D). Yet, it should be noted that the decline in leadership approval and trust were spurred not only by the economic crisis, but also by the many corruption scandals marring Brazilian politics as well as disappointment with public services and social policy. This is further discussed in paragraph 2.2.

We explore the role of the change in personal and macroeconomic circumstances and government approval, depicted in Fig. 2, in the case of Brazil by testing the following three hypotheses:

H1: Changes in personal economic circumstances following the economic crisis in 2015 are associated with changes in SWB.

H2: Changes in the state of the economy and perceived economic outlook following the economic crisis in 2015 are associated with changes in SWB.

H3: Changes in the approval of the country's leadership following the economic crisis in 2015 are associated with changes in SWB.

2.2 Economic Crises, Grievances, and Voting Behavior

Since the work of Kramer (1971), several economic studies have linked the state of the economy and one's SWB to election outcomes. The explanation for this is simple. Voters punish the incumbent party if their SWB worsens as they blame the incumbent party for this deterioration; voters may also reward the incumbent party if they experience improvements in their quality of life. Voters can punish or reward the incumbent for a deteriorated or improved *personal circumstances* generating *self-centred discontent*, but they can also do so based on the standing of the economy or changes in *macroeconomic circumstances*, irrespective of their own personal economic situation, that generates *economy-centred discontent* (cf. Giebler et al., 2021).

There is support for this theory in the empirical literature. Lewis-Beck and Stegmaier (2007) find that perceived changes in one's own personal economic situation strongly correlate with support for the incumbent party in developing countries, while job losses related to automation and globalization are mentioned as important reasons for the election of Donald Trump in 2016 (e.g. Autor et al., 2017). Most studies on voting behavior mention a strong sense of societal discontent in parts of the population as a driver of voting the

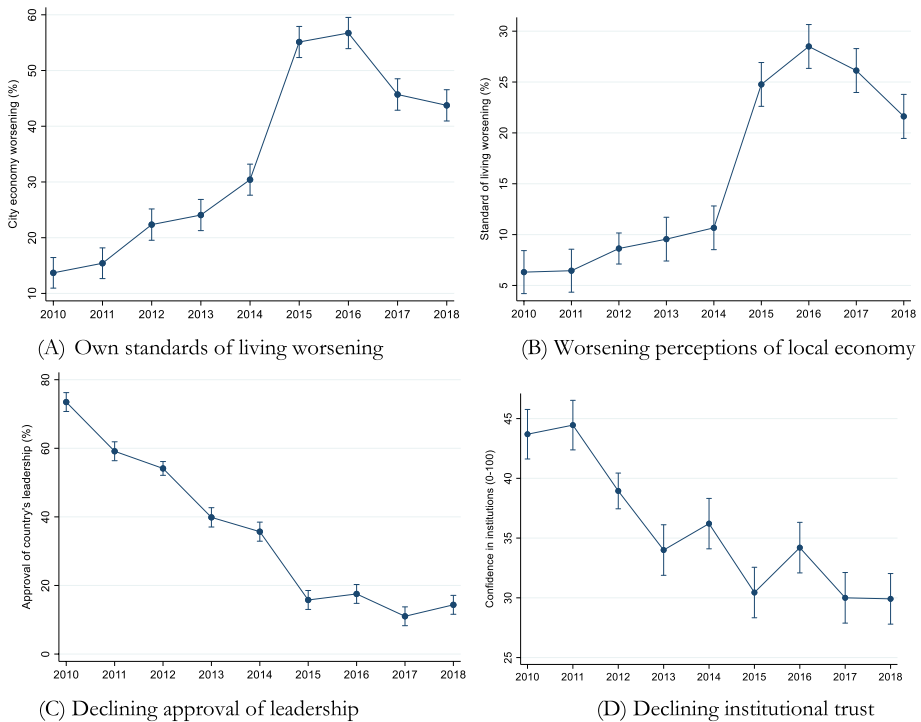


Fig. 3 Decline in expectations and loss of political trust in Brazil (2010–2018). Source: Gallup World Poll, 2010–2018. Notes 95% confidence intervals shown. Sampling weights used. Panels (A) and (B) show the percentage of respondents with worsening expectations about the economy and own standards of living, respectively. Panel (C) displays the percentage of respondents who approve the political leadership in Brazil. Panel (D) shows an index of confidence in institutions, with higher values representing greater confidence

incumbent out of office (Ward et al. 2020). Several empirical studies find a strong association between SWB and voting for the incumbent party (e.g., Bravo, 2016; Liberini et al., 2017; Ward et al., 2020) and between SWB and voting for populist parties (Algan et al., 2018; Nowakowski, 2021). Herein, the populist vote can be perceived as a special case of the non-incumbent vote, where citizens do not feel represented by incumbent parties and traditional opposition parties and would like to see a radical change in the political system.

Brazil's 2018 presidential election presents an ideal case to study the link between economic deterioration, subjective well-being, and voting behavior. The idea that the social programs of the Partido dos Trabalhadores were a burden to the more conservative but growing middle class had taken root on the eve of the elections (Alves & Vargas, 2020). Whereas the poor in Brazil approved of a system focused on poverty reduction and social redistribution, the middle class expected more as people in the lower middle class—including those with recently acquired middle-income status—were vulnerable to falling into poverty following the economic shock in 2015. These populations were not covered by unemployment insurance and other social protection programs (see also Ferreira et al., 2013) and suffered for many years following an economic shock (Silva et al., 2021).

