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Anatomy of Brazil's Subjective Well-Being

A Tale of Growing Discontent and Polarization in the 2010s

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Abstract

After increasing for years and reaching high levels, Brazil's subjective well-being deteriorated following the economic contraction in 2015. Using data from the Gallup World Poll for the 2010s, this paper identifies the factors that underpin Brazil's subjective well-being and its change, paying special attention to heterogeneity across population groups. Having sufficient income, financial security, economic optimism, satisfaction with living standards and health services, social capital, tertiary education, and digital access are the main factors associated with subjective well-being. These factors matter to different extents along the income distribution and across generations and space. The decline in subjective well-being since 2015 was heterogeneous and more pronounced among men, rural residents, and the old. Economic expectations increased in importance as they assumed a greater role in people's preferences, especially those of men, and more people grew pessimistic about the economic outlook. The decline in subjective well-being and the switch in voter support from one end of the political spectrum to the other in the 2018 general elections were both associated with the grievances triggered by the economic and leadership crisis of the mid-2010s. These grievances signal an erosion in the support for the social contract in place since the 1990s and the need to renew it.

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Anatomy of Brazil's Subjective Well-Being: A Tale of Growing Discontent and Polarization in the 2010s

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1. Introduction

Brazil made steady improvements in its experienced welfare during the past half a century (Helliwell et al., 2015).[1] This increase – proxied by improvements in subjective well-being (SWB)[2] – 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 (Neri, 2009; Touchton et al., 2017; Wampler et al., 2019), improved social and political inclusion, civic engagement, and human rights.[3] By the mid-2010s, Brazil ranked higher than most countries at a similar stage in their development in terms of average subjective well-being (SWB), although inequality in SWB remained high.[4]

The virtuous cycle between economic development and improvements in perceived welfare drew to a halt after 2014 as 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% from 2013 to 6.2 in 2018 (Figure 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.[5] SWB slightly improved in 2019 but given the severity of the COVID-19 crisis in Brazil, SWB levels declined in 2020 to or below the 2018 level.[6]

Figure 1. SWB and Per Capita Income Trends in Brazil (2010-2020)

Sources: Gallup World Poll for SWB and World Bank for GDP per Capita (2017 Constant US$). *Notes SWB graph:* 95% confidence intervals shown. N=13,911. Sampling weights used. All interviews in 2015 were held in October/November and in 2020 between September and November.

[1] Whereas in 1960 the average Brazilian evaluated his life with a score of 4.6 out of 10, by 2011 this value increased to 7.1. 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?*' We observe a similar increase during Brazil's Golden Decade using the life-satisfaction question in Latinobarómetro 1997-2013 (Veenhoven, 2021).

[2] Subjective well-being or experienced quality of life is often used 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 the work by Inglehart et al. (2008) and Ott (2021) on the relationship between freedom, democracy, and SWB.

[4] For further information, see Appendix A.

[5] We find a similar decrease in alternative SWB measures, including the Affect Balance Scale in the Gallup World Poll and data from the Latinobarómetro. See Appendix B for further information.

[6] See papers by De Abreu et al. (2021), Passos et al. (2021), and Zhang et al. (2021).

The literature on SWB in Brazil has mostly examined the correlates associated with the high levels of Brazilian SWB (e.g. Islam et al., 2009; Gori-Mora, 2013; Golgher & Coutinho, 2020) in comparison with those of many other countries. Some Brazilian studies have focused on the SWB of specific populations such as the elderly (e.g., Pinto et al., 2016; Simões et al., 2021) and adolescents (e.g., Viñas et al., 2019) or are specific quasi-experiments focusing on rural household displacement (Randell, 2016) or land ownership programs (De Moura & De Silveira Bueno, 2013).

Our paper contributes to this literature in several ways. First, using data from the Gallup World Poll for the decade starting in 2010, we identify the factors associated with Brazil's SWB and its change during this period, paying special attention to differences across groups within the country. The results suggest that having sufficient income, financial security, economic optimism, satisfaction with living standards and health services, social capital, tertiary education, and digital access are the main factors associated with SWB in Brazil. In line with the high SWB inequality, there are substantial differences in SWB along the income distribution, across generations and space, and across groups with different employment and education status. There are also differences in the extent to which the factors underpinning SWB matter for different population groups. Youth derive greater life satisfaction from economic optimism, digital access, and acceptance of diversity than older generations. Satisfaction with living standards, economic optimism, and tertiary education matter more for the poor, while opportunities for social mobility are more important to the happiness of the middle and upper classes. Episodes of financial struggle, confidence in national institutions, and the quality of education services have a stronger influence on the SWB of urban residents compared to rural populations. In the higher-income South and Southeast, people care more about their health, ability to obtain tertiary education, and social relations, while in the rest of the country people are more concerned about their ability to earn income and standard of living.

Second, we explore the decline in SWB since 2015 and analyze *which groups* have been affected the most and *how*. The decline in SWB coincided with a remarkable economic deterioration but declining income and increasing unemployment are not the only factors associated with the deterioration in perceived welfare. Deteriorating economic expectations and political disappointment also played a role in this decline both because the share of people who became more pessimistic about the economic outlook increased and because economic expectations assumed a greater role in people's preferences, especially those of men. We show that not everyone's SWB was equally hit by the crisis and that the factors associated with the SWB decline vary across groups.[7] A rise in dissatisfaction with living standards mattered more for men than women and those older than 30 than the young, while economic pessimism mattered more to the less educated and the old. Disappointment with political leadership was more important for the youth than Brazilians older than 30. The experienced welfare of the bottom 40% of the population was affected both by the economic deterioration and the growing leadership crisis.

Third, we provide support for the hypothesis that the decline in SWB in the 2010s could be indicative of increased polarization and decline in support for Brazil's social contract.[8] Building on the literature that has examined the relationship between SWB, social unrest (e.g., Arampatzi et al., 2018; Witte et al., 2020; Abi-Nasif et al., 2021), and voting behavior (e.g. Liberini et al., 2017; Ward et al., 2021) and using a nationally representative survey, collected for the Brazilian Electoral Study (Meneguello, 2019), we show that the decline in SWB and the switch in voter support in the 2018 general elections from one end of the political spectrum to the other were both associated with

[7] A recent paper also provides evidence of considerable differences in preferences over policy areas across space and demographic groups in Colombia (Burger et al. 2021).

[8] Here we define a social contract as '*the entirety of explicit or implicit agreements between all relevant societal groups and the sovereign (i.e., the government or any other actor in power), defining their rights and obligations toward each other*' (Loewe et al., 2021).

the grievances triggered by the economic deterioration and the leadership crisis of the mid-2010s. These grievances indicate an erosion in support for the social contract that emerged after the end of the military dictatorship and was shaped since 2002 by the Partido dos Trabalhadores, which dominated Brazilian politics until its electoral loss in 2018. All groups to different extents, especially the middle class (middle 40%), expressed dissatisfaction with their standard of living, reflecting deficits in the quality of public services. The economic crisis and subsequent weak economic growth fueled growing pessimism and fears, especially among people with newly acquired middle-class status, of falling back into poverty. The young and the poor were also dissatisfied with wide-spread corruption, which exacerbated the leadership crisis and further limited the state capacity to deal with the consequences of the economic crisis.

The remainder of this paper is organized as follows. Section 2 discusses the conceptual framework and the literature on SWB and economic development with a specific focus on Brazil. Section 3 presents the data, variables, and empirical strategy. Section 4 discusses the empirical results, while Section 5 links the results to the outcome of the 2018 general election. Section 6 offers a summary, caveats, and a discussion of policy implications.

2. Conceptual framework

2.1. Subjective well-being and experienced welfare

We use the Cantril ladder scores in the Gallup World Poll to measure SWB 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[9] measures (Veenhoven, 2000), are generally regarded as valid measures of 'experienced welfare' (cf. Senik, 2011) in a country (OECD, 2013; Helliwell et al., 2021). They offer advantages 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.

SWB measures capture how people evaluate the quality of their own lives, while traditional, objective measures reflect the livability of the environment or the presence of opportunities to live a good life. This distinction is important because opportunities do not necessarily materialize in life; likewise, people are sometimes able to thrive in adverse circumstances. Thus, increased income or expenditures need not indicate rising experienced welfare and increased welfare need not reflect increased incomes or expenditure. In sum, traditional economic indicators may not be able to accurately track changes in experienced welfare (Arampatzi et al., 2018).

Despite criticism by economists that SWB measures have limited validity and reliability (e.g., Bertrand and Mullainathan, 2001), recent work in behavioral and happiness economics has shown that these measures complement well objective indicators as they provide information that is useful and cannot be obtained from objective data sources (Deaton, 2008; Ravallion, 2012). First, the use of specific objective quality-of-life indicators disregards the fact that people may value differently the opportunities for a good life. These indicators do not capture people's preferences on the extent to which objective conditions translate into outcomes of a good life (Veenhoven, 2000; 2002). According to Deaton (2008), objective aggregate measures, such as per capita GDP, reflect the subjective opinions of analysts and policy makers of what makes a good quality of life (Deaton, 2008). The assumption being that improvements in the average level of income in a country should lead to welfare increases for its citizens. Multidimensional quality-of-life measures can provide a solution because they cover non-monetary areas that matter to experienced welfare but are omitted from traditional welfare indicators based only on aggregate GDP or household income or expenditures. However, weighing the different aspects can be challenging when constructing an

[9] Alternatively, SWB is also referred to as life satisfaction.

index (Diener et al., 2009) and ultimately reflects the analysts' and policy makers' subjective opinions on the value of different domains for experienced welfare (Diener et al., 2009).

Second, objective measures capture well the quantifiable part of a concept but often do not include all its relevant and/or qualitative aspects. Income does not always reflect people's standard of living or whether people are able to make ends meet (Ravallion, 2012). People may have to work two or three jobs to ensure that they have sufficient income, or they may have to commute long distances on a daily basis to access well-paying jobs. Similarly, objective crime levels are not always accurate in capturing the safety in an area (Lorenc et al., 2012) and objective inequality can differ considerably from perceived inequality (Gimpelson & Treisman, 2018). Standards of living are affected by environmental and climate issues, quality of public services, governance, social cohesion, and other difficult to measure quality dimensions of development. SWB measures factor in the effects of these issues on experienced welfare by gauging people's evaluations, experiences, and expectations (Diener et al. 2009; Jahedi & Mendez, 2014).

Third and particularly related to this research, SWB data can be used to uncover the objective and subjective conditions that underpin experienced welfare using regression analyses and identify the domains that are most important in explaining changes in experienced welfare for specific groups. The main objective and subjective factors underpinning individuals' SWB have been well-documented (Helliwell, 2006; Frey, 2010; Layard, 2011; Clark, 2018), but the regressions used in these analyses pose challenges. Systematic differences have been found in how people value different domains of importance to experienced welfare across and within countries (Deaton, 2008; Tiefenbach & Kohlbacher, 2016). In addition, people recalibrate their SWB based on the 'ideal' they have for their personal life ('reference point'). Thus, people's values and preferences may change over time. Technological advances have accelerated the change in reference norms and in many places around the world they have increased people's frustration with relative income differences (Graham, 2005).

2.2. Drivers of SWB

Genetic factors and personality traits explain to a large extent differences in SWB between people (Bartels, 2015), but other personal characteristics, including age (Clark, 2019), health (Graham, 2008), income (Clark et al., 2008), marital status (Stutzer & Frey, 2006), social contacts (Helliwell, 2006), and employment status (Winkelmann, 2014), also play a role. In addition, the livability of the environment also matters in that differences in SWB between countries are mostly driven by differences in economic development (37%), the quality of and access to health care services (15%), freedom (11%), and the availability of social support (8%) (Clark, 2018). Although there are cross-country variations in the relative importance of different domains, several papers have shown that the correlates of SWB are quite similar across cultures (Helliwell et al., 2010; Tov & Diener, 2013; Diego-Rosell et al., 2018), with the difference that economic factors appear to be more important in developing countries (Oishi, 2010), while freedom has a stronger correlation with SWB in more affluent and individualistic countries.

In Latin America and the Caribbean, as in other developing regions, economic factors are considered important drivers of SWB (Diego-Rosell et al., 2018), but income perceptions (e.g. 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.[10] In Brazil, Gori-Maia (2013) finds that neighborhood income is negatively associated with self-reported perceptions of income sufficiency, i.e., families with the same income are less likely to report sufficient income in high-income neighborhoods. Islam et al. (2009) report that the relationship

[10] See also Macchia et al. (2019) who show that the rank of income is more strongly associated with well-being in more unequal nations.

between income and SWB in Brazil is mediated by social class, suggesting that higher income results in higher SWB because higher income provides more status in society.

At the same time, the relationship between income and SWB can vary across the happiness distribution. Lamu and Olsen (2016), Graham and Nikolova (2015), D'Ambrosio et al. (2020), and Burger et al. (2021) find that the association between income and SWB is strongest for the unhappiest respondents. This suggests that income redistribution would not only reduce inequality, but also boost average experienced welfare. Other domains that are more strongly associated with the SWB of the unhappiest people in the distribution are health (Lamu & Olsen, 2016), unemployment (Binder & Coad, 2015), education and digital connectivity (Burger et al., 2021). These findings suggest that improvements in basic needs will tend to benefit most the least fortunate members of society.

2.3 SWB and economic development in Brazil

The literature on the relationship between economic development and SWB has flourished since the seminal work of Easterlin (1974). Looking at SWB and economic growth in the United States between 1946 and 1970, Easterlin found that at a given point in time, SWB varies directly with income both among and within nations, but over time an increase in income in a country is not associated with an increase in SWB. Although several investigators have found a small positive effect of economic growth on SWB (Hagerty & Veenhoven, 2003; Stevenson & Wolfers, 2008, Diener et al., 2013;), Easterlin disputes these results (Easterlin 2005; Easterlin & O'Connor, 2020), arguing that economic growth has not made us any happier. At the same time, most studies in this literature have focused on developed countries, while several papers have shown considerable SWB increases in developing countries growing at a fast pace (e.g., Opfinger, 2016; Slag et al., 2019; Kaiser & Vendrik, 2019).

Rather than focusing on whether the Easterlin Paradox holds, a stream of the literature examines *under which conditions* economic growth results in an increase in SWB. According to Sarracino and O'Connor (2019), increases in income and SWB can go hand in hand when countries limit inequality, manage to safeguard social capital, and provide good social safety nets for the poorest members of society. Oishi and Kesebir (2015) and Mikucka et al. (2017) find that economic growth increases average happiness only when it is inclusive. When economic growth is rapid but not inclusive, feelings of unfairness can form (Oishi et al., 2011), fueled by people's increased tendency to make social comparisons in times of rising prosperity (Oishi & Keshbir, 2015). If a sufficiently large number of people believe that they are left behind, average SWB may decline during a period of rapid growth. Bartolini et al. (2013) argue that happiness can also grow if economic growth is not accompanied by a reduction in (the quality of) social capital or relational goods, while Ono and Lee (2013) highlight the importance of good safety nets in studies of countries that transitioned from communism to capitalism.

