LUND UNIVERSITY
School of Economics and Management

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Happiness, Prosperity and Inequality in the 21st Century: The Case of Latin America

by

Frank Schönberg
fr4544sc-s@student.lu.se

Abstract
Latin American countries are among the happiest countries world-wide despite suffering from vast economic inequality at the same time. Addressing this alleged puzzle, this study analyses the effects of economic prosperity and inequality on happiness in Latin America. Using a pooled dataset of annual surveys from the Latinobarómetro between 2005 and 2018, an advanced three-level model with individuals nested within country-years nested within countries was applied. It was found that: (1) Neither inequality nor economic growth exhibit a direct effect on an individual's happiness but affect it negatively if one is accompanied by the other. (2) Relative wealth comparisons with one's social class are important for Latin Americans. (3) Within-social-class inequality affects the happiness of people from a low (high) social class positively (negatively), while between-social-class inequality affects it negatively (positively). Lastly, (4) perceived social mobility constitutes a crucial moderator for the effects of actual inequality on happiness. These results imply that Latin American policy makers should continue to aim for decoupling economic growth and increases in inequality while creating equal opportunities regarding social mobility for their citizens, so that especially the poor do not feel left behind.

Key words: Happiness, Prosperity, (Perceived) Inequality, Latin America, Multilevel Modelling

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1   Introduction

Even though Latin American countries constantly score a place amongst the happiest countries in the world (Ram, 2010), they simultaneously continue to suffer from the highest economic inequality worldwide (Zmerli & Castillo, 2015). Although the relationship between economic inequality and happiness[1] retained increased attention from economists during the last decades, the puzzle remains unsolved (Ram, 2010; Schneider, 2016).

One reason might be the fact that the *economics of happiness* represent a quite novel approach, analysing the relationship between happiness as the psychological variable and (socio-) economic variables interdisciplinarily (Beja, 2011). However, philosophers and economists such as Aristotle, Smith and Bentham already dealt with "the pursuit of happiness" during times when economics were not as quantitatively driven as nowadays (Graham, 2005). Pigou (1920) stated that economic welfare measured monetarily through income is only one part of overall welfare, thus, our capability to measure limits our ability to access and understand the concept of an individual's total welfare. Nevertheless, it was as late as in 1974 when Easterlin (1974) first examined happiness from an economic point of view. He found that, albeit richer people within one country are on average happier than poorer ones at a certain point of time, there was no clear evidence that a country's average happiness increases when it increases national wealth – the so-called Easterlin-paradox was born. Since then, the interest of economists in happiness and its influencing factors increased rapidly and the happiness economics evolved. While some researches claim to have solved the puzzle and found evidence of a positive relationship between economic growth and happiness (Stevenson & Wolfers, 2008), others state that it is not a paradox, but that both perspectives are compatible and can be explained by relative comparisons (Clark, Frijters & Shields, 2008), and yet, according to Easterlin (2017) himself the paradox is still valid.

The second big discussion in the happiness economics concerns the relationship between inequality and happiness. The first study explicitly addressing the relationship between income distribution and self-rated happiness explicitly was conducted three years later after Easterlin's first paper in 1974 and was conducted by Morawetz (1977) who analysed two small communities in Israel and found a negative relationship between income distribution and self-reported happiness. However, since then no clear relationship could be found (Dolan, Peasgood & White, 2008; Schneider, 2016). While some researchers found a positive relationship (Clark, 2003; Schyns, 2002), others claim a negative one (Delhey & Kohler, 2011; Graham & Felton, 2006; Graham, 2008) whereas others found no relationship at all (Ram, 2010; Western & Tomaszewski, 2016). Within this field of study the analysis of perceived inequality on happiness constitutes a particular gap of previous research (Schneider, 2016).

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[1] Following the literature standard, the terms "happiness", "life satisfaction" and "subjective well-being" will be used interchangeably within this paper. For a more detailed discussion please refer to Chapter 2.1.2.

Moreover, previous research focused mainly on OECD and Western developed countries (Ferrer-i-Carbonell & Ramos, 2014; Graham & Pettinato, 2001), thus, there is a huge need for investigating the relationship between inequality and happiness in developing countries (Ngamaba, Panagioti & Armitage, 2018). It is imperative to analyse developing countries since the structures of inequality differ vastly from developed countries, especially in Latin America (Graham, 2005; Graham & Felton, 2006). This is the case because "Latin America holds the sad record of being the most unequal region in the world" (Zmerli & Castillo, 2015, p. 183). At the same time, it exhibits high happiness among its inhabitants (Dolan, Peasgood & White, 2008), making it an interesting target of study.