At the same time, the middle class felt that their increasing tax burden was not efficiently spent and was not allocated to policy areas important to them such as infrastructure, health, and

education (Clément et al., 2020). Many middle-class Brazilians were disappointed with the poor quality of these services, while the high cost of private services, mainly affordable to the affluent, placed a heavy burden on middle-class household budgets. Underinvestment in infrastructure and human capital,⁴ which are key for productivity-driven growth, and the reliance on consumption-based growth through redistribution backfired on the incumbent Partido do Trabalhadores, as low growth persisted after the crisis (Melo et al., 2014) and clouded the prospects for the revival of the Brazilian economy. Moreover, the expectations and prospects of the middle class for greater economic and social mobility were dimmed by revelations about wide-spread corruption and clientelism. This created resentment against the Partido dos Trabalhadores is also known as *antipetismo*. The frustrations caused by unmet aspirations for better living conditions and high-quality services are considered a typical case of perceived relative deprivation (Gurr, 1970). In turn, this perceived relative deprivation is well-known to be related to radical voting behavior in the short run (Davies, 1962). Particularly, the Tiebout-Hirschman-Rothschild mechanism introduced by Tubadji et al. (2021) argues that if those who make up the majority feel like their chances for advancing their socio-economic status are limited and the lack of investments reduces the appeal of the environment they live in, the majority may feel trapped and excluded, resulting in radicalized voting behavior.⁵

These grievances became evident during the mass protests organized ahead of the 2014 FIFA World Cup and the 2016 Olympic Games. Protestors demanded improved and affordable urban mobility, improved public education, and an end to corruption (Sampaio, 2014). The protests did not stop after the resignation of the then president of Brazil, Dilma Rousseff, in 2016, as the mainstream Brazilian political parties formed an alliance to withstand the ‘voice of the street’, herewith inducing anti-elitist sentiments (Enstanque, 2015) and opening space for the entry of new parties. In this context, the vote for the Partido Social Liberal was not only a vote against the Partido dos Trabalhadores, but also a protest vote against the current social contract.

In sum, in line with the framework of Montagnoli and Moro (2018) on SWB and work on voting behavior (e.g. Giebler et al., 2021; Tubadji et al., 2021), we argue that voting behavior can be associated with both changes in the economy and perceptions about the economic outlook following an economic shock and changes in one’s personal economic circumstances. We explore the role of these two mechanisms by testing the following hypotheses.:

H4: Changes in personal economic circumstances following the 2015 economic crisis are associated with vote switching or withdrawal of support for the incumbent party in the 2018 presidential elections.

H5: Changes in the state of the economy and perceived economic outlook following the 2015 economic crisis are associated with vote switching or withdrawal of support for the incumbent party in the 2018 presidential elections.

H6: Changes in the approval of the country’s leadership following the 2015 economic crisis are associated with vote switching or withdrawal of support for the incumbent party in the 2018 presidential elections.

We acknowledge that there are also non-economic factors that explain the win of Partido Social Liberal in the 2018 general elections. According to Rennó (2020), resentment against the ruling Partido dos Trabalhadores, cultural backlash (conservatism), and the demand for law and order amid spiking crime also (partly) explain the rise of Bolsonaro. These factors are also recognized in the wider literature on voting behavior (Tubadji & Nijkamp, 2019). For example, studies on Brexit have highlighted both the economic

⁴ Investment in infrastructure projects decreased in the 2000s (Sampaio, 2014).

⁵ Empirical studies on Brexit (Tubadji et al., 2021) and populist voting in the Netherlands (Tubadji et al., 2023) confirm the Tiebout-Hirschman-Rothschild mechanism.

situation driving the Brexit vote as well as cultural factors including generational, gender, and migration issues (e.g., Lee et al., 2018; Tubadji et al., 2021). However, because we lack good data on non-economic factors, a detailed examination of these non-economic factors is beyond the scope of this paper.

3 Data and Methodology

3.1 Data

Our analysis relies on data from the Gallup World Poll for the period 2010–2018, unless stated otherwise. During this period the Gallup World Poll surveyed annually 1000 randomly selected adult Brazilians (15 years and older). In total, our sample includes 9981 observations with a Cantril ladder score. We have all relevant information for 6913 observations that constitute our common sample. The Gallup World Poll in Brazil is reasonably spatially representative over the period 2010–2018, although some states (Espírito Santo, Rio de Janeiro) are slightly overrepresented, while other states (Minas Gerais, Pará) are slightly underrepresented. Sampling weights provided by the Gallup World Poll are used in all analyses to make the sample as representative as possible. Supplemental Material B presents detailed descriptions of the variables obtained from the Gallup World Poll.