In the Eastern European countries, where the transition went together with a loss of jobs and basic income and loss in the provision of public services including health insurance and education (Easterlin, 2009; Djankov et al., 2016), happiness declined in the 1990s and early 2000s despite the acceleration of economic growth following the initial stages of transition. The importance of limiting inequality, preserving social capital, and expanding the provision of social safety nets has also been shown in the case of China, where growth in life satisfaction lags behind economic growth.[11]

[11] China's SWB dropped swiftly in the initial stages of economic growth due to a rise in inequality and a decline in social security (Easterlin et al., 2012) and social capital (Bartolini & Sarracino, 2015).

The Brazilian experience in the late-1990s and 2000s was very different from that of China. Driven by strong global demand for commodities, the Brazilian economic growth during the Golden Decade was accompanied by formal job creation and a significant reduction in income inequality (Neri, 2009). Wages rose faster than inflation during this period (Baltar & Krein, 2013), which helped boost consumption. In addition, increases in the minimum wage and the creation of social programs such as *Bolsa Familia* reduced extreme poverty by over 50% (Neri, 2010), while per capita social security benefits grew on average by 3.25% per year from 1995 to 2004 (Kakwani et al., 2010). These reforms were financed by significant increases in tax revenue. Between 1995 and 2012, the tax-to-GDP ratio in Brazil increased by 30% (Melo et al., 2014). The social programs ensured that the poorest Brazilians would not be left behind, which contributed to a remarkable jump in SWB in the 2000s.

Importantly, unlike the Chinese people, Brazilians gained greater political freedom and voice during this period. The relationship between SWB and political freedom is well-established (e.g. Inglehart et al., 2008; Ott, 2020), although democratization does not affect SWB only through political inclusion. According to Wampler et al. (2019), the democratic turn in Brazilian politics resulted in the creation of participatory institutions, including policy management councils, policy conferences, and participatory budgeting, and greater civic participation in policy-making processes (see also Touchton et al., 2017). In addition, state capacity improved through investments in personnel training, infrastructure, and equipment, partly spurred by improvements in fiscal transparency and federal monitoring of local policy implementation. Following Wampler et al. (2019), these developments improved citizens' well-being because authorities were able "*to make better use of resources when they receive inputs via democratic institutions as well as when citizens exercise oversight*" (pp. 286–87).

During this period, Brazil gradually reshaped its social contract and, in the process, transitioned from a low-redistribution and high-inequality society towards a higher-redistribution and lower-inequality society (Alston et al., 2013). Beliefs in economic growth at all costs in a stratified society were gradually replaced by beliefs in social inclusion with fiscal stability and freedom. The emphasis on fiscal stability was a reaction to the hyperinflation of the early 1990s, while the belief in social inclusion and freedom reflected the shift from a military regime to a democracy. These changes translated into SWB increases.

However, the renewed social contract benefited some Brazilians more than others and inequality, although lower than in previous decades, remained relatively high. As pointed out by Ban (2013), social programs such as Bolsa Familia[12] and social pensions only reached a small part of the population and, although wages rose, job precariousness and instability persisted (Pochmann, 2012).[13] The growing middle class was particularly vulnerable to economic insecurity (Biekart, 2015)[14] as the working middle class was not part of most social welfare arrangements. Although the middle class fared well during Brazil's Golden Decade, the aspirations of this emerging group gradually turned into fear of losing their newly acquired positions following the slowdown of Brazil's economy in the 2010s.

While relying on social redistribution and consumption-based growth, Brazil's social contract overlooked investments that would improve the quality of key public services, including infrastructure, education, and health. Whereas social assistance and social security expenditure made up 60%-70% of the total social expenditures, health and education expenditures were only 10%-20% and decreased in the 2010s (SIAFI, 2016). However, the latter areas were particularly

[12] Research by Barrientos et al. (2016) indicates that Bolsa Familia reached about 14 million households in Brazil.
[13] For example, job turnover in 2009 was still over 85% of formal jobs for low-paying jobs (earning up to 2.5 times the minimum wage) (Estanque, 2015).
[14] Brazil's middle class comprised 15% of the Brazilian population in the early 1980s; by 2012 it encompassed approximately a third of the country's population according to estimates by Ferreira et al. (2013).

important to the middle class (Clément et al., 2020), which was becoming increasingly dissatisfied with the quality of public services given the level of taxes they had to pay. At the same time, progress for these groups was hampered by widespread clientelism and corruption. As a result, grievances grew on the eve of Brazil's economic crisis and erupted during the June 2013 protests, which were largely driven by the middle class (Estanque, 2015).

2.4 SWB and economic decline in Brazil

More recently, studies have started paying attention to the link between economic decline and SWB. De Neve et al. (2018) show that SWB tends to be much more sensitive to negative than positive economic growth. Hence, in times of crises, countries can experience a serious erosion in SWB, although some countries are more resilient than others (see e.g., Arampatzi et al., 2015; Helliwell et al., 2021). Focusing specifically on recent economic crises, several studies have found that the negative impact of an economic crisis on SWB can indeed be alleviated by institutional and social trust (Helliwell et al. 2014), social capital (Gudmundsdottir 2013), the presence of unemployment support programs and employment protection legislation (Morgan & O'Connor, 2021), and good quality of governance (Arampatzi et al. 2019).

Building on this discussion and the work of Montagnoli and Moro (2018), we identify *two main channels* through which economic crises or contractions negatively affect SWB. First, such events are typically accompanied by 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. In Latin America, crises lead 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, economic crises can have psychological effects and lead to loss of hope and trust and decline in expectations. Disappointment with government policies, lower future economic expectations, and loss of hope (Pleeging et al., 2020) can also negatively affect SWB. Income expectations and feelings of financial security are strongly associated with SWB, and at times can even be more important than objective measures of current income (e.g., Frijters et al., 2012; Arampatzi et al., 2015).[15]

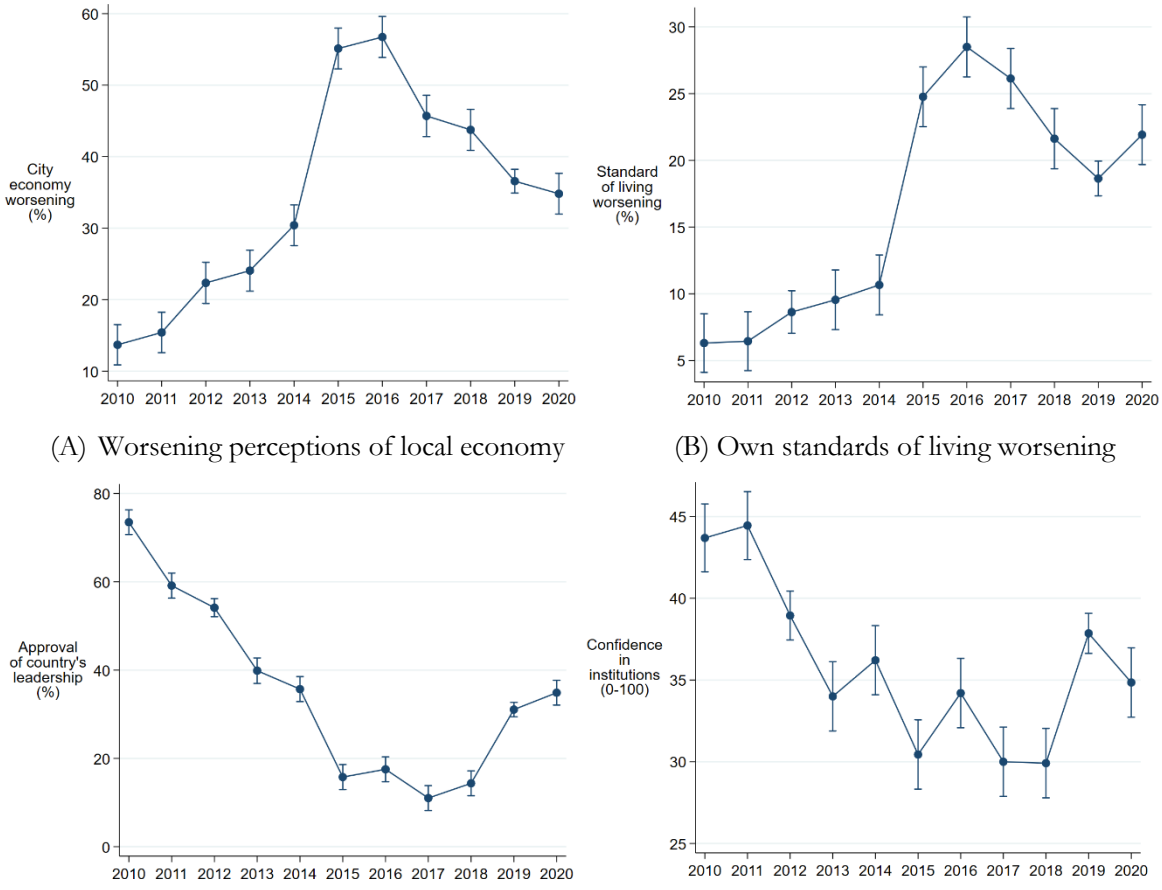
In Brazil, we expect both mechanisms to play an important role in explaining the decline in SWB since 2015. First, the economic contraction impoverished millions of Brazilians and increased inequality (World Bank, 2017) at a time when public spending was cut to address the country's deteriorating finances (Góes & Karpowicz, 2017). Thus, the recession was particularly detrimental to the poor and ultra-poor (Wang & Sun, 2020), whose lives had improved in the 2000s. Second, the crisis had psychological consequences. The percentage of people with worsening expectations about the local economy and their own standards of living, which had started to steadily increase in the first half of the 2010s, escalated after 2014 (Figure 2A and Figure 2B). In parallel, during the same period, there was substantial erosion in government approval (Figure 2C) and trust in political institutions (Figure 2D). 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.

We next explore the role of these two mechanisms in Brazil, recognizing that while disappointment and suffering are widespread during times of economic hardship, some groups may have been more heavily affected than others and different sets of factors may have played a role across

[15] This touches upon the thesis of Neri: "*Brazilians stand out for having people with the highest individual happiness and optimism for their individual future, but this contrasts with high pessimism regarding the future of their country.*"

different groups of Brazilians. We also study the link between the decline in experienced welfare in Brazil and the anti-establishment voting behavior during the elections of 2018, which can be perceived as indicative of the decline in support for Brazil's social contract. Although the move from a low-redistribution and high-inequality society towards a higher-redistribution and lower-inequality society was initially welcomed by most Brazilians, the switch in voter support in 2018 from the incumbent, center-left Partido dos Trabalhadores to the far-right Partido Social Liberal signaled a certain discontent in Brazilian society and a decline in support for the social contract, shaped since the early 2000s by the Partido dos Trabalhadores. As indicated in the previous subsection (2.3), at least part of this discontent can be traced back to growing grievances among Brazil's emerging middle class that remains vulnerable to economic shocks. This vulnerability reflects still inadequate unemployment insurance and short-term compensation programs and lack of good formal-sector jobs in an economic environment plagued by market competition issues (Silva et al. 2021). The crisis in the mid-2010s threatened especially the newly acquired status of groups belonging to the lower middle class. These groups had benefited from the social redistribution programs during the Golden Decade but they did not see ways to solidify their position due to the shortage of good formal sector jobs and the social spending cuts following the 2014 crisis.

Figure 2: Decline in expectations and loss of political trust in Brazil



(A) Worsening perceptions of local economy

(B) Own standards of living worsening

(C) Declining approval of leadership

(D) Declining institutional trust

Source: Gallup World Poll, 2010-2020. *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.

3. Data and Methodology

3.1. Data

Our analysis relies on data from the Gallup World Poll for the period 2010-2020, unless stated otherwise. During this period, the Gallup World Poll surveyed annually between 1,000-3,000 randomly selected adult Brazilians (15 years and older). In total, our sample includes 13,911 observations. We have all the relevant information for 10,228 observations that constitute our common sample. Table 1 shows the socio-demographic composition of the sample, which is representative at the country level as the surveys are designed to cover entire countries except for unsafe or inaccessible regions. As shown in Appendix C, the Gallup World Poll in Brazil is reasonably spatially representative over the period 2010-2020, although some states (Espirito Santo, Rio de Janeiro) are slightly overrepresented, while other states (Minas Gerais, Pará) are slightly underrepresented. Sampling weights are used in all analysis to make the sample as representative as possible.

Table 1. Descriptive statistics based on the Gallup World Poll data sample for Brazil, 2010-20

Variable	N	Mean	SD	Min	Max
SWB	10,228	6.65	2.35	0	10
Age	10,228	37.87	16.51	15	97
Female	10,228	0.51		0	1
Has a partner	10,228	0.53		0	1
Elementary education	10,228	0.39		0	1
Secondary education	10,228	0.54		0	1
Tertiary education	10,228	0.07		0	1
Per capita household income (international $)	10,228	4785	5119	0	31983
Full-time employed for employer	10,228	0.29		0	1
Self-employed	10,228	0.15		0	1
Part-time employed	10,228	0.16		0	1
Unemployed	10,228	0.08		0	1
Out of workforce	10,228	0.32		0	1
Lives in a rural area	10,228	0.49		0	1

Note: Income is winsorized at the 99% level.

3.2. Variables

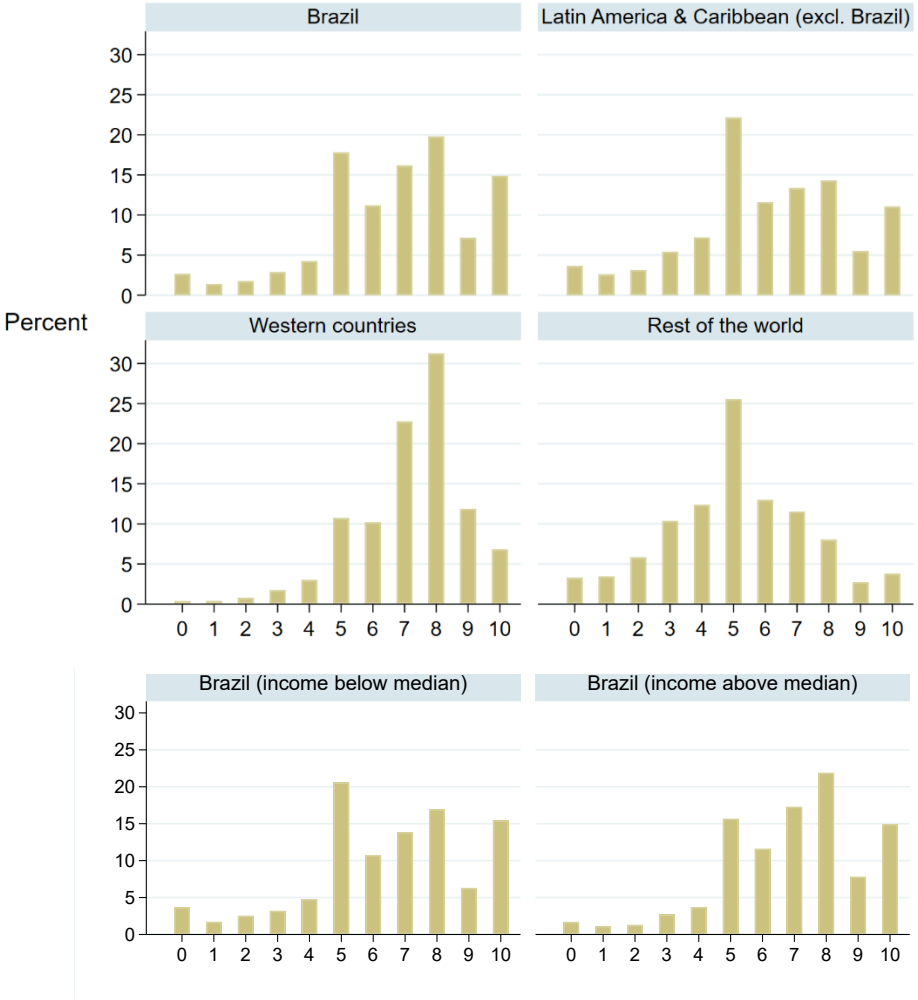
Our dependent variable is SWB, which we also refer to as experienced welfare or life satisfaction. It is measured using the "Cantril ladder" or "Self-Anchoring Striving Scale" (Cantril, 1965), mentioned earlier in the paper. Figure 3 displays the responses to the Cantril ladder question in Brazil, Latin America and the Caribbean, the Western countries (the Anglo-Saxon world and Europe), and the rest of the world. About one-third of Brazilian citizens (33%) score a 5 or lower on the Cantril ladder, but a considerable share of the population (21%) gives their life a score of 9 or 10. Many Brazilians with a below median income indicate that they are satisfied with their quality of life.[16]

The relatively high SWB scores in many Latin American countries have been extensively discussed in the quality-of-life literature (Rojas, 2016). The high scores are largely explained by the quantity and quality of close social relationships and family life in this part of the world (Rojas, 2016) as well as the generally optimistic nature of Latin Americans (Yamamoto, 2016). Yet, cultural

[16] In this regard, the poorest 40% of Brazilians score much higher on the Cantril ladder (6.4) than the poorest 40% of Russians (5.3), Indians (3.9), Indonesians (4.9), Chinese (4.7), and South Africans (4.4).

response style also plays a role (Brulé & Veenhoven, 2017). Like in other Latin American countries, the percentage of Brazilian respondents scoring 10 is higher than the percentage of respondents scoring a 9. In the Western world, there is a more equal distribution of SWB (with a concentration around 7) and a lower percentage of people who give their quality of life a score of 10.