Hence, this thesis aims to fill in these lacunas by analysing empirically, whether and if so, to which extent, national prosperity[2] as well as (perceived) inequality relate to life satisfaction in Latin America respectively. In detail, the following two research questions (RQ) will be addressed within this paper:

RQ1   *What is the relationship between (perceived) economic inequality and happiness in Latin America and how does it change over time?*

RQ2   *What is the relationship between prosperity and happiness in Latin America and how does it change over time?*

To answer these questions, five hypotheses (H) were derived based on existing literature and the findings of previous studies: Focussing on Europe and USA, Alesina, Di Tella and MacCulloch (2004) found a negative relationship between income inequality and happiness. Looking at China, Wu and Li (2017) also found that income inequality exhibits a negative effect on a person's life satisfaction. However, Jiang, Lu and Sato (2012) as well as Ferrer-i-Carbonell and Ramos (2014) criticise that previous research does not focus on the crucial differentiation between within-group and between-group inequality. Lastly, Dolan, Peasgood and White (2008) as well as Schneider (2016) state that not actual inequality but rather how it is perceived by the individuals matters for their happiness which, however, lacks empirical investigation. Thus, to address the first research question, the following three hypotheses were derived:

H1   *Economic inequality has a negative relationship with happiness, cross-sectionally as well as over time.*

H2   *Between-reference-group inequality matters to a higher extent for Latin Americans than within-reference-group inequality.*

H3   *The perception of inequality, especially fairness and social mobility, is a crucial moderator for the effect of inequality on an individual's happiness.*

Looking at prosperity, Ram (2010) found a positive relationship between income and happiness. In line with that, Graham and Felton (2006) found that individual wealth and life satisfaction are also positively related in Latin America, while especially relative wealth

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[2] Note that prosperity will be used as a collective term which includes the dimensions of wealth (a stock) and income (a flow) on the individual level as well as GDP on the country level.

matters. Analysing 67 nations within a time-span of 10 to 40 years, Veenhoven and Vergunst (2014) found a positive relationship between GDP growth and happiness. Analysing 28 European countries, Zagorski, Evans, Kelley and Piotrowska (2014) found a positive relationship between the level of GDP and subjective well-being. In addition, researchers such as Luttmer (2005) as well as Clark, Frijters and Shields (2008) especially stress on the importance of relative comparisons when analysing economic prosperity. Therefore, the following two hypotheses were derived to address the second research question:

> *H4*   *Prosperity is positively related with happiness on an individual level as well as on a country level, cross-sectionally and over time.*

> *H5*   *Relative comparisons matter to a higher extent for Latin Americans than average prosperity of one's reference group.*

The testing of the hypotheses will be done through linear multilevel models using repeated cross-sectional data from annual surveys conducted by the Latinobarómetro between 2005 and 2018. In detail, the effects of personal wealth, national prosperity (GDP per capita), objective economic inequality (Gini) and perceived economic inequality on life satisfaction in Latin America will be analysed. This methodology will be an essential improvement compared to previous studies which aggregated individual level data improperly, did not account for higher level variations and did not differentiate between cross-sectional and longitudinal dimensions (Mikucka, Sarracino & Dubrow, 2017).

For policy makers, the topicality and urgency of the analysed spheres can be seen in their manifestation in the Sustainable Development Goals (SDGs) of the United Nations (UN), namely Goal 8 "decent work and economic growth", which refers amongst others to the promotion of sustained, inclusive and sustainable economic growth, and Goal 10 "reduced inequality", which refers the reduction of inequality within and among countries, making them imperative for the global development agenda (UN, 2020). This thesis will be of special interest to policy makers in Latin America and other developing countries to assess, how economic growth and national prosperity affect their people's happiness. Moreover, it gives insights if economic inequality matters for their citizens' happiness, and thus, whether redistribution measures to increase equality are necessary or, if in fact other policies should be focussed on instead. Moreover, identifying happiness indicators may not only be beneficial for policy makers but can also contain valuable information for individuals, supporting them in their everyday life decision to achieve the highest satisfaction possible (Diener & Suh, 1997).

The contribution of this paper is thus quadripartite: (1) The relationship between economic inequality