We do not have data on voting behavior in the GWP and therefore cannot test for direct association between SWB and vote switching. While the *Latinobarómetro* includes data on voting behavior and subjective well-being, these data—collected a few months before the elections—indicate that a surprisingly low number of voters intended to vote for the Partido Social Liberal. For this reason, we rely on data from a post-electoral survey collected by the Center for Studies on Public Opinion for the Brazilian Electoral Study (Meneguello, 2019), which is part of the Comparative Study of Electoral Systems Project (CSES), coordinated by the University of Michigan. The survey is nationally representative and provides information on the voting behaviour and other characteristics of 1,734 Brazilians. Specifically, we obtain data on whether (1) respondents voted for the presidential candidate of the Partido Social Liberal during the two rounds of the presidential elections and whether (2) respondents voted during the 2014 elections for the candidate of the incumbent Partido dos Trabalhadores.⁶ For brevity, definitions of variables included in our analyses can be found in Supplemental Material C. We connect the two datasets by aligning as much as possible the explanatory variables in the analysis of SWB with those in the analysis of vote switching.

3.2 Variables in the SWB Analysis

We use the Cantril Ladder scores in the Gallup World Poll (Cantril, 1965) to measure SWB (also referred to as experienced welfare or life satisfaction) or the degree to which an individual judges the overall quality of his or her own life-as-a-whole favorably. These cognitive measures of SWB, also known as life evaluation measures (Veenhoven, 2000), are generally regarded as valid measures of ‘experienced welfare’ (cf. Senik, 2011) in a country (Helliwell et al., 2021; OECD, 2013). Jahedi and Méndez

⁶ Although the party was no longer officially the incumbent party in 2018, it was treated as such.

(2014) and Witte et al. (2020) discuss in detail the advantages of SWB measures compared to widely used, objective measures of quality of life, such as per capita Gross Domestic Product (GDP), income or expenditure from household surveys, the Human Development Index, and multidimensional poverty measures.

Given our interest in explaining the decline in SWB in Brazil in the aftermath of the economic crisis and testing hypothesis H1-H3, we include as independent variables both objective and subjective personal and macroeconomic factors that are well-known to affect the level and change in SWB (Diego-Rosell et al., 2018) and capture the self-centered and economy-centered discontent.

3.2.1 Variables Related to Change in Personal Economic Circumstances and Self-centered Discontent

Personal economic circumstances and self-centered discontent are captured by the per capita household income, measured as reported household income divided by household size (Clark et al., 2008), and the employment status of survey participants (Winkelmann, 2014), reflected with five categories of employment: (a) employed full-time for an employer; (b) self-employed, (c) part-time employed, (d) unemployed, and (e) out of workforce.

Following Arampatzis et al. (2018), we also include four subjective economic variables indicating the respondent's experience with: (i) financial struggle, (ii) income sufficiency, (iii) satisfaction with own standard of living, and (iv) personal economic optimism. Income perceptions formed based on comparisons of one's income with that of the relevant age- and gender-based reference group seem to be as important for people's SWB as absolute income, especially in more unequal countries (Macchia et al., 2020). In Brazil, families with the same income are less likely to report sufficient income in high-income neighborhoods (Gori-Maia, 2013). Income sufficiency is included in the analysis as a variable measured based on the equally weighted answers to two questions asking whether the respondent had in the last 12 months enough money (a) to buy enough food for themselves and family (Yes=1, No=0) and (b) to provide shelter and housing for themselves and family (Yes=1, No=0). Financial struggle is captured with a 4-point Likert scale that reflects the extent to which respondents are living comfortably on their present income in the preceding 12 months or having difficulties to make ends meet. Standard-of-living satisfaction is another dummy variable with value of 1 if the respondent was satisfied with their standard of living, all the things they can buy and do, or 0, otherwise. The value of personal economic optimism is captured using the answers to the question: '*Right now, do you feel your standard of living is getting better or getting worse?*'. Answer categories for this question are: (1) getting worse, (2) the same, and (3) getting better.

3.2.2 Variables Related to Change in Macroeconomic Circumstances and Economy-Centered Discontent

Objective variables related to macroeconomic circumstances and economy-centered discontent include regional GDP per capita and the regional unemployment rate. Perceptions about the economic outlook are proxied with the answers to the question: '*Right now, do you feel that the economic conditions in the city you are living in are getting*

better or getting worse?. Answer categories for this question include: (1) getting worse, (2) the same, and (3) getting better.

3.2.3 Variables Related to Leadership Approval

Approval of leadership is measured as a dummy variable, which is assigned a value of 0 or 1 depending on the answer to the following question: ‘*Do you approve or disapprove of the job performance of the leadership of this country?*’ (0 = disapprove, 1 = approve). Confidence in institutions is based on a weighted average of the answers to questions regarding confidence in the military, judicial system and courts, the national government, and the honesty of elections.

3.2.4 Control Variables

We also control for a range of objective and subjective personal characteristics, shown to explain differences in SWB between people, including age, health status, marital status, gender, household composition, migration status, education level, digital connectivity, place of residence, and civic engagement through donations, volunteering, or assisting others in need in the previous month. We include several subjective personal characteristics that can affect the level and change in SWB. These are religiousness and social support from friends and family (Helliwell, 2006). Other societal conditions—related to other (non-economic) aspects of societal discontent—are captured by including subjective domains measuring satisfaction with the quality of the environment (air and water) and public services (transportation infrastructure, health care, educational system, socializing opportunities), as well as perceptions of personal freedom, social mobility, safety, acceptance of diversity, and corruption. A complete description of the variables included in our analyses can be found in Supplemental Material B.