Figure 3. SWB distribution in Brazil and the Rest of the World



Source: Gallup World Poll (2010-2018). N=13,911 for Brazil.

Given our interest in explaining the decline in SWB in Brazil in the aftermath of the economic crisis, we include as independent variables economic factors that are well-known to affect the level and change in SWB. These are the per capita household income, measured as reported household income divided by household size, and the employment status of survey participants, captured by 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. We also control for regional conditions by including the regional GDP per capita and the regional unemployment rate.

In addition, we 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 sufficiency is a variable 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, where respondents are asked to indicate the extent to which they 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. Likewise, optimism about the economic climate is measured using 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. In addition, we measure political trust with two subjective variables: approval of leadership and confidence in institutions. Approval of leadership is a dummy variable 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.

We also include subjective domains measuring satisfaction with the quality of the environment (air and water) and public services (transportation infrastructure, health care, educational system, socializing opportunities), and perceptions of personal freedom, social mobility, safety, acceptance of diversity, and corruption.

Finally, we control for a range of objective and subjective personal characteristics. The objective personal characteristics in our analyses include age, gender, marital status, household composition, migration status, health status, education level, digital connectivity, place of residence, and civic engagement through donation, 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. A complete description of the variables included in our analyses can be found in Appendix D.

3.3. Empirical strategy

We gauge the drivers of SWB in Brazil in the period 2010-2020 using a regression model that examines individual differences in SWB in Brazil:

$$SWB_{ijt} = X'_{ijt}\beta + Z'_{jt}\theta + t_t + \varepsilon_{ijt}. \quad (1)$$

In this model, the reported subjective well-being, SWB_{ijt}, of individual *i* in state *j* in year *t* depends on a vector of objective and subjective individual characteristics, X'_{ijt}, and a vector of regional indicators measured at the state level, Z'_{jt}, including regional GDP per capita and regional unemployment. A vector of year dummies, t_t, allows us to control for time-related shocks, common to all regions in the country. We estimate Model (1) using a weighted least squares (WLS) estimator with robust standard errors clustered at the regional level. According to Ferrer-i-Carbonell and Frijters (2004) the ordinality or cardinality of the dependent variable does not significantly affect the results.[17]

Linear regression analysis may, however, suffer from endogeneity issues because our dependent variable, *SWB*, and the subjective domain variables included as independent variables are simultaneously determined (see also Arampatzi et al., 2018; O'Connor, 2020; Burger et al., 2021). A traditional instrumental variables (IV) estimation, unfortunately, is unattainable due to the

[17] Although recent research by Bond and Lang (2019) and Schroeder and Yitzhaki (2017) has challenged this approach, claiming that SWB estimations can be reversed with certain monotonic increasing transformations of SWB data, Kaiser and Vendrik (2020) show that this will only happen under the rare instances when people use SWB response scales in a strongly nonlinear fashion. In the context of a linear model, such reversals are almost impossible.

absence of valid instruments. In view of that, we follow O'Connor (2020) and Burger et al. (2021) and re-estimate model (1) using the Lewbel IV estimator (Lewbel, 2012) as a robustness check. The Lewbel IV estimator uses internally generated, heteroskedasticity-based instruments for cross-sectional data to isolate the effect of the individual domain satisfactions on overall SWB. The Lewbel IV estimator is comparable to the difference generalized method of moments (GMM) and the system GMM estimators in panel data research (Arellano and Bond, 1991).

Apart from examining the main correlates of SWB in Brazil, we study how these effects vary along the income distribution and across genders, generations and space using split sample analysis (Koenker and Bassett Jr., 1978). This helps us to identify the heterogeneity in the domains correlated with the SWB of different segments of the population and to understand why some groups of people have been particularly hard hit by the economic crisis in the mid-2010s.

Finally, to examine temporal differences in SWB between the period before the economic crisis (2010-2014) and after the economic crisis (2015-2020), we make use of the Blinder-Oaxaca decomposition analysis (Blinder, 1973; Oaxaca, 1974). The Blinder–Oaxaca decomposition divides the differential of the SWB outcome into two parts: the first part shows the explained differences in SWB scores between the two periods (Q), while the second one refers to the unexplained part (U). More specifically:

$$\Delta SWB = [E(X_A) - E(X_B)]' \beta^* + [E(X_A)' (\beta_A - \beta^*) - E(X_B)' (\beta_B - \beta^*)], \quad (2)$$

where ΔSWB is the difference in SWB between the two time periods, A (2015-2020) and B (2010-2014), β_A and β_B are vectors of coefficients estimated using weighted least squares for the respective periods (using sampling weights), and β^* is a non-discriminatory vector of coefficients, estimated with a pooled regression and used to determine the deviation in the relative importance of each domain in the model between the two time periods. The explained part ($Q=[E(X_A) - E(X_B)]'\beta^*$)—or the "endowments effect"—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. Hence, this "endowment effect" reflects the differences in objective and subjective circumstances between the post-crisis period A and pre-crisis period B. The unexplained part ($U=[E(X_A)' (\beta_A - \beta^*) - E(X_B)' (\beta_B - \beta^*)]$) captures omitted variables as well as changes in the estimated coefficients between period A and B.

4. Empirical Results

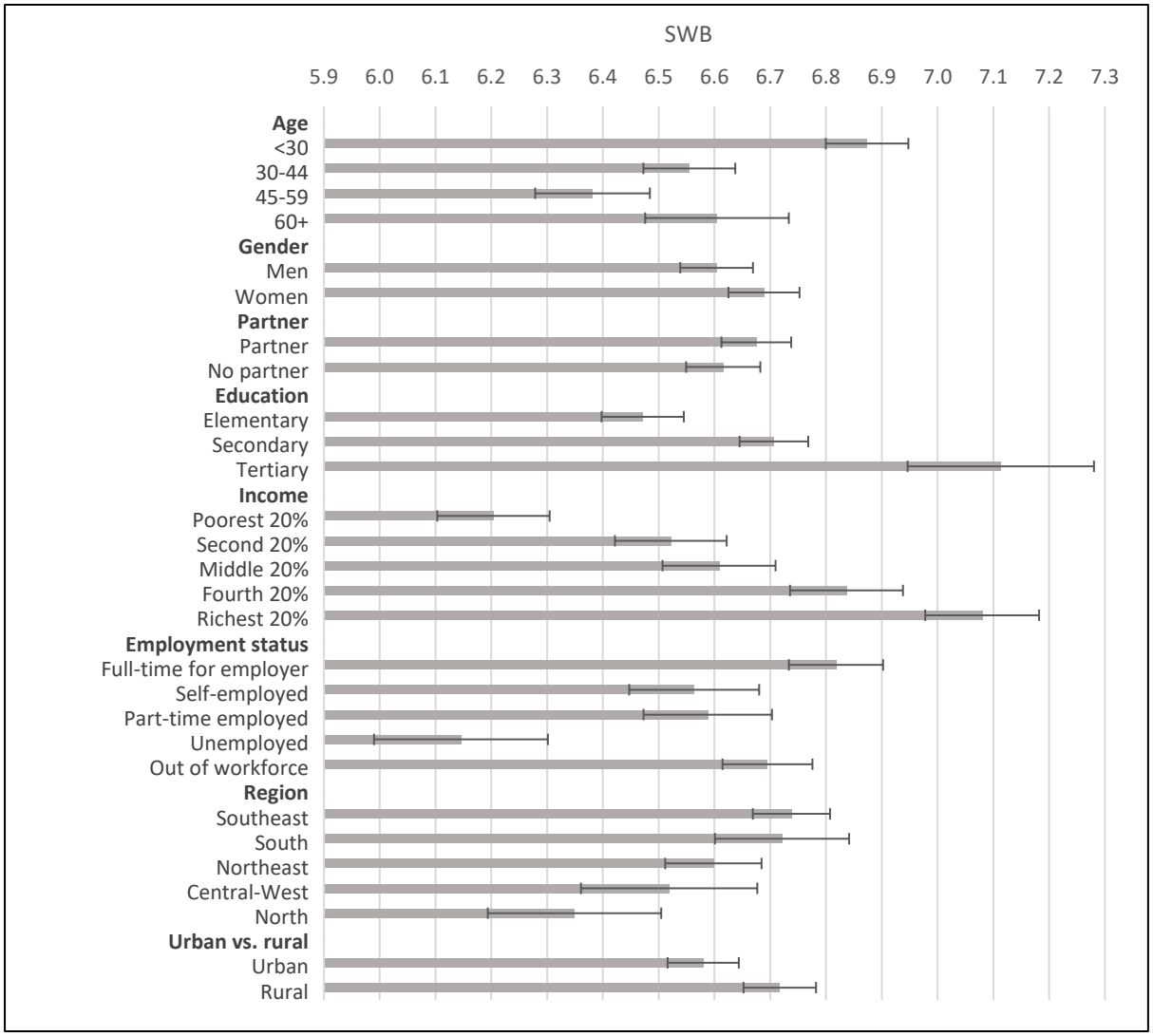
4.1. Factors underpinning SWB in Brazil

Figure 4 shows the socio-demographic differences in SWB across respondents with different objective characteristics. The largest differences in SWB are observed between the poorest 20% (6.2) and richest 20% (7.1), those with only elementary education (6.4) and the college educated (7.1), the unemployed (6.2) and the full-time employed (6.8), and the young (<30 years, 6.9) and the middle-aged (45-69 years, 6.4). Gender and spatial differences as well as differences between people with and without a partner are more limited, although people in the North of Brazil have a significantly lower SWB (6.4) than the South (6.7) and the Southeast (6.7). The average difference in SWB between the pre-crisis (2010-2014) and post-crisis (2015-2020) period is 0.6 points.

Table 2 presents results from different specifications of model (1) in Brazil. Model specification (1), shown in column (1), includes only personal characteristics, based mainly on objective data. In line with the descriptive statistics provided in the previous section, we find a U-shaped relationship between age and SWB. However, this relationship loses its significance and becomes less pronounced in model specification (2) where we control for subjective economic situation. The respective differences between males and females and singles and individuals with partners are statistically significant and these results are robust to the inclusion of different controls. In all

model specifications, SWB is uncorrelated with religiosity and having children. The much lower SWB of immigrants is not statistically significant because there are only 55 immigrants in the sample but this result hints at a potentially substantial difference between the experienced welfare of immigrants and natives. Our results suggest that health status is a significant correlate of SWB, even when we control for experiencing physical pain a day prior to conducting the survey. However, this result loses its significance in the full model and the size of the coefficient is significantly reduced once we control for other objective and subjective factors, including satisfaction with health services. Experiencing physical pain a day prior to conducting the survey retains its significance but the size of the negative coefficient is significantly reduced once we take into account the availability of health services and the rest of the controls in the full model specification (7). Having tertiary education is a significant and robust correlate of SWB. In specification (7), those who completed tertiary education have SWB that is 0.34 point higher than those who did not complete tertiary education.

Figure 4. SWB by demographic group



Notes: 95% confidence intervals shown. N=10,228.

As expected, income is positively associated with SWB, while unemployment is negatively correlated with SWB. However, both effects disappear after adding controls for individuals' subjective economic situation, indicating that low income and unemployment likely result in financial struggle and lower levels of optimism with regards to one's own economic situation and

the local economic climate. These subjective indicators explain approximately an additional 10% of the variance in model specification (2). At the same time, financial struggle, income sufficiency, and personal economic optimism retain their significance, even when controlling for potential confounding factors in the final specification. These results indicate that income and employment enhance SWB mostly by enabling people to meet their own consumption needs and to achieve a standard of living consistent with their expectations. Regional economic development and unemployment is not significantly correlated with SWB beyond its effect through a person's income and employment status.

In line with the literature, we find that social support is significantly and positively associated with SWB, as shown in specification (3) and in the full specification (7). However, the positive associations of civic engagement and acceptance of diversity with SWB in specification (3) disappear once we control for other factors in the full specification (7).

Among community basics, only perceptions of health care services are positively and significantly correlated with SWB both in specification (4) and the full specification (7). Satisfaction with socializing opportunities and water quality are positively associated with SWB, although the significance of this association disappears when controlling for other variables in the full specification (7). Satisfaction with transport infrastructure, air quality, and the education system as well as safety are not associated with SWB, but having digital access is a robust and significant factor underpinning SWB. The size of the effect is also large: people with digital access have an SWB score that is on average 0.3 point higher than the SWB score for people without digital access.

At the national level, confidence in national institutions (the government, judicial system, military, and honesty of elections) is associated with higher SWB levels. However, approval of leadership and perceived corruption are uncorrelated with SWB. Although perceptions about social mobility and freedom are positively associated with SWB in specification (5), these effects become insignificant in the full specification.

Which life domains explain most differences in SWB? Since some of the variables are differently scaled, we obtain standardized regression coefficients to compare the relative importance of the various correlates of SWB. These standardized coefficients are the coefficients that you would estimate if the SWB variable and all independent variables were all transformed standardized scores (z-scores) before conducting the WLS regression. Because these standardized coefficients are all measured in standard deviations, instead of the units of the variables, they are comparable to one another (see also De Neve et al., 2015 and Burger et al., 2021). The standardized regression coefficients are presented in the grey columns in Table 2. The results suggest that people's subjective economic experiences are the most important factors explaining the variation in SWB in Brazil, followed by personal characteristics, such as marital status, gender and tertiary education, as well as digital access, health status, and perceptions about health care.