3.3 Variables in the Voting Behavior Analysis

To link the voting and SWB analyses and test hypotheses H4-6, we use a similar set of variables capturing change in self-centred discontent, change in economy-centred discontent, and leadership approval. In the case of self-centred discontent, we rely on information on income and employment status, while the *respondent’s views on their personal economic situation* proxy for a combination of subjective economic variables used in the SWB analysis, including *financial struggle*, *income sufficiency*, *satisfaction with own standard of living*, and *personal economic optimism*. *Economy-centred discontent* is captured with *the respondent’s views on the country’s economic situation*, which proxy for *optimism about the economy* in the SWB analysis. *Antipetismo*—a variable indicating resentment against the Partido dos Trabalhadores (antipetismo)—encapsulates the disapproval of the incumbent’s leadership due to widespread corruption and economic deterioration and proxies for *approval of the country’s leadership* included in the SWB analysis, while *trust in political parties* proxies for *confidence in institutions*.

In addition, we include a wide range of control variables similar to those included in the SWB analysis: age, gender, marital status, education, immigrant status, geographic region, and a variable indicating whether the respondent lives in a rural area (see Supplemental Material C). We also include household size and a few objective variables that were not available in the Gallup World Poll. Specifically, we add a variable indicating

whether the respondent is white, Evangelical, and beneficiary of Bolsa Familia. In addition, we add several control variables covering other aspects of society-related discontent including *perceived corruption* and *satisfaction with public service provision*.

3.4 Empirical Strategy

We rely on the life-satisfaction model of Burger et al. (2022) to examine the temporal differences in SWB between the period before the onset of the economic crisis in 2015 (2010–2014), which we refer to as the *pre-crisis* period, and the *crisis* period following the onset of the 2015 economic crisis (2015–2018). Once we estimate the model with data for the pre-crisis and crisis periods, we use the Blinder-Oaxaca decomposition analysis (Blinder, 1973; Oaxaca, 1974) to decompose the change in SWB between the two periods into two parts: the first part shows the differences in SWB scores between the two periods explained by changes in circumstances (C), while the second one refers to the part explained mostly by changes in preferences and other factors not explicitly included in the analysis (P). More specifically, we have:

$$\Delta\text{SWB} = [E(X_A) - E(X_B)]' \beta_A + [E(X_B)]' (\beta_A - \beta_B), \quad (1)$$

where ΔSWB is the difference in SWB between the two time periods, subscript A refers to the period (2015–2018) and B to the period (2010–2014), and β_A and β_B are vectors of coefficients estimated using weighted least squares for the respective periods (using sampling weights).

The part related to changes in circumstances ($C = [E(X_A) - E(X_B)]' \beta_A$) shows how much of the overall differential in the average SWB can be attributed to differences in the level of the explanatory variables (X) between the two periods. The differences in objective and subjective circumstances between the post-crisis period A and crisis period B, $E(X_A) - E(X_B)$, indicate how these factors deteriorated after the onset of the crisis. The part related to changes in preferences ($P = [E(X_B)]' (\beta_A - \beta_B)$) captures changes in the estimated coefficients between periods A and B as well as omitted variables.

Next, building on the studies of Amaral (2020) and Rennó (2020), we use logistic regressions to test hypotheses H4–H6 and identify (i) the factors associated with voting for Bolsonaro and his Partido Social Liberal in the second round of the 2018 Presidential Election and (ii) the factors associated with vote switching from extending support to Dilma Rousseff and the Partido dos Trabalhadores in the 2014 election to supporting Bolsonaro in the 2018 election. We are particularly interested in the correlates associated with vote switching because they can point to the domains that ultimately matter for social change in Brazil.

4 Empirical Results

4.1 Deteriorating Economic Conditions and SWB

The deterioration in experienced welfare, computed as the difference in SWB between the crisis (2015–2018) and the pre-crisis period (2010–2014) and shown in Fig. 4 by