4.2. Sensitivity analysis: Reverse causality

We provide the results of these Lewbel IV regressions in Table 3. We first attempted to re-estimate specification (7) in Table 2 by simultaneously instrumenting all the subjective variables. However, this led to a situation of weak instruments caused by the fact that there is not enough heteroskedasticity in the error term to meet the conditions for so many externally generated Lewbel IV instruments. Following Burger et al. (2021), we proceeded by separately instrumenting each *one* of the subjective variables and re-estimating model specification (7) each time.

Our conclusions regarding the most important factors underpinning the variation in Brazilian SWB do not change after re-estimation of specification (7) with the Lewbel IV estimator. The effects of financial struggle, income sufficiency, satisfaction with standards of living, personal economic optimism, social support, digital access, and satisfaction with health care remain statistically

significant. Only the effect of national institutions becomes insignificant, although the magnitude of the coefficient of this variable does not become smaller. These findings lend support to the thesis that economic perceptions and expectations about the prospects of the economy matter for SWB in Brazil.

At the same, the magnitude of the effects of acceptance of diversity, satisfaction with socializing opportunities, and satisfaction with freedom become statistically significant after re-estimation with the Lewbel IV estimator. These increases in coefficients after re-estimation with an IV estimator suggest that the effect of these variables is highly heterogeneous since IV estimates capture local average treatment effects instead of average treatment effects. In our case, the increase in coefficients indicate considerable heterogeneity in the studied population: for some individuals these factors are very important in their SWB function, while for others they matter only to a lesser extent. We further examine the heterogeneity of these effects in the next subsection.

4.3. Sensitivity analysis: Heterogeneous relationships

Using split sample analysis and the full specification (7), we next explore the extent to which the SWB correlates differ across different groups of Brazilians (Table 4).

Gender differences

We find an inverted U-shaped relationship with age for Brazilian men (Table 4, column (1)), but not women (Table 4, column (2)). In other words, SWB varies over the lifecycle of Brazilians considerably less for females than males. This result is in line with recent research by Laaksonen (2021), who also found that the U-shaped relationship between age and SWB is stronger for males than for females.[18] Confidence in national institutions matter more to men, while women care more about social support, personal freedom, and social mobility. Other studies also find that social relationships are more important for females than males (Arrondo et al., 2020).

Generational differences

Digital access and acceptance of diversity are significantly correlated with the SWB of younger Brazilians (Table 4, column (3)), while these issues have no effect on the SWB of older Brazilians (Table 4, column (4)). This has been found in other studies and is not surprising since especially for young people the Internet is the prime media choice (Pénard et al., 2013). Older Brazilians also derive less life satisfaction from economic optimism than their younger counterparts, which can be explained by the fact that older people tend to have lower aspirations and the gap between their aspirations and achievements is lower (Ahn et al., 2007).

Difference along the income distribution

There are differences in the composition of factors underpinning the SWB of the bottom 40% (B40) and the top 60% (T60) of Brazilians (Table 4, columns (5) and (6)). Satisfaction with the standard of living and economic optimism tend to matter more for the life satisfactions of the bottom 40%. This finding is in line with the fact that a greater percentage of the unhappiest Brazilians are dissatisfied with their standard of living and struggle financially (Table 5). Having children, being an immigrant, and having tertiary education are associated with the SWB of the B40, while opportunities for social mobility are associated with the happiness of the T60. This is not surprising since upward mobility is of particular concern to the middle class whose basic needs are already met.

[18] A further discussion of the complex relationship between age and SWB is, however, beyond the scope of this paper.

Table 2. Regression results from different specifications of model (1)

	(1) Personal characteristics		(2) Subjective economic situation		(3) Social capital and digital access		(4) Community basics and safety		(5) Perceptions of public policy and institutions		(6) Objective regional circumstances		(7) Full model	
Dependent variable: SWB	**Coef.**	**Beta**	**Coef.**	**Beta**	**Coef.**	**Beta**	**Coef.**	**Beta**	**Coef.**	**Beta**	**Coef.**	**Beta**	**Coef.**	**Beta**
Age	-0.08**		-0.03		-0.07**		-0.07*		-0.07**		-0.08**		-0.03	
Age^2	0.08**		0.04		0.08**		0.07*		0.07**		0.08**		0.04	
Female	0.21*	0.04	0.26**	0.06	0.21*	0.04	0.28**	0.06	0.25*	0.05	0.21*	0.04	0.27**	0.06
Has a partner	0.24**	0.05	0.16*	0.03	0.24**	0.05	0.24**	0.05	0.23**	0.05	0.24**	0.05	0.17**	0.04
Has children under 15	0.05	0.01	0.05	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.05	0.01	0.04	0.01
Religious	0.22	0.03	0.08	0.01	0.17	0.02	0.13	0.02	0.12	0.01	0.21	0.02	0.04	0.00
Immigrant	-0.72	-0.02	-0.70	-0.02	-0.62	-0.01	-0.77	-0.02	-0.79	-0.02	-0.72	-0.02	-0.74	-0.02
Has health problems	-0.51*	-0.09	-0.28	-0.05	-0.46*	-0.08	-0.47*	-0.08	-0.49*	-0.08	-0.51*	-0.09	-0.26	-0.04
Had physical pain yesterday	-0.33**	-0.07	-0.12*	-0.02	-0.29**	-0.06	-0.25**	-0.05	-0.26**	-0.05	-0.33**	-0.07	-0.09*	-0.02
Lives in a rural area	0.17**	0.04	0.06	0.01	0.19**	0.04	0.02	0.01	0.10*	0.02	0.17*	0.04	0.06	0.01
Education level														
Elementary	Ref.		Ref.		Ref.		Ref.		Ref.		Ref.		Ref.	
Secondary	0.01	0.00	0.02	0.00	-0.09	-0.02	0.11	0.02	0.11	0.02	0.01	0.00	0.02	0.00
Tertiary	0.44*	0.05	0.34*	0.04	0.27	0.03	0.59**	0.07	0.53**	0.06	0.44*	0.05	0.34*	0.04
Employment status														
Full-time employed for employer	Ref.		Ref.		Ref.		Ref.		Ref.		Ref.		Ref.	
Self-employed	-0.05	-0.01	-0.02	-0.00	-0.04	-0.01	-0.06	-0.01	-0.07	-0.01	-0.05	-0.01	-0.02	-0.00
Part-time employed	-0.06	-0.01	0.04	0.01	-0.04	-0.01	-0.05	-0.01	-0.07	-0.01	-0.06	-0.01	0.05	0.01
Unemployed	-0.47**	-0.06	-0.11	-0.01	-0.43**	-0.05	-0.46**	-0.05	-0.44**	-0.05	-0.47**	-0.06	-0.12	-0.01
Out of workforce	0.01	0.00	0.05	0.01	0.05	0.01	-0.01	-0.00	-0.02	-0.00	0.01	0.00	0.06	0.01
Household income per capita (ln)	0.24**	0.11	0.08	0.04	0.20**	0.10	0.23**	0.11	0.24**	0.11	0.24**	0.11	0.07	0.03
Financial struggle			-0.32**	-0.05									-0.29**	-0.04
Income sufficiency			0.29**	0.11									0.26**	0.09
Satisfied with standard of living			0.86**	0.16									0.80**	0.15
Personal economic optimism			0.46**	0.15									0.44**	0.14
Optimism about economic climate			0.12*	0.05									0.05	0.02
Social support					0.59**	0.07							0.27*	0.03
Civic engagement					0.19**	0.02							0.07	0.01
Acceptance of diversity					0.47**	0.07							0.11	0.02
Digital access					0.48**	0.06							0.30**	0.04
Safety							0.31	0.04					0.00	0.00
Satisfied with socializing opportunities							0.32**	0.05					0.09	0.01
Satisfied with transportation infrastructure							0.17	0.03					-0.01	-0.00
Satisfied with educational system and schools							0.22	0.05					0.07	0.02
Satisfied with quality of air							0.01	0.00					-0.04	-0.01
Satisfied with quality of water							0.15**	0.03					0.07	0.01
Satisfied with health care							0.34**	0.07					0.18*	0.04

Corruption									-0.07	-0.01			-0.04	-0.01
Confidence in national institutions									0.44**	0.06			0.16*	0.02
Approval of country's leadership									0.22	0.04			0.13	0.03
Satisfied with personal freedom									0.35**	0.06			0.05	0.01
Social mobility is possible									0.33*	0.07			0.04	0.02
Regional GDP per capita (Brazilian real)											0.00	0.00	0.01	0.03
Regional unemployment rate											-0.02	-0.02	0.01	0.02
Year dummies	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	10,228		10,228		10,228		10,228		10,228		10,228		10,228	
R^2	0.073		0.175		0.087		0.097		0.092		0.073		0.183	

Notes: * p<0.05, ** p<0.01. 'Ref.' stands for reference group, 'Coef.' for unstandardized coefficients and 'Beta' for standardized coefficients. A non-reported missing category was included for the variable "Social mobility is possible" because this variable was not measured in 2019 and 2020.

Table 3. Lewbel IV Estimates

Dependent variable: SWB	WLS Coef.	Lewbel Coef.	Kleibergen-Paap rk Wald F statistic	Hansen J test (p-value)
Financial struggle	-0.29**	-0.44*	19.38	0.22
Income sufficiency	0.26**	0.52*	48.58	0.44
Satisfied with standard of living	0.80**	0.57**	20.50	0.15
Personal economic optimism	0.44**	0.43**	50.04	0.77
Optimism about economic climate	0.05	-0.10	14.67	0.07
Social support	0.27*	0.47*	16.62	0.79
Civic engagement	0.07	-0.18	12.30	0.85
Acceptance of diversity	0.11	0.52*	13.91	0.72
Digital access	0.30**	0.40*	24.17	0.11
Safety	*0.00*	*-0.04*	*7.33*	*0.70*
Satisfied with socializing opportunities	0.09	0.27*	28.23	0.95
Satisfied with transportation infrastructure	-0.01	0.18	9.88	0.62
Satisfied with educational system	0.07	-0.13	26.69	0.83
Satisfied with quality of air	-0.04	0.13	79.42	0.67
Satisfied with quality of water	0.07	0.12	16.11	0.21
Satisfied with health care	0.18*	0.36*	11.88	0.51
Corruption	*-0.04*	*0.06*	*4.08*	*0.34*
Confidence in national institutions	0.16*	0.22	36.32	0.86
Approval of country's leadership	0.13	0.15	15.50	0.06
Satisfied with personal freedom	0.05	0.28*	26.08	0.33
Social mobility is possible	0.04	0.12	629.41	0.18

Notes: * p<0.05, ** p<0.01. N=10,228. Every estimate in the Lewbel column is based on a separate Lewbel IV model, in which only the variable that is represented in that row was instrumented. The critical value for the Kleibergen-Paap (10% maximal IV relative bias) for the Stock and Yogo test is applied. Estimations with potentially weak instruments are highlighted in *italics*.

Table 4. Split-sample WLS regression results

	(1) Men	(2) Women	(3) Age below median	(4) Age above median	(5) Income lowest 40%	(6) Income upper 60%	(7) Urban	(8) Rural	(9) South & Southeast	(10) North, North-east, & Central-West
Age	-0.05*	-0.02			-0.02	-0.04**	-0.02	-0.04	-0.05**	-0.01
Age^2	0.05*	0.02			0.02	0.05**	0.02	0.05	0.06**	0.01
Female			0.30**	0.23*	0.22	0.30**	0.35**	0.21*	0.27**	0.30**
Has a partner	0.19*	0.16	0.22**	0.13*	0.09	0.24**	0.15	0.20	0.21**	0.13
Has children under 15	-0.01	0.09	0.06	0.02	0.15**	-0.06	-0.05	0.13	-0.00	0.11
Religious	0.09	-0.05	-0.13	0.10	0.05	0.04	0.03	0.09	-0.03	0.18
Immigrant	-0.22	-1.46	0.04	-1.60	-2.04*	-0.04	-1.02	0.27	-1.05*	0.12
Has health problems	-0.20	-0.29	-0.38	-0.06	-0.21	-0.32**	-0.20	-0.33	-0.44**	-0.04
Had physical pain yesterday	-0.01	-0.17*	-0.14	-0.04	-0.13	-0.04	-0.12*	-0.07	-0.07	-0.10
Lives in a rural area	0.06	0.05	-0.00	0.08	0.07	0.03			0.06	0.03
Education level										
Elementary	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Secondary	0.05	-0.03	-0.15	0.10	0.04	0.01	0.03	0.01	0.05	-0.06
Tertiary	0.44*	0.21	0.16	0.42*	0.55**	0.29	0.24	0.44*	0.43**	0.12
Employment status										
Full-time employed for employer	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Self-employed	-0.05	0.07	-0.21	0.08	-0.04	-0.01	0.14	-0.17	-0.07	0.11
Part-time employed	0.08	-0.00	-0.09	0.08	0.03	0.05	-0.07	0.17	-0.08	0.22
Unemployed	-0.02	-0.23	-0.18	-0.09	-0.09	-0.21	-0.15	-0.09	-0.28*	0.11
Out of workforce	-0.01	0.08	-0.07	0.15	0.08	0.03	0.05	0.07	-0.07	0.27*
Household income per capita (ln)	0.06*	0.08	0.09*	0.05	0.07	0.03	0.09	0.03	0.01	0.14**
Financial struggle	-0.32*	-0.25	-0.23	-0.34**	-0.26	-0.30*	-0.45**	-0.11	-0.23*	-0.31*
Income sufficiency	0.25**	0.26**	0.26**	0.25**	0.19	0.33*	0.27**	0.24**	0.28**	0.24**
Satisfied with standard of living	0.86**	0.76**	0.66**	0.87**	0.92**	0.69**	0.83**	0.80**	0.68**	0.98**
Personal economic optimism	0.40**	0.47**	0.55**	0.36**	0.50**	0.36**	0.42**	0.46**	0.40**	0.49**
Optimism about economic climate	0.03	0.08	0.12	0.02	0.07*	0.03	0.04	0.08	0.04	0.08
Social support	0.13	0.37**	0.34	0.20	0.24*	0.30	0.27*	0.29	0.34**	0.18
Civic engagement	0.14	0.03	0.20	-0.03	0.06	0.08	-0.05	0.21	0.13	0.07
Acceptance of diversity	0.16	0.05	0.30**	-0.01	0.02	0.19	0.20	-0.03	0.12	0.08
Digital access	0.27*	0.33*	0.46**	0.16	0.32*	0.26	0.20*	0.35**	0.37**	0.26
Safety	0.11	-0.10	0.10	-0.05	0.05	-0.02	0.01	-0.05	0.04	-0.01
Satisfied with socializing opportunities	0.12	0.07	0.08	0.12	0.06	0.12	0.12	0.05	0.16*	-0.04

Satisfied with transportation infrastructure	-0.04	0.02	-0.06	0.04	0.11	-0.12	-0.23**	0.23	-0.12	0.12
Satisfied with educational system and schools	-0.03	0.17	0.04	0.09	0.09	0.05	0.15*	-0.00	0.01	0.20*
Satisfied with quality of air	0.02	-0.07	-0.09	-0.02	-0.05	-0.01	0.03	-0.12	0.02	-0.09
Satisfied with quality of water	0.13	-0.01	0.02	0.10	0.10	0.01	0.08	0.04	0.04	0.07
Satisfied with health care	0.25*	-0.00	0.17*	0.17	0.17	0.18*	0.18*	0.15	0.14	0.24*
Corruption	0.02	-0.10	-0.06	-0.03	0.01	-0.08	0.03	-0.09	-0.04	0.00
Confidence in national institutions	0.26**	0.04	0.08	0.20	0.13	0.19	0.38**	-0.05	0.22	0.03
Approval of county's leadership	0.19	0.07	0.07	0.16	0.25	0.05	0.01	0.24*	0.13	0.13
Satisfied with personal freedom	-0.06	0.14**	0.05	0.05	0.03	0.08	0.06	0.07	0.06	0.04
Social mobility is possible	-0.08	0.17*	0.24	-0.08	-0.10	0.15*	-0.02	0.10	0.12	-0.02
Regional GDP per capita	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.01	-0.00
Regional unemployment rate	0.02	0.00	0.01	0.01	0.01	0.01	-0.00	0.04	0.05**	-0.02
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,302	5,926	4,907	5,321	4,135	6,093	5,320	4,908	5,802	4,426
R^2	0.201	0.182	0.201	0.180	0.180	0.181	0.207	0.178	0.196	0.189

Notes: * p<0.05, ** p<0.01. Unstandardized coefficients reported. The grey shaded cells indicate that the coefficients significantly differ between the two compared groups for pairs of coefficients (at 10% level) of which at least one of the coefficients is statistically significant.

Spatial differences

Financial struggle and dissatisfaction with education have a stronger influence on the experienced welfare of urban residents,[19] who also derive greater utility from confidence in national institutions (Table 4, columns (7) and (8)). Personal health, tertiary education, part-time employment, social capital (both in terms of social support and socializing opportunities), and unemployment are significant correlates of SWB in the more developed South and Southeast, but not in the rest of the country, where subjective economic factors matter more for life satisfaction, along with some objective economic characteristics such as household income and economic inactivity. This is in line with Inglehart's (2007) hypothesis that there is a shift from survival to self-expression and post-materialistic values when a society economically progresses.

Table 5. SWB, real income, and subjective economic indicators by SWB group

SWB group	Inflation-adjusted average household income per capita (International $)	Income sufficiency (1-4)	% Financial struggle	% Satisfied with standard of living
1 (4 or lower)	2279	2.1	43%	48%
2 (5)	2876	2.5	27%	63%
3 (6 or 7)	3726	2.8	17%	71%
4 (8)	4262	3.0	14%	83%
5 (9 or 10)	3586	2.9	20%	90%

Source: GWP.
Note: Groups are not equal quantiles – 14% of the respondents score a 4 or lower, 19% of the respondents score a 5, 28% of the respondents score a 6 or 7, 19% score an 8, and 21% of the respondents score a 9 or 10.

4.4. The evolution of SWB in the 2010s

After rising for decades, Brazil's SWB considerably deteriorated after 2014, when the economy contracted. The decline, computed as the difference in SWB between the post-crisis (2015-2020) and the pre-crisis period (2010-2014) and shown in Figure 5 by demographic group, was experienced by all socio-demographic groups, indicating that most Brazilians were affected by the economic malaise. However, the decline is significantly larger for men and less pronounced for young people (<30) and people living in urban areas. In addition, the decline was larger for people out of the workforce compared to the part-time employed, 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.

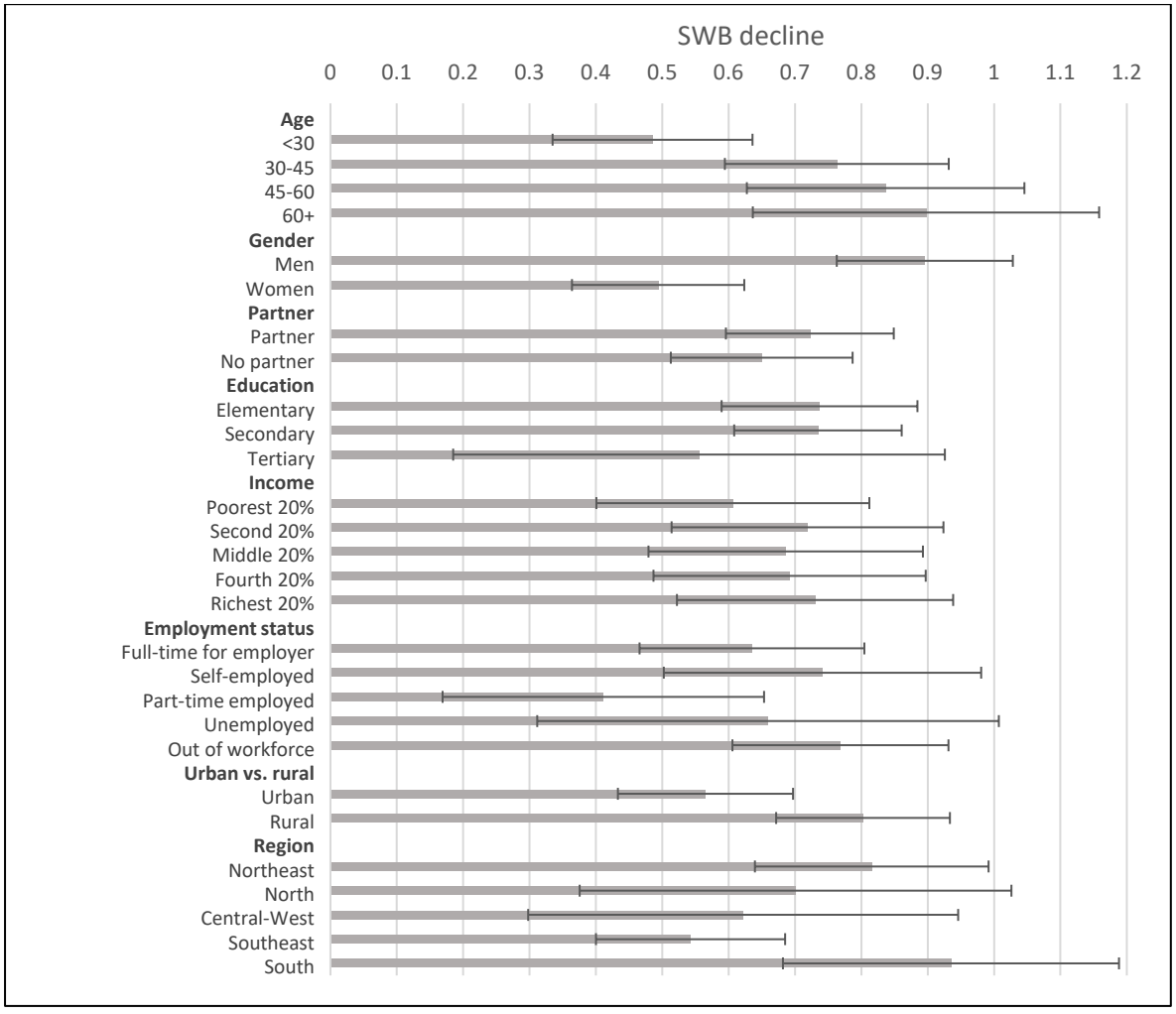
We use the Blinder-Oaxaca decomposition, shown in equation (2), to understand the main factors behind the plunge in SWB since 2015. The results, shown in Figure 6, suggest that the explained part of the decomposition accounts for more than 62% of the decline in SWB. *The decline is primarily associated with a deterioration in economic optimism and economic circumstances and a decrease in political trust, measured by perceptions about country's leadership.* Table 6 shows that these aspects indeed deteriorated after 2014. The percentage of respondents experiencing financial struggle increased from 17% to 25% and the percentage of respondents satisfied with their standard of living decreased from 78% to 70%. Income decreased by almost 25%, while the percentage of respondents that reported being

[19] One explanation for this difference is the larger inequality that exists in cities and the fact that people's reference points of a good life are in part driven by the quality of life of others in their immediate environment. Education offers a way to climb the social ladder. In addition, the returns to education are likely to be higher in urban areas, which offer more opportunities (Cardoso et al., 2019).

unemployed increased from 6% to 10%. These figures are in line with the decline in GDP per capita and the rise in unemployment rates reported in national statistics and the worsening regional conditions, reported in Table 6. Furthermore, the deteriorating objective economic conditions are reflected in deteriorating economic perceptions. Personal economic optimism declined from a 2.6 to a 2.4. Whereas in the period from 2010 to 2014 67% of the people felt their life was getting better, this share declined to 57% in the period from 2015 to 2020. Positive expectations regarding the local economy plunged from a 2.4 to a 2.0, with the percentage of people with positive expectations regarding the local economy declining from 55% to 42%. In addition, leadership approval plunged from 52% to just 23% of respondents approving the government; confidence in national institutions declined too.

At the same time, not all conditions deteriorated considerably. Social support declined but remained high (at 90%), while reported education levels, civic engagement, acceptance of diversity, digital access, satisfaction with socializing opportunities and health care, and perceived safety improved in the second half of the 2010s.[20] Yet, as shown in Figure 6, only improvements in digital access partly mitigated the negative effects of the economic crisis on SWB.

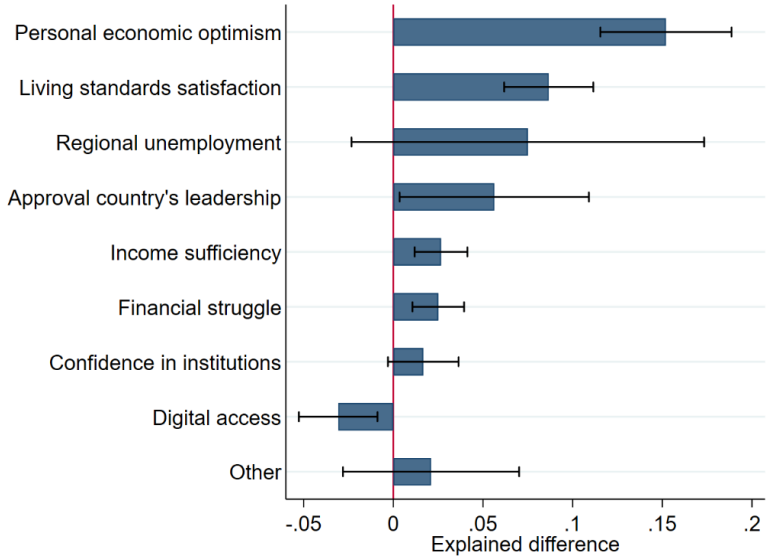
Figure 5. SWB decline by demographic group



Notes: 95% confidence intervals shown. N=10,228

[20] There were no notable differences between groups with regard to changes in perceived safety.

Figure 6. Factors associated with the SWB decline



Notes: 95% confidence intervals shown. N=10,228. The decomposition model contains all explanatory variables from the full specification (model 7 of Table 2). The model explains 62% of the SWB decline. Factors that did not significantly or sizably (>0.01) contribute to the SWB decline are grouped in the category "other".

Changing preferences manifested in differences in estimated coefficients before and after 2014 also drove part of the decline in SWB. Most interestingly, economic optimism was less positively correlated with SWB in the 2010-2014 period compared to 2015-2020 period, herewith augmenting the decline in SWB in the 2015-2020 period as economic optimism plunged, but the opposite happened with leadership approval. Hence, economic expectations played a role in the SWB decline for the following two reasons. First, the share of people who became more pessimistic about the economic outlook increased in the second half of 2010s. Second, economic expectations assumed a greater role as a factor underpinning experienced welfare. At the same time, 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.

However, if we look at different groups in Brazilian society presented in Figure 7A-7H, we see that there is some heterogeneity in the factors associated with declines in SWB by group. Increase in economic pessimism and dissatisfaction with living standards played a bigger role in the decline of SWB of older people, disappointment with political leadership mattered more for the youth, but so did improvements in digital access, which mitigated the SWB decline of the youth (Panel A and B).

Decline in living standards mattered more for the SWB of men, whose SWB also declined substantially more than that of women (Panel C and D). This is not surprising as men typically are the main breadwinners in the household and their identity is closely tied in with their economic success. Hence, economic setbacks have a much stronger influence over their welfare. The results in these two panels also suggest that the observed change in preferences in Brazil in the second half of the decade is due to changes in the preferences of Brazilian men. While for women changes in circumstances explain nearly all of the decline in SWB, for men these changes, captured by the explained part of the decomposition, account for only 40% of the decline in SWB. In the second half of the decade, economic expectations exerted greater influence over the experienced welfare of Brazilian men, while leadership approval declined in importance.

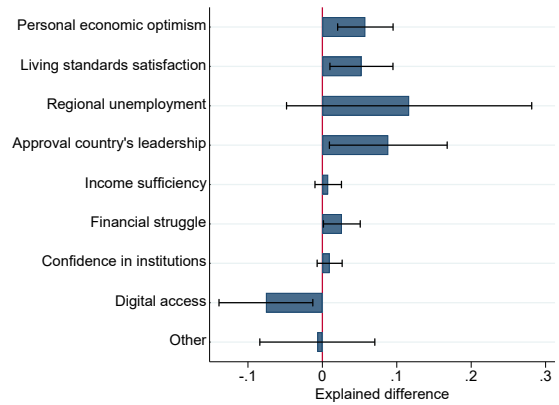
Table 6. Conditions affecting SWB before and after 2014

Variable	2010-2014	2015-2020
Age	38	38
% female	51	51
% has a partner	55	52
% has children under 15	50	52
% religious	95	90
% immigrants	0.003	0.003
% has health problems	20	18
% had physical pain yesterday	32	36
% lives in a rural area	52	47
% elementary education	42	36
% secondary education	53	56
% tertiary education	5	9
% full-time employed for employer	32	27
% self-employed	15	15
% part-time employed	14	17
% unemployed	6	10
% out of workforce	34	31
Per capita household income (inflation-adjusted, international $)	3530	2699
% in financial struggle	17	25
Income sufficiency (1-4)	2.8	2.7
% satisfied with standard of living	78	70
Personal economic optimism (1-3)	2.6	2.4
Optimism about economic climate (1-3)	2.4	2.0
% having social support	92	90
Civic engagement index (0-1)	0.27	0.32
Acceptance of diversity index (0-1)	0.70	0.75
Digital access index (0-1)	0.70	0.83
Safety index (0-1)	0.56	0.64
% Satisfied with opportunities for socializing	79	82
% Satisfied with transportation infrastructure	47	48
% Satisfied with educational system	54	54
% Satisfied with quality of air	71	64
% Satisfied with quality of water	74	73
% Satisfied with health care	33	35
Corruption index (0-1)	0.66	0.75
Confidence in national institutions index (0-1)	0.40	0.34
% approves of country's leadership	52	23
% satisfied with freedom	78	79
% considers social mobility possible	75	65
Regional GDP per capita (inflation-adjusted; Brazilian real)	21538	19986
Regional unemployment rate	7	12

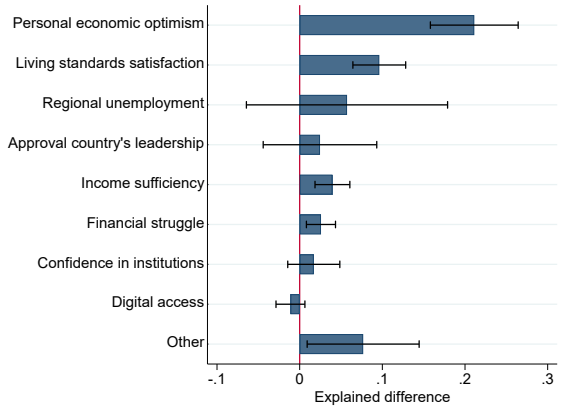
Notes: Grey= situation has significantly changed. Per capita income is winsorized at the 99% level at the upper tail. The numbers for regional GDP per capita, shown in the table, are the average across the GDP per capita of all regions in Brazil.