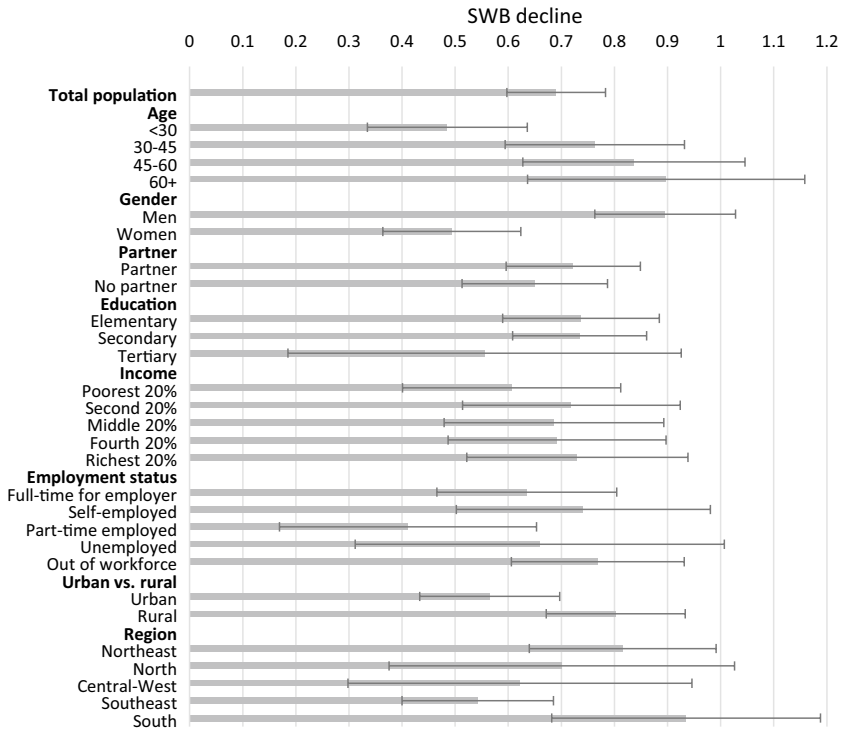


Fig. 4 SWB decline by demographic group—Cantril Ladder. *Notes* 95% confidence intervals shown. N=9,981

demographic group, was experienced by all socio-demographic groups, indicating that most Brazilians were affected by the economic malaise. However, the decline was significantly larger for men and less pronounced among the young (<30). In addition, the decline was larger for people inactive in the labor market, compared to those employed part-time, and for people living in the Northeast and the South, compared to those living in the Southeast. Other differences across groups are not statistically significant.

We use the Blinder-Oaxaca decomposition to understand the main factors behind the plunge in SWB since 2015. The results from the decomposition are presented in Table 1, while the results for the underlying regressions for the pre-crisis and crisis periods are provided in Supplemental Material D. They suggest that the part of the decomposition related to changes in circumstances (left column) accounts for more than 77% of the decline in SWB. The decline is primarily associated with personal economic circumstances and self-centered discontent due to deterioration in personal circumstances, particularly perceived income changes. In addition, increasing *dissatisfaction with the country's leadership* is associated with the decline in SWB.

The deterioration in perceived personal economic circumstances, shown in Table 2, is substantial. Personal economic optimism declined from a 2.6 to a 2.3, with the percentage of people with positive expectations regarding their own economic circumstances declining from 68 to 53%. The percentage of respondents experiencing financial struggle increased from 17 to 23% and the percentage of respondents satisfied with their standard of

living decreased from 78 to 67%, while the percentage of respondents who reported being unemployed increased from 7 to 10%. In addition, only 15% of respondents approved of the government after the economic crisis, compared to 52% before the crisis; confidence in national institutions declined too.

Although the percentage of people with positive expectations regarding the local economy declined from 55 to 33%, the increase in economy-centered discontent was not associated with the decline in SWB. Please note that the correlation between personal and economy-centered discontent is only limited. When we exclude the variables capturing personal economic circumstances and self-centered discontent from the decomposition analysis, changing perceptions regarding the economy do not explain a large part of the decline in SWB.⁷ Also none of the other control variables, including corruption and satisfaction with public services, explain a significant part of the decline in SWB.

At the same time, not all conditions deteriorated considerably, and some conditions improved (Table 2). Social support remained high (at 91%), while reported secondary and tertiary education levels, civic engagement, acceptance of diversity, digital access, and perceived safety improved in the second half of the 2010s. Yet, these improvements did not mitigate the negative effects of self-centered discontent on SWB (Table 1).

Changing preferences, manifested in differences in estimated coefficients before and after 2014, also drove part of the decline in SWB (Table 1; right column). Most interestingly, the unexplained part of the Blinder-Oaxaca decomposition shows that personal economic optimism was less positively correlated with SWB in the pre-crisis (2010–14) period compared to the crisis (2015–18) period, herewith augmenting the decline in SWB in the crisis period as personal economic optimism plunged. Hence, personal economic expectations played a role in the SWB decline for the following two reasons. First, the share of people who became more pessimistic about their own economic situation increased in the second half of 2010s, as shown in the part of the Blinder-Oaxaca decomposition related to changes in circumstances. Second, economic expectations about own economic situation assumed a greater role as a factor underpinning experienced welfare, as shown in the part of the Blinder-Oaxaca decomposition related to changes in preferences. Quite the opposite, the role of country's leadership approval was played down because while support for leadership waned after 2014, this domain mattered less for people's perceived well-being. Although an increasing number of people disapproved leadership, its importance in people's SWB declined. Hence, these results suggest that we cannot reject hypotheses H1, but we do not find sufficient support for hypotheses H2 and only mixed support for H3.

4.2 Post-crisis Grievances and Voting Behavior

Table 3 (column 1) shows the demographic characteristics associated with the likelihood to have voted for Bolsonaro (and his Partido Social Liberal) during the second, final round of the 2018 presidential election. Since the demographic groups are defined the same way as in the SWB analysis, we are able to identify the common factors associated with the change in SWB and voting behavior. Results confirm that age is a weakly significant predictor of the probability to vote for Bolsonaro. Compared to young people (<30), people of ages between 45 and 60 were 1.3 times more likely to vote for his Partido Social Liberal. However, the differences between young people and all other age categories are much less pronounced and insignificant. Gender is another significant predictor of a Bolsonaro

⁷ These results are available upon request from the authors.