The relatively small SWB decline for the tertiary educated seems to be mostly driven by changes in perceptions of eroding living standards and regional unemployment, although none of the factors is statistically significant due to the small sample size of this group. The less educated suffered mostly due to a plunge in economic optimism and erosion in living standards (Panel E and F). Drivers of the decline in SWB for the different income groups are fairly similar. However, disappointment with political leadership and regional unemployment mattered more for the B40, while increased dissatisfaction with living standards played a bigger role for the middle 40% (M40).

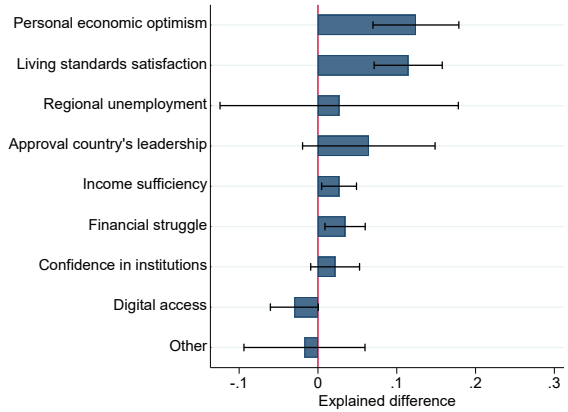
Figure 7: Factors explaining the SWB decline by subgroup



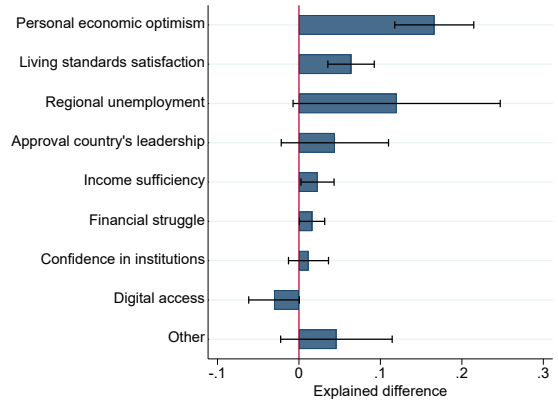
(A) Younger than 30 years (Explained: 67%)



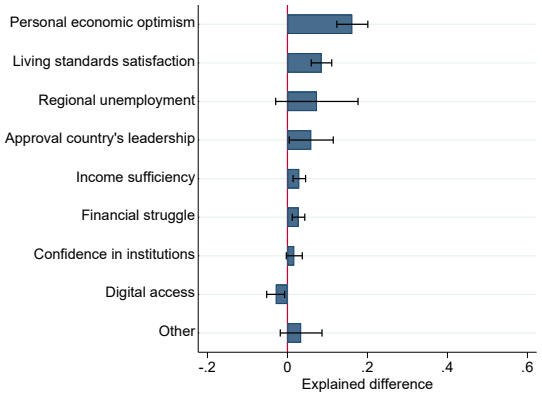
(B) 30 years or older (Explained: 63%)



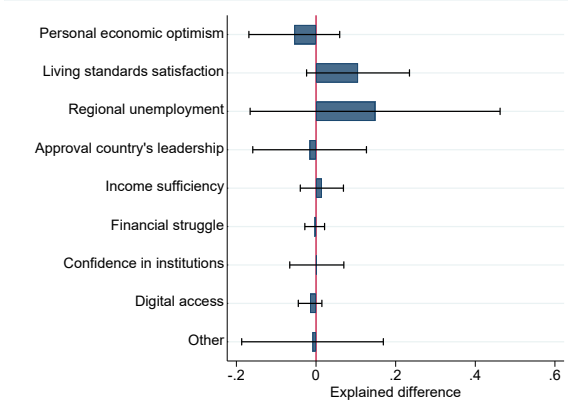
(C) Men (Explained: 40%)



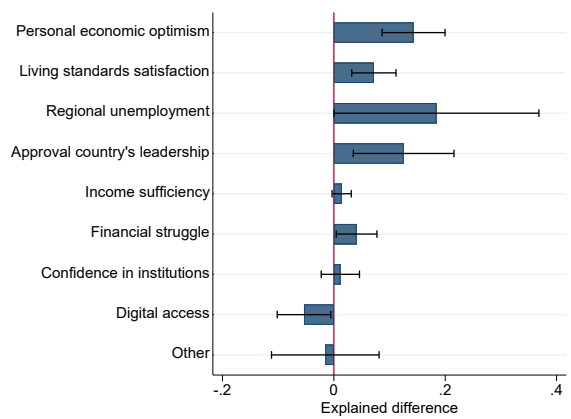
(D) Women (Explained: 99%)



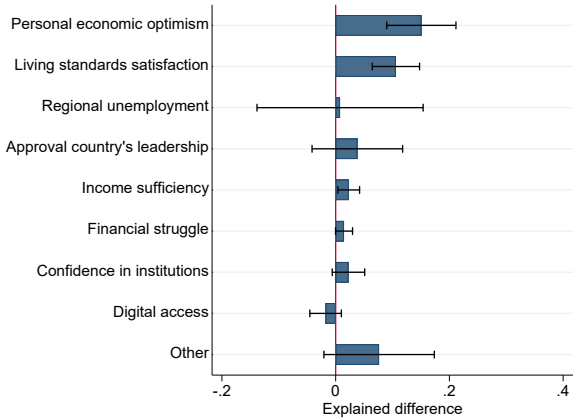
(E) No tertiary education (Explained: 64%)



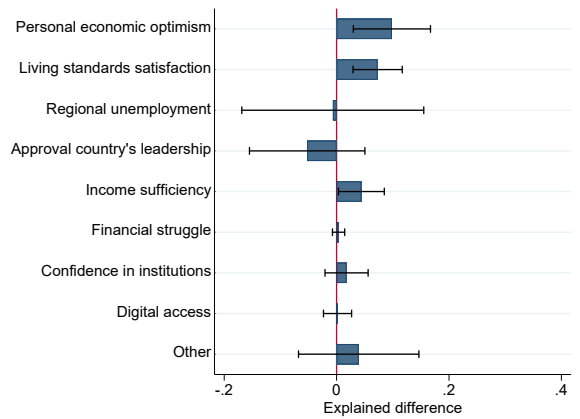
(F) Tertiary education (Explained: 37%)



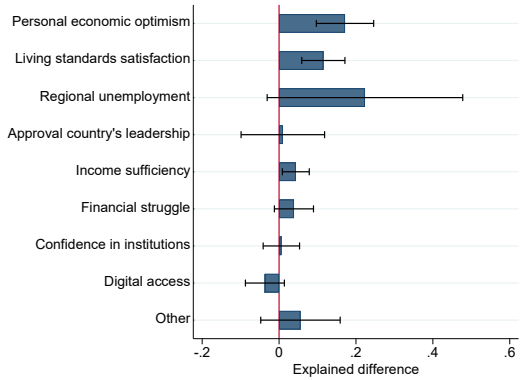
(G) Poorest 40% (Explained: 79%)



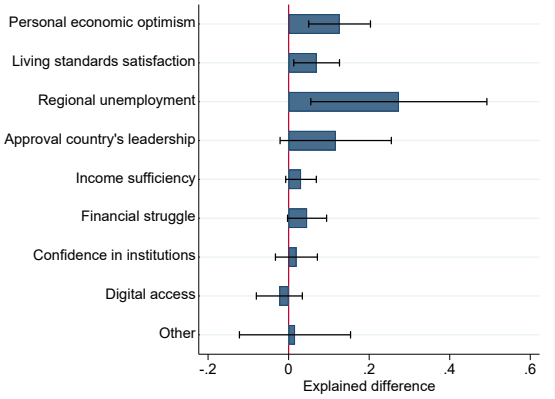
(H) Middle 40% (Explained: 61%)



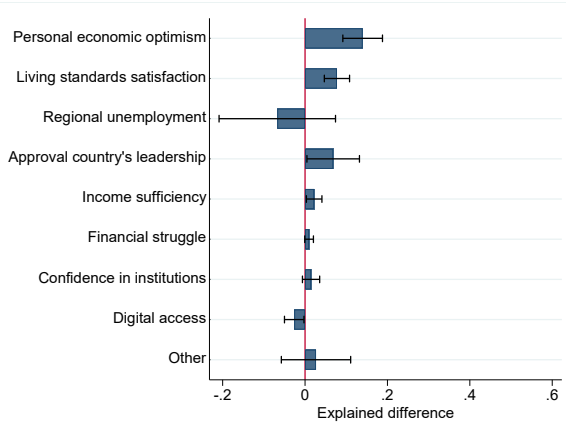
(I) Richest 20% (Explained: 30%)



(J) Northeast (Explained: 66%)



(K) Central-West and North (Explained: 100%)



(L) South and Southeast (Explained: 43%)

Regional unemployment also played a role in the Central West and North, while leadership approval mattered in the South and Southeast (Panels J, K, and L). This is in line with the greater economic dynamism and better labor market conditions in the South of Brazil (Brazilian Institute of Geography and Statistics, 2021). However, increase in economic pessimism and dissatisfaction with living standards played a role in the decline of SWB in all regions.

Since the last GWP survey included in our data set was conducted in November of 2020, it is possible that reactions to the 2020 COVID-19 pandemic are also driving the declines in SWB and differences in these declines across groups. Since in the next section we focus on the role of the economic crisis in the mid-2010s and the loss of approval of the governments prior to Bolsonaro's election in 2018, we conducted a robustness check on the analysis of the decline in SWB with data up to 2018. We find very similar results, which are available upon request.

5. Declining SWB and Voting Behavior

Did the plunge in experienced welfare following the economic and political crisis in the mid-2010s influence the voting behavior in Brazil during the 2018 general elections? Since the work of Kramer (1971), several economic studies have linked the state of the economy to election outcomes which either reward or punish the incumbent party. Lewis-Beck & Stegmaier (2007) put forward two main explanations for the relationship between the state of the economy and voting behavior. First, voters can punish (or reward) the incumbent for a deteriorated (improved) personal economic situation. In developing countries, changes in one's perceived personal economic situation have been found to be particularly strongly correlated with support for the incumbent (Lewis-Beck & Stegmaier, 2007). Job losses related to automation and globalization are also often mentioned as important reasons for the election of Donald Trump in the United States in 2016 (e.g., Autor et al., 2017). Second, voters can punish or reward the incumbent based on the standing of the national economy, irrespective of their own personal economic situation.

However, economic conditions are not the only factors linked to voting preferences. Several psychological studies have focused on other factors explaining voting behavior such as cultural backlash against progressive policies, demand for law and order, and status threat. Knuckey and Hassan (2020) associate the vote for Trump with anti-immigration sentiment and racial prejudice. Norris and Inglehart (2016) attribute the rise of populism in the West not to economic insecurity but to a cultural backlash and a reaction of once-dominant parts of the population to progressive viewpoints about ethnic minorities, women, and the LGBTQ+ community. In this regard, status threat is also perceived as an important explanation for the Trump vote (Mutz, 2018).

There is also a literature on the links between voting behavior and SWB. Most studies on voting behavior mention a strong sense of discontent in parts of the population as a driver of voting the incumbent out of office (Ward et al. 2020). The explanation for this is simple: voters punish the incumbent party if their experienced welfare 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. Several empirical studies find a strong positive association between SWB and voting for the incumbent party (e.g., Bravo, 2016; Liberini et al., 2017; Ward et al., 2020).[21] Bravo (2016), who studied this issue in Latin America, finds a strong correlation between SWB and the likelihood that the incumbent will win the elections using data from the Latinobarómetro. In elections held in Latin America between 1992 and 2013, support for left-wing parties was higher when the more unsatisfied voters were under a right-wing incumbent regime (Bravo, 2016).

[21] In addition, several studies examine the relationship between political participation and SWB. Weitz-Shapiro and Winters (2011) find a causal relationship between individual happiness and the likelihood to vote in elections in Latin America and the Caribbean.

Several studies explain the win of Partido Social Liberal in the 2018 general elections with both economic and non-economic factors. According to Rennó (2020), resentment against the ruling Partido dos Trabalhadores, cultural backlash, the demand for law and order amid 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).

During the 2018 elections not only the incumbent party, but also other traditional opposition parties like the Partido da Social Democracia Brasileira (PSDB) lost voter support. This switch in voting behavior from one end of the political spectrum to the other can be viewed as an indication of polarization and eroding support for the social contract, put in place in the mid-1990s and since then shaped primarily by the then ruling Partido dos Trabalhadores. Polarization increased as large segments of the population questioned governability, the mechanisms of democratic representation, and the effectiveness of the current social contract, especially because Brazil's economic crisis was accompanied by a perceived inability of the political system to sufficiently mediate its effects.[22] The failure of the state to meet social-contract obligations in terms of service delivery and to cushion the effects of the crisis through social safety nets helped create conditions for the economic crisis to turn into a political one (Halikiopoulou and Vasilopoulou, 2018).

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 were satisfied with 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 economic shocks. These populations were not covered by unemployment insurance and other social protection programs (see also Ferreira et al., 2012) and suffered for many years after 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 these policy areas, 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).[23] Moreover, the expectations and prospects of the middle class for greater economic and social mobility were dimmed by revelations about widespread corruption and clientelism. This created resentment against the Partido dos Trabalhadores, also known as antipetismo.

The frustrations caused by unmet aspirations for better jobs and quality of services are considered a typical case of relative deprivation (Gurr, 1970). These grievances already became evident during the mass protests organized ahead of the FIFA World Cup and Olympics. Protestors demanded improved and affordable urban mobility, improved quality public education, and an end to corruption (Sampaio, 2014). The protests did not stop after the resignation of the then president

[22] Indeed, as noted by Halikiopoulou and Vasilopoulou (2018, p. 28), '*Economic crisis is likely to become a political crisis when severe issues of governability affect the ability of the state to fulfil its social contract obligations. This breach of the social contract is accompanied by declining levels of trust in state institutions, resulting in party system collapse. In these circumstances citizens may question the existing mechanisms of democratic representation, which opens space for parties that are anti-systemic and offer an alternative vision of representation'*. Similar instances of a combined economic and political crisis were experienced in Greece (Halikiopoulou & Vasilopoulou, 2018) and several Andean countries (Meriweather, 2006).

[23] For example, Brazilians' expenditures on food increased by 26% between 2003 and 2009, while agricultural productivity only increased by an average of 1.1% per year and investment in infrastructure projects actually decreased in the 2000s (Sampaio, 2014).