Table 1 Proportional contribution of variables to the temporal SWB gap in Brazil

	Part related to changes in circumstances: $E(X_A) - E(X_B)$ β_A	Part related to changes in preferences: $E(X_B) - (\beta_A - \beta_B)$
<i>Personal circumstances and self-centered discontent</i>		
Personal economic optimism	-0.13 (0.02)**	-0.51 (0.26)*
Living standards satisfaction	-0.10 (0.02)**	0.20 (0.12)
Income sufficiency	-0.03 (0.01)**	0.10 (0.25)
Financial struggle	-0.03 (0.01)**	-0.05 (0.03)
Employment status	-0.00 (0.01)	-0.03 (0.04)
Per capita income (inflation-adjusted)	-0.00 (0.01)	-0.02 (0.05)
<i>Macroeconomic circumstances and economy-centered discontent</i>		
Optimism about economy	0.01 (0.03)	-0.01 (0.17)
Regional unemployment rate	-0.08 (0.06)	-0.15 (0.20)
Regional GDP per capita (inflation-adjusted, Brazilian real)	-0.02 (0.01)#	0.38 (0.22)#
<i>Leadership</i>		
Confidence in institutions	-0.02 (0.02)	0.01 (0.09)
Approval country's leadership	-0.16 (0.06)**	0.23 (0.09)**
<i>Other</i>		
Other	0.03 (0.03)	-0.42 (1.07)
Intercept		-0.11 (1.19)
Total gap explained	-0.53 (0.09)**	-0.16 (0.11)
Total gap	-0.69 (0.06)**	

Other factors that did not significantly or sizably (>0.01 points) contribute to the SWB decline are grouped in the category "other"

** $p < 0.01$, * $p < 0.05$, # $p < 0.10$. Robust standard errors in parentheses. $N = 6,913$

Table 2 Changes in conditions affecting SWB before and after 2014

Variable	Mean score 2010–2014	Mean score 2015–2018
Age	38	38
% female	51	51
% has a partner	55	53
% has children under 15	51	50
% religious	95	94
% immigrants	0.003	0.003
% has health problems	20	18
% had physical pain yesterday	32	33
% lives in a rural area	52	49
% elementary education	42	36
% secondary education	53	57
% tertiary education	5	7
% full-time employed for employer	32	28
% self-employed	15	15
% part-time employed	13	16
% unemployed	6	10
% out of workforce	34	31
Per capita income (inflation-adjusted)	3584	2996
% in financial struggle	17	23
Income sufficiency (1–4)	2.8	2.7
% satisfied with standard of living	78	67
Personal economic optimism (1–3)	2.6	2.3
Optimism about economy (1–3)	2.3	1.8
% having social support	92	91
Civic engagement index (0–1)	0.27	0.29
Acceptance of diversity index (0–1)	0.71	0.73
Digital access index (0–1)	0.70	0.79
Safety index (0–1)	0.56	0.61
% Satisfied with opportunities for socializing	80	81
% Satisfied with transportation infrastructure	48	47
% Satisfied with educational system	54	53
% Satisfied with quality of air	71	66
% Satisfied with quality of water	74	73
% Satisfied with healthcare	33	33
Corruption index (0–1)	0.66	0.77
Confidence in national institutions index (0–1)	0.40	0.31
% approves of country's leadership	52	15
% satisfied with freedom	78	77
% considers social mobility possible	75	65
Regional GDP per capita (inflation-adjusted, Brazilian real)	21,456	20,504
Regional unemployment rate	7	11

Bold = situation has significantly changed. Per capita income is winsorized at the 99% level at the upper tail. The numbers for regional GDP per capita, shown in the table, are the average across the GDP per capita of all regions in Brazil

vote. Men were over 1.5 times more likely to vote for Bolsonaro than women. These results provide some indirect evidence that groups that experienced larger declines in SWB were also more likely to vote for the Partido Social Liberal. Support for Bolsonaro was stronger outside the Northeast, despite the fact that the region experienced a similar decline in SWB as other regions. This result is expected given the relatively strong support for the Partido dos Trabalhadores in the region, which has benefited from the redistributive policies of the party during the Golden Decade (Amaral, 2020).⁸ We find that religious denomination and ethnicity—not available in the Gallup World Poll—are strong predictors of a vote for the Partido Social Liberal. Evangelicals and white Brazilians were much more likely to vote for Bolsonaro than other religions and ethnic groups. Although the Gallup World Poll does not contain an ethnicity variable, a further examination of the religiosity variable using the Gallup World Poll reveals that the decline in SWB is not larger for respondents with strong religious beliefs. Table 3 (column 2) also shows that the middle aged, evangelicals, and people with a partner were more likely to switch parties and withdraw support from the incumbent party. At the same time, the poorest and vulnerable bottom 40% of the population and the unemployed were significantly less likely to support Bolsonaro. Hence, if we examine objective personal economic circumstances, we see that it are not the ones worst off that vote for Bolsonaro. Overall, these results suggest that the rise of Bolsonaro was associated not only with the voting choices of some groups that experienced a larger decline in SWB, but also with the support of groups with certain attitudes and values.