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 up space for the entry of new parties. In the end, 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.

Ideally, in our analysis, we would like to link the decline in SWB to the decline in support for the social contract and the switch in voter support from one end of the political spectrum to the other in the 2018 general elections. Unfortunately, we do not have data from the GWP to answer this question because the Poll does not include questions on voting behavior. However, using information from the Brazilian Electoral Study - a post-electoral national survey that is carried out by the Center for Studies for Public Opinion - we explore whether the incumbent party was indeed punished for the economic and leadership crisis associated with the decline in SWB in the second half of the 2010s.

5.1. Demographic characteristics of Bolsonaro supporters

Our analysis builds on the studies of Amaral (2020) and Rennó (2020) and utilizes a survey collected 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. This survey is nationally representative and provides data on the voting behavior and other characteristics of 1,734 Brazilians. Specifically, we obtain information on whether (1) respondents voted for the presidential candidate of the Partido Social Liberal during the two rounds of the presidential election and whether (2) respondents voted during the 2014 elections for the candidate of the incumbent Partido dos Trabalhadores.[24] For brevity, definitions of variables included in our analyses can be found in Appendix E. We use a logistic regression to test which factors were associated with voting for the Partido Social Liberal and switching from supporting the Partido dos Trabalhadores in the 2014 election to supporting the Partido Social Liberal in the 2018 election. We are interested in vote switching because it can be seen as a punishment of the incumbent ruling party and an erosion of the social contract.

If dissatisfaction with life matters for voting behavior, we should see a higher propensity to vote for the Partido Social Liberal among men and the old (those older than 30). Table 7 (column 1) shows the demographic characteristics associated with the likelihood to have voted for the Partido Social Liberal during the second, final round of the 2018 election. Results confirm that age was a weakly significant predictor of the probability to vote for the Partido Social Liberal. *Compared to young people, people between 45 and 60 were 1.3 times more likely to vote for the Partido Social Liberal.* However, the differences between young people and the other age categories are much less pronounced and insignificant. Gender was also found to be a significant predictor. *Men were over 1.5 times more likely to vote for the Partido Social Liberal. These results provide some evidence that groups that experienced larger declines in SWB were more likely to vote for the Partido Social Liberal.*

We do not find any evidence that people with tertiary education were less likely to vote for the Partido Social Liberal compared to people with elementary and secondary education despite this group's relatively small declines in SWB. Support for the Partido Social Liberal 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).[25] In addition, we find that religious denomination and ethnicity – not available in the Gallup World Poll – are strong predictors of a vote for the Partido

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

[25] 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.

Social Liberal. Evangelicals and white Brazilians were much more likely to vote for the Partido Social Liberal than other religious and ethnic groups. Although the Gallup World Poll does not contain an ethnicity variable, a further examination of the religion variable using the Gallup World Poll reveals that the decline in SWB is not larger for respondents with strong religious beliefs.[26] Table 7 (column 2) also shows that that the middle aged, evangelicals, and people with a partner were more likely to switch parties and withdraw support from the incumbent party. Overall, these results suggest that the rise of the Partido Social Liberal was associated not only with the voting choices of groups that experienced a larger decline in SWB, but also with the support of groups that espouse certain values.

Table 7: 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 Dilma in 2014 to Bolsonaro in 2018 (2)
Age		
<30	Ref.	Ref.
30-45	0.96	1.37*
45-60	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
Region		
Northeast	Ref.	Ref.
North	2.82**	1.05
Central-West	2.57**	0.94
Southeast	2.48**	0.99
South	3.08**	1.27
Education level		
Elementary	Ref.	Ref.
Secondary	1.38*	0.91
Tertiary	1.11	0.78
Employment status		
Full-time employed for employer	Ref.	Ref.
Self-employed/manager	0.89	1.07
Unemployed	0.53**	0.80
Out of workforce	0.81	0.88
Household income per capita		
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

5.2. Factors associated with voting behavior in 2018

The relationship between change in SWB and voting behavior is complex and indirect because a loss in SWB is more likely to translate into a protest vote when people hold the incumbent party

[26] These results are available upon request.

responsible for their loss in SWB and think that under different leadership they would have been better off. Since the Gallup World Poll does not include a voting variable and some of the demographic variables of interest to us, we again use the data from the Brazilian Electoral Study and a logistic regression to link the likelihood to vote for Bolsonaro to a similar set of variables as those included in the analysis of SWB change in section 4.4.

Table 8: Factors Associated with the Bolsonaro Vote – Logistic Regression

Panel A	**Dependent variable:** Voted for Bolsonaro in Second Round of Presidential Elections	**Dependent variable**: Voted for Bolsonaro in Second Round of Presidential Elections	**Dependent variable:** Voted for Bolsonaro in Second Round of Presidential Elections
Economic situation country			
Improved	1.09		1.08
Same	Ref.		Ref.
Worsened	0.59**		0.70#
Personal economic situation			
Improved (Upward)	0.62**		0.78
Same	Ref.		Ref.
Worsened (Downward)	0.84		0.91
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
Antipetismo		1.54**	1.58**
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	**Dependent variable:** Switched from voting Dilma in 2014 to Bolsonaro in 2018	**Dependent variable:** Switched from voting Dilma in 2014 to Bolsonaro in 2018
Economic situation country			
Improved	0.92		0.97
Same	Ref.		Ref.
Worsened	1.36**		1.51**
Personal economic situation			
Improved (Upward)	1.20		1.27
Same	Ref.		Ref.
Worsened (Downward)	1.08		1.24
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
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
Antipetismo		1.12**	1.12**
Bolsa Familia beneficiary		1.01	1.09
Socio-demographic controls	YES	YES	YES
N	1,566	1,566	1,461

Notes: #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.

Panel A in Table 8 shows the factors associated with the likelihood to have voted for Bolsonaro during the 2018 elections (see again Appendix E for definitions of the variables included in the logistic regression). Our results suggest that voting for the Partido Social Liberal in the second round of the elections is associated with resentment against the Partido dos Trabalhadores (*antipetismo*), which encapsulates disapproval of leadership due to widespread corruption and economic deterioration. Our results also suggest that those who voted for the Partido Social Liberal tend to hold anti-immigrant, anti-redistribution, conservative, and pro-military viewpoints; there is no evidence that the groups holding such sentiments experienced larger declines in SWB.

Panel B of Table 8, however, shows that the factors that explain the decline in SWB are also the factors underlying the switch from voting for the Partido dos Trabalhadores in 2014 to voting for Partido Social Liberal in 2018. Thinking that the economy has worsened increases the likelihood of being a switch voter by 50%, while having resentment against the Partido dos Trabalhadores increases the chance of switching from Dilma to Bolsonaro by 12%. These results suggest that the economic crisis and corruption scandals affected not only experienced welfare, but also eroded support for the Partido dos Trabalhadores and for the social contract shaped by the party during the 2000s.

6. 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, following an economic and political crisis. Using Gallup World Poll data for the period 2010-2020, we identify the factors underpinning the level of Brazil's SWB and its change during this period, paying special attention to differences across groups. Our results suggest that having sufficient income, financial security, economic optimism, satisfaction with living standards and health services, social capital, tertiary education, and digital access are the main factors associated with SWB in Brazil. These factors matter to different extents along the income distribution and across generations and space.

Mostly economic factors explain the decline in SWB since 2015, but disappointment with the country's leadership also played a role. Economic expectations played a role in the decline as they assumed a greater role in people's preferences, especially those of men, and more people grew pessimistic about the economic outlook. The SWB decline and the switch in voter support from one end of the political spectrum to the other in the 2018 general elections were both associated with the grievances triggered by the economic and leadership crisis of the mid-2010s. These grievances, fueled by deteriorating economic expectations and their greater role in people's preferences, signal an erosion in the support for the social contract in place since the 1990s and the need to renew it.

This paper has three important implications. First, our findings indicate that the decline in SWB in Brazil can be linked not only to the economic decline after 2014, but also to the political crisis. This finding supports the notion that the effect of economic crises on subjective well-being can indeed be alleviated by good governance (Arampatzi et al. 2019) and a timely and effective government response to the crisis (Silva et al, 2021). Second, the study shows that there is a lot of heterogeneity in the relationship between economic decline and SWB. The magnitude of the SWB decline and the correlates associated with the decline vary across groups. This finding suggests that it is important to take heterogeneity within the population into account when designing specific policies to decrease the adverse effects of an economic (or any other) crisis. Third, we show that there are real-life social consequences of economic and political mismanagement which not only lowers individuals' experienced welfare but also affects people's voting behavior and election outcomes. Support for the social contract in Brazil has waned, but the contract can be renewed by

addressing the needs of the middle class for (i) more and better formal-sector jobs in a competitive economy, driven by innovation and entrepreneurship, (ii) financial security through social safety nets appropriate for an economy with lots of informality and complementary programs for reemployment assistance and reskilling, and (iii) good governance, strong and effective institutions, able to deliver quality services to both the lower and middle classes.

This 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 voting behavior, but data was collected a few months before the elections and surprisingly a small number of people stated that they voted for Partido Social Liberal. This study also raises questions about the different mechanisms that give rise to voting the incumbent out of office. Particularly, it can be hypothesized that a loss in SWB translates into a vote for the non-incumbent when people hold the incumbent party responsible for their loss in SWB. This hypothesis should be examined in future research.

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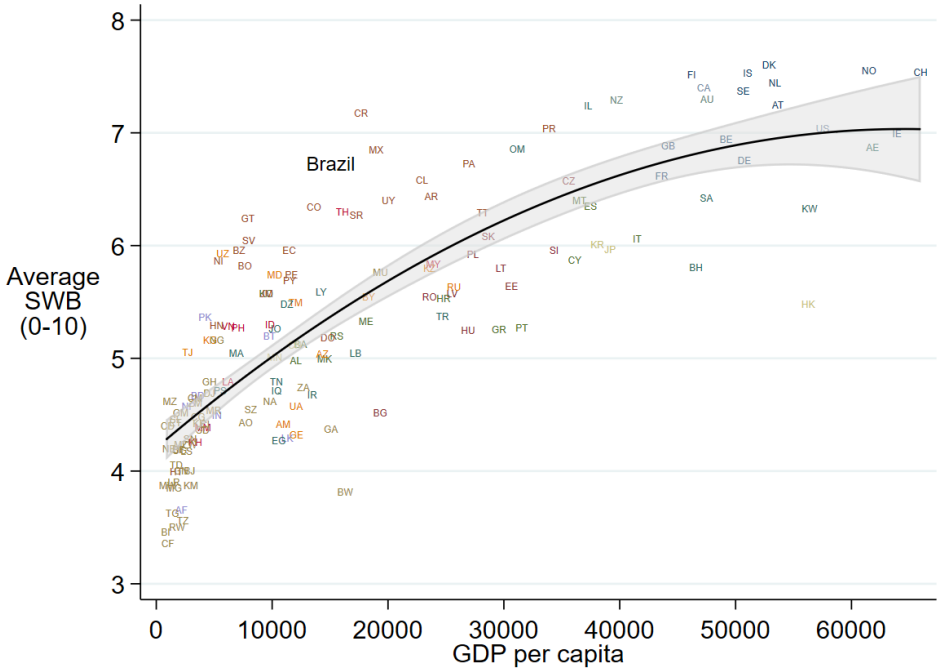
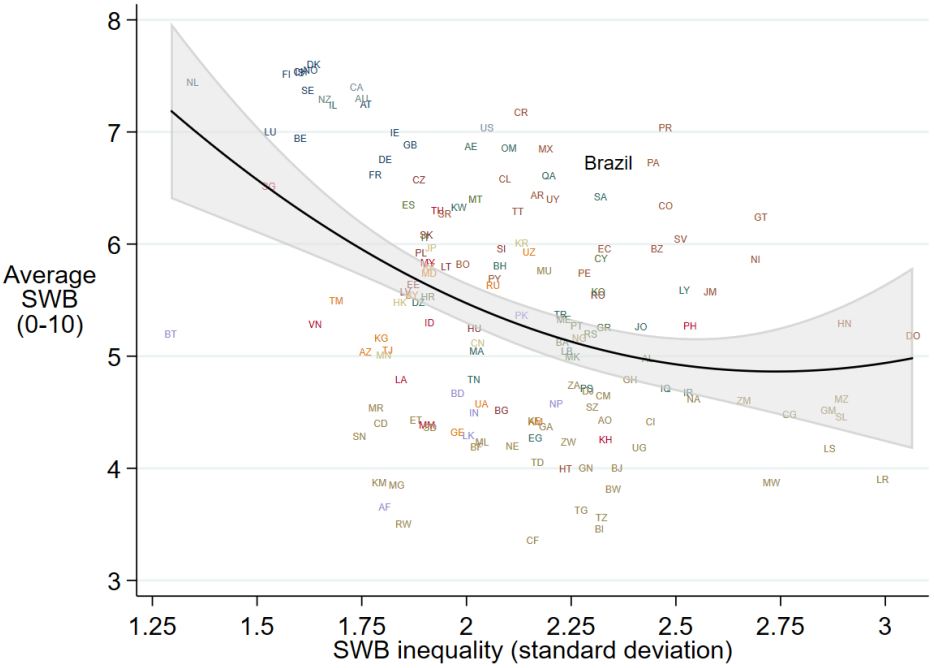
Appendix A: Subjective Well-Being (SWB), Economic Development, and Inequality

Figure A1. SWB by economic development at the country level



Sources: Gallup World Poll for SWB (2010-2018) and World Development Indicators for GDP per capita. *Notes:* N=153 countries. Sampling weights and two-letter country codes are used. No control variables. For both indicators the average of the 2010-2018 period is taken. Non-linear regression line and 95% confidence interval shown. GDP per capita is measured at Purchasing Power Parities (PPP) using constant 2017 international dollars. For Brazil, the average SWB is 6.73 and the GDP per capita is $15,092.

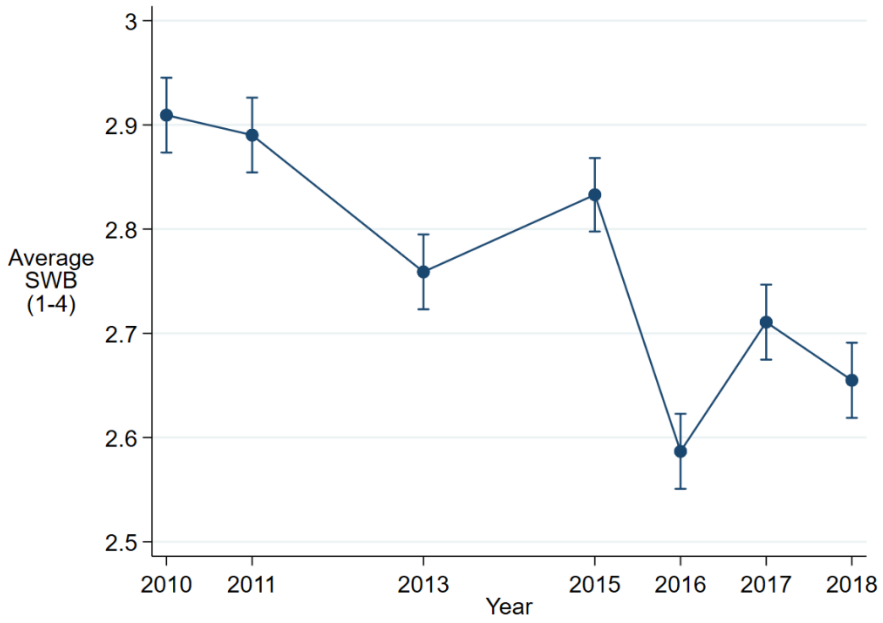
Figure A2. SWB by SWB inequality at the country level



Source: Gallup World Poll (2010-2018). *Notes:* N=156 countries. Sampling weights and two-letter country codes are used. No control variables. SWB inequality is measured using the method proposed by Kalmijn and Veenhoven (2005). Non-linear regression line and 95% confidence interval shown.

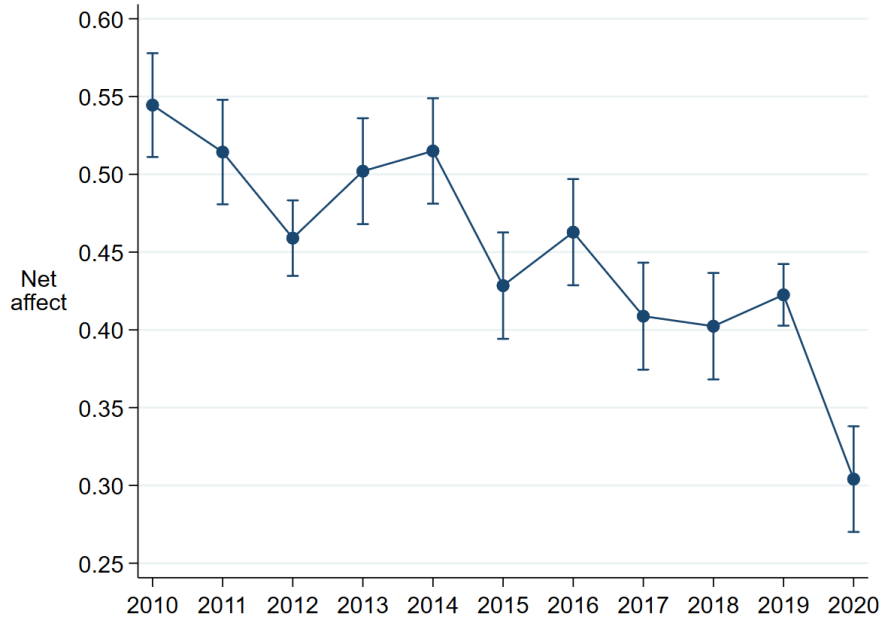
Appendix B: Development of SWB in Brazil

Figure B1: Development of Life Satisfaction in the Latinobarómetro



Source: Latinobarómetro (2010-2018). *Notes:* 95% confidence intervals shown. N=8,432. SWB is based on the question: *Generally speaking, would you say you are satisfied with your life? Would you say you are...?* 1=Not at all satisfied; 2=Not very satisfied; 3=quite satisfied; 4=very satisfied (reverse coded). All interviews in 2015 were held in January/February 2015.

Figure B2: Development of Net Affect in the Gallup World Poll



Source: Gallup World Poll. *Notes:* 95% confidence intervals shown. N=13,911. All interviews in 2015 were held in October/November 2015. Net Affect Score is based on the differences between the Positive Experience score and Negative Experience score. The Positive Experience score is based on the average of the following two questions on which respondents can answer yes (1) or no (*0*): *(a) Did you smile or laugh a lot yesterday?, (b) Did you experience enjoyment during a lot of the day yesterday?* Likewise, the negative experience index consists of three questions: *Did you experience the following feelings during a lot of the day yesterday? How about (a) worry, (b) sadness, and (c) anger?*

Appendix C. Geographical Representativeness Analysis Sample

Region	Number of Observations	% of population in sample (average 2010-2020)	% of total population (average 2010-2020)	Difference between columns 2 and 3
Roraima	58	0.5%	0.3%	+0.2%
Amazonas	244	1.9%	1.9%	0.0%
Pará	407	3.2%	4.0%	−0.8%
Tocantins	102	0.8%	0.7%	+0.1%
Maranhão	392	3.0%	3.4%	−0.4%
Piauí	205	1.6%	1.6%	0.0%
Ceará	507	3.9%	4.4%	−0.5%
Rio Grande do Norte	245	1.9%	1.7%	+0.2%
Paraíba	271	2.1%	1.9%	+0.2%
Pernambuco	534	4.1%	4.6%	−0.5%
Alagoas	245	1.9%	1.6%	+0.3%
Sergipe	204	1.6%	1.1%	+0.5%
Bahia	877	6.8%	7.2%	−0.4%
Minas Gerais	1,141	8.9%	10.2%	−1.3%
Rio de Janeiro	1,144	8.9%	8.3%	+0.6%
São Paulo	2,824	21.9%	21.7%	+0.2%
Paraná	718	5.6%	5.5%	+0.1%
Santa Catarina	484	3.8%	3.4%	+0.4%
Rio Grande do Sul	718	5.6%	5.5%	+0.1%
Mato Grosso do Sul	220	1.7%	1.3%	+0.4%
Mato Grosso	150	1.2%	1.6%	−0.4%
Goiás	410	3.2%	3.3%	−0.1%
Distrito Federal	169	1.3%	1.4%	−0.1%
Espirito Santo	428	3.3%	1.9%	+1.4%
Amapá	29	0.2%	0.4%	−0.2%
Rondonia	114	0.9%	0.8%	+0.1%
Acre	33	0.3%	0.2%	+0.1%

Appendix D. Variable Descriptions and Definitions, Gallup World Poll

Variable	Question	Scale
SWB	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?	0 (worst possible life) - 10 (best possible life)
Age & age^2/100		Age in years
Gender		Male/female
Has a partner	Dummy taking the value of 1 if the respondent is married or has a domestic partner, and 0 otherwise.	1=yes; 0=no
Has children under 15	Dummy taking the value of 1 if the respondent has children under 15 living in one's household, and 0 otherwise.	1=yes; 0=no
Immigrant	Were you born in this country, or not?	1=no; 0=yes
Religious	Is religion an important part of your daily life?	1=yes; 0=no
Has health problems	Do you have any health problems that prevent you from doing any of the things people your age normally can do?	1=yes; 0=no
Had physical pain yesterday	Did you experience the following feelings during a lot of the day yesterday? How about physical pain?	1=yes; 0=no
Lives in a rural area	The respondent's self-reported type of settlement: (1) Rural area or farm; (2) Small town or village; (3) Large city; (4) Suburb of a large city. 'Rural' is defined as individuals in categories (1) and (2) and "urban" as individuals in categories (3) and (4).	1=rural; 0=urban
Education level	What is your highest completed level of education? Elementary: Completed elementary education or less (up to 8 years of basic education); Secondary: Completed secondary education and up to 3 years tertiary education (nine to 15 years of education); Tertiary: Completed 4 years of education beyond "high school" and/or received a 4-year college degree.	1=elementary 2=secondary 3=tertiary
Employment status	Divided in 5 categories based on a series of questions. (1) employed full-time for an employer; (2) self-employed, (3) part-time employed, (4) unemployed, and (5) out of workforce.	
Per capita income	Per capita income (reported household income divided by household size)	International dollars
Financial struggle	Index with 2 equally weighted items. Have there been times in the past 12 months when you did not have enough money to: 1. buy food that you or your family needed? 2. provide adequate shelter or housing for you and your family?	1=yes; 0=no
Income sufficiency	Which one of these phrases comes closest to your own feelings about your household's income these days? 1= living comfortably on present income 2= getting by on present income 3= finding it difficult on present income 4= finding it very difficult on present income	1-4
Satisfied with standard of living	Are you satisfied or dissatisfied with your standard of living, all the things you can buy and do?	1=satisfied; 0=dissatisfied
Personal economic optimism	Right now, do you feel your standard of living is getting better or getting worse?	1=getting worse 2=the same 3=getting better
Optimism about economic climate	Right now, do you think that economic conditions in the city or area where you live, as a whole, are getting better or getting worse?	1=getting worse 2=the same 3=getting better
Social support	If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?	1=yes; 0=no
Civic engagement	Index with 3 equally weighted items. Have you done any of the following in the past month? How about: 1. Donated money to a charity? 2. Volunteered your time to an organization?	1=yes; 0=no

	3. Helped a stranger or someone you didn't know who needed help?	
Acceptance of diversity	Index with 4 equally weighted items. Is the city or area where you live a good place or not a good place to live for: 1. racial and ethnic minorities? 2. gay or lesbian people? 3. immigrants from other countries? 4. people with intellectual disabilities?	1=Good place; 0=Not good place
Digital access	Index with 2 equally weighted items. 1. Do you have a landline telephone in your home or a mobile phone that you use to make and receive personal calls? 2. Do you have access to the internet in any way, whether on a mobile phone, a computer, or some other device?	1=yes; 0=no
Satisfied with transportation infrastructure	Index with 2 equally weighted items. In your city or area where you live, are you satisfied or dissatisfied with: 1. the public transportation systems? 2. the roads and highways?	1=satisfied; 0=dissatisfied
Satisfied with quality of air	In your city or area where you live, are you satisfied or dissatisfied with the quality of air?	1=satisfied; 0=dissatisfied
Satisfied with quality of water	In your city or area where you live, are you satisfied or dissatisfied with the quality of water?	1=satisfied; 0=dissatisfied
Satisfied with socializing opportunities	In your city or area where you live, are you satisfied or dissatisfied with the opportunities to meet people and make friends?	1=satisfied; 0=dissatisfied
Satisfied with health care	In your city or area where you live, are you satisfied or dissatisfied with the availability of quality health care?	1=satisfied; 0=dissatisfied
Satisfied with educational system and schools	In your city or area where you live, are you satisfied or dissatisfied with the educational system or the schools?	1=satisfied; 0=dissatisfied
Safety	Index with 4 equally weighted items. 1. Do you feel safe walking alone at night in the city or area where you live? 2. In the city or area where you live, do you have confidence in the local police force? 3. Within the last 12 months, have you had money or property stolen from you or another household member? (reverse coded) 4. Within the past 12 months, have you been assaulted or mugged? (reverse coded)	1=yes; 0=no
Corruption	Index with 2 equally weighted items. 1. Is corruption widespread within businesses located in Colombia, or not? 2. Is corruption widespread throughout the government in Colombia, or not?	1=yes; 0=no
Confidence in national institutions	Index with 4 equally weighted items. Do you have confidence in each of the following, or not? 1. How about the military? 2. How about the judicial system and courts? 3. How about the national government? 4. How about the honesty of elections?	1=yes; 0=no
Approval of country's leadership	Do you approve or disapprove of the job performance of the leadership of this country?	1=approve; 0=disapprove
Satisfied with freedom	In Colombia are you satisfied or dissatisfied with your freedom to choose what you do with your life?	1=satisfied; 0=dissatisfied
Social mobility is possible	Can people in this country get ahead by working hard, or not?	1=yes; 0=no
Regional GDP per capita (Brazilian real)	Regional GDP per capita at Purchasing Power Parities (PPP) under current prices derived from data of the Brazilian Institute of Geography and Statistics.	In Brazilian real
Regional unemployment rate	Percentage of unemployed people in the population derived from the Brazilian Institute of Geography and Statistics.	In percentages

Appendix E. Variable Descriptions and Definitions of Data from the Brazil Electoral Study

Variable	Question	Scale
Bolsonaro vote round 2	Voted for Jair Bolsonaro in the second round of the presidential elections	0=No 1=Yes
Bolsonaro-PT switch	Switched from voting for Dilma in 2014 to Bolsonaro in 2018	
Age	Four age categories: <30 years, 30-44 years, 45-59 years, 60 years or older	Age in years
Gender	Gender of the respondent	Male/female
Has a partner	Dummy taking the value of 1 if the respondent is married or has a domestic partner, and 0 otherwise.	1=yes; 0=no
Other people in household	Dummy taking the value of 1 if the respondent has other people than their partner living in the same household	1=yes; 0=no
Evangelical	Religious denomination: evangelical	1=yes; 0=no
White	Ethnicity: Preto, Pardo, Branco, Amarelo, Índio	1=White (Branco) 2=Other
Immigrant	Were you born in Brazil, or not?	1=no; 0=yes
Lives in a rural area	The respondent's self-reported type of settlement: (1) Rural; (2) urban	1=rural; 0=urban
Region	Region in which the respondent is living	1= North 2= Northeast 3= Central-West 4= Southeast 5= South
Education level	Highest level of attained education	1=Elementary 2=Secondary 3=Tertiary
Employment status	Current employment status	1=Paid employment 2=Self-employed/Boss 3=Unemployed 4=Out of labor force
Income	Approximate monthly household income	1= Lowest quintile- 5=Highest quintile; 6=Unknown
Economic situation country	Do you think that the current economic situation in the country is much better, a little better, the same, a little worse or much worse than in the last twelve months?	1=much/little better; 2=the same; 3=little/much worse
Personal economic progress	In recent years, it has been argued that many people have experienced a change in their social class. • 8 years ago, you and his family belonged to the class: (1=Highest, 6=Lowest) • Today they belong to class: (1=Highest, 6=Lowest)	1= No change; 2= Upward 3= Downward
Perceived corruption	How widespread do you think corruption is in Brazil, such as bribes among politicians?	1(hardly happens) -4(very widespread)

Against income redistribution	To what extent do you agree with the following statement "The government should take measures to reduce the differences between income levels"	1(completely agree) – 5 (completely disagree)
Immigrants bad for economy	To what extent do you agree with the following statement: immigrants are good for the Brazilian economy	1(completely agree) – 5 (completely disagree)
Satisfied with crime control	How satisfied are you with crime control?	0 (very dissatisfied)-10(very satisfied)
Satisfied with public services provision	Index of How satisfied are you with (1) access to health care, (2) access to higher education, (3) access to high schools, (4) access to vocational education, (5) access to culture, (6) access to justice for ordinary citizens, (7) access to medicines	0 (very dissatisfied)-10(very satisfied)
Conservatism	Based on the proposition: Minorities should adapt to the customs and traditions of Brazil	1(completely agree) – 5 (completely disagree)
Nativism	Index based on the questions: (1) How important do you think it is to be born in Brazil to be considered truly Brazilian?, (2) How important do you think it is to have Brazilian ancestors to be considered truly Brazilian?, (3) How important do you think it is to be able to speak the Portuguese language to be considered truly Brazilian?, and (4) How important do you think it is to follow the customs and traditions of Brazil to be considered truly Brazilian?	1(low degree nativism)-4(high degree nativism)
Confidence in the military	What is your confidence in the military?	1(not confident)-4(very confident)
Satisfied with democracy	In general, are you very satisfied, satisfied, not very satisfied or not at all satisfied with the functioning of democracy in Brazil?	1(not confident)-4(very confident)
Trust in political parties	What is your confidence in political parties in general?	1(not satisfied)-4(very satisfied)
Antipetismo	Can you indicate how much you like the PT party?	0=Very much 10=Not at all
Bolsa Familia beneficiary	In the last three years, were you or a household member a beneficiary of the Bolsa Família program?	1=Yes 0=No