Next, moving to the main hypotheses of interest and using the data from the Brazilian Electoral Study, we show results from a logistic regression that links the likelihood to vote for Bolsonaro to a similar set of variables as those included in the analysis of SWB change in the previous sections, including similar socio-demographic controls. This way we try to closely align the logistic regression with the life-satisfaction analysis in Sect. 4.1 and explore the links presented in Fig. 2.

Table 4 (Panel A) shows the factors associated with the likelihood to have voted for Bolsonaro during the 2018 elections. Our results suggest that voting for the Partido Social Liberal in the second round of the elections is associated with a combination of factors, including conservative and pro-military viewpoints and resentment toward the Partido dos Trabalhadores (*antipetismo*), immigrants, and redistributive policies. There is no evidence that the groups holding such sentiments experienced larger declines in SWB, except for *antipetismo* or dissatisfaction with the leadership of the government, which matters for the decline in SWB, especially among those younger than 30, the B40, and the less educated.

Table 4 (Panel B) shows the factors associated with vote switching, i.e. voting for Rousseff's Partido dos Trabalhadores in 2014 but voting for Bolsonaro's Partido Social Liberal in 2018. Growing economy-centered discontent increases the likelihood of being a switch voter by 51%, while having resentment against the Partido dos Trabalhadores increases the chance of switching from Dilma to Bolsonaro by 12%. Changes in the personal economic situation and self-centered discontent appear uncorrelated with vote switching. This is in line with the observation that it were the poorest and most vulnerable who were economically hardest hit by the crisis that did not vote for Bolsonaro.

Overall, these results provide support for hypotheses H5 and H6, but not for H4. They suggest that the economic crisis in the mid-2010s affected the outcome of the 2018 presidential elections primarily through worsening perceptions about the future of the country's

⁸ In this regard, Pereira and Melo (2015) also show for the Brazilian state of Pernambuco that the negative effect of corruption disappears when public expenditures in a particular area increase.

Table 3 Socio-demographic characteristics associated with the Bolsonaro vote—logistic regression

	Dependent variable: voted for Bolsonaro in second round of presidential elections (1)	Dependent variable: switched from voting for Dilma in 2014 to Bolsonaro in 2018 (2)
<i>Age</i>		
< 30	Ref	Ref
30–44	0.96	1.37*
45–59	1.30#	1.23
60+	1.13	0.55**
Female	0.64**	1.06
Has a partner	1.34**	1.49**
Other persons in household	0.85	0.88
Evangelical	2.11*	1.34*
White (Branco)	1.28*	0.94
Immigrant	0.32	1.62
Lives in a rural area	1.01	0.93
<i>Region</i>		
Northeast	Ref	Ref
North	2.82**	1.05
Central-West	2.57**	0.94
Southeast	2.48**	0.99
South	3.08**	1.27
<i>Education level</i>		
Elementary	Ref	Ref
Secondary	1.38*	0.91
Tertiary	1.11	0.78
<i>Employment status</i>		
Paid employment	Ref	Ref
Self-employed/entrepreneur	0.89	1.07
Unemployed	0.53**	0.80
Out of workforce/other	0.81	0.88
<i>Household income per capita</i>		
Poorest 20%	0.53**	0.73
Second 20%	0.65*	0.94
Middle 20%	Ref	Ref
Fourth 20%	0.98	1.12
Richest 20%	0.98	0.92
Unknown	0.82	0.66#
N	1,734	1,734

All presented values are odd's ratios. # $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. All models are estimated using robust standard errors. Ref. = Reference category

Table 4 Factors associated with the Bolsonaro vote—logistic regression

Panel A/dependent variable:	Voted for Bolsonaro in second round of presidential elections	Voted for Bolsonaro in second round of presidential elections	Voted for Bolsonaro in second round of presidential elections
<i>Economic situation country</i>			
Improved	1.09		1.08
Same	Ref		Ref
Worsened	0.59**		0.70#
<i>Personal economic situation</i>			
Improved (Upward)	0.62**		0.78
Same	Ref		Ref
Worsened (Downward)	0.84		0.91
Antipetismo (Lack of leadership approval)		1.54**	1.58**
Perceived corruption	1.17#		0.95
Against income redistribution	1.07		1.13#
Immigrants bad for economy	1.14**		1.12*
Satisfied with crime control	0.99		1.01
Satisfied with public services provision	1.01		1.01
Conservatism	1.14**		1.15**
Nativism	1.16#		1.13
Confidence in the military		1.51**	1.53**
Satisfied with democracy		1.17*	1.13
Trust in political parties		0.98	1.03
Bolsa familia beneficiary		0.72#	0.75
Socio-demographic controls	YES	YES	YES
N	1,566	1,566	1,461
Panel B/dependent variable:	Switched from voting Dilma in 2014 to Bolsonaro in 2018	Switched from voting Dilma in 2014 to Bolsonaro in 2018	Switched from voting Dilma in 2014 to Bolsonaro in 2018
<i>Economic situation country</i>			
Improved	0.92		0.97
Same	Ref		Ref
Worsened	1.36**		1.51**
<i>Personal economic situation</i>			
Improved (Upward)	1.20		1.27
Same	Ref		Ref
Worsened (Downward)	1.08		1.24
Antipetismo (Lack of leadership approval)		1.12**	1.12**
Perceived corruption	1.11		1.06
Against income redistribution	0.91		0.92
Immigrants bad for economy	1.02		1.00
Satisfied with crime control	1.00		0.99

Table 4 (continued)

Panel B/dependent variable:	Switched from voting Dilma in 2014 to Bolsonaro in 2018	Switched from voting Dilma in 2014 to Bolsonaro in 2018	Switched from voting Dilma in 2014 to Bolsonaro in 2018
Satisfied with public services provision	1.00		0.99
Conservatism	1.07		1.07
Nativism	1.15		1.12
Confidence in the military		1.16*	1.17*
Satisfied with democracy		1.00	1.01
Trust in political parties		1.05	1.07
Bolsa Familia beneficiary		1.01	1.09
Socio-demographic controls	YES	YES	YES
N	1,566	1,566	1,461

$p < 0.10$, * $p < 0.05$, ** $p < 0.01$. All presented values are odd's ratios. All models are estimated using robust standard errors. Ref. = Reference category

economy and the leadership crisis, rather than through worsened personal economic circumstances, which mattered mostly for the deterioration in SWB.

5 Concluding Remarks

For decades Brazil's SWB was rising and by the mid-2010s the country stood out with its relatively high level of experienced welfare, although inequality in subjective well-being also remained high. Brazil's SWB considerably deteriorated in 2015, when the economy contracted. Using data from the Gallup World Poll and a post-election national survey by the Center for Studies on Public Opinion, we find that the economic crisis in 2015 influenced both the post-2014 decline in subjective well-being and the withdrawal of support for the incumbent party during the 2018 presidential election, but through different channels. Personal economic circumstances *or self-centered discontent* matter for subjective well-being, but not vote switching, while perceptions about the economy *or economy-centered discontent* matter for vote switching, but not subjective well-being. Leadership approval is associated with both SWB and vote switching, although findings for SWB are mixed.

The results are not causal, but they are indicative of the factors associated with the outcome of the 2018 presidential election. Vote switching was shaped by perceptions about the economy, disapproval with the country's leadership, and views favoring law and order, rather than by worsening personal economic circumstances. A likely reason why changing personal economic circumstances matter less for vote switching in the case of Brazil is that the vote for Bolsonaro was not considered a viable alternative for the people hardest hit by the economic crisis—the poor and ultra-poor (Wang & Sun, 2020)—given that these groups depend on the redistributive policies of Partido dos Trabalhadores. Resentment against the incumbent party was strongest among the more conservative, middle-class Brazilians. On one hand, they felt vulnerable to falling into poverty; on the other hand, they did not think the tax burden was allocated to policy areas important to their future

economic prosperity, such as infrastructure, health, and education. *Antipetismo* was further strengthened due to the growing evidence of economic mismanagement and corruption.

Our results have three important implications. First, we show that there are real-life social consequences of economic crises, which not only lower individuals' experienced welfare but also affect people's voting behavior and election outcomes through their effect on perceptions about the economic outlook. Second, the election analyses also show that while leadership approval affects vote switching, it matters less for SWB. Vote switching in Brazil was also associated with racial and social attitudes, not only with economy-centered discontent. This is in line with earlier observations in Europe that economy-centred discontent does not necessarily imply dissatisfaction with life but can still be associated with non-incumbent support (Giebler et al., 2021). Third, and related to the previous point, our research shows that although SWB and voting behavior have been both affected by the economic crisis, the mechanisms through which economic crises affect SWB and voting outcomes can be very different. For this reason, it is always important to look at the national or regional context.

There are some limitations to this study that need attention in future research. First, the study is in part limited by data availability since we do not have access to good data that combines SWB and voting behavior. Only the Latinobarómetro includes data on voting behavior and subjective well-being, but according to these data—collected a few months before the elections—a surprisingly small number of people stated that they would vote for the Partido Social Liberal. Particularly, it would be interesting to examine whether SWB mediates the relationship between dissatisfaction with the state of the economy, changes in personal economic situation and leadership approval. In addition, not all variables in the SWB analysis are available for the voting analysis and vice versa.

Second, both the SWB and voting behavior samples are too small to look at the heterogeneity in SWB and voting behavior. In particular it would be interesting to see whether factors that drive the SWB decline of some subgroups are also related to vote switching within these subgroups.

Third, our findings hint at the importance of *regional context* in explaining the rise of Bolsonaro. Most importantly, our findings suggest that particularly Brazilians located in regions that were benefiting less from the policies of the Partido dos Trabalhadores voted for the Partido Social Liberal because their concerns may have been neglected. This mechanism for voter's response to a context of perceived regional or local deprivation, known as the Tiebout-Hirschman-Rothschild (THR) mechanism (Tubadji, 2021; Tubadji et al., 2021), is currently not well-captured by the variables in our voting analysis and should be explored in the future. In addition, more geographically fine-grained data is needed to explore the mechanism in more detail.

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Declarations

Conflicts of interest The authors declare that they have no conflicts of interest.

Ethics Approval and Informed Consent For the data analysis, we made use of secondary data using the Gallup World Poll and Brazilian Electoral Study; no primary data collected by the authors was used.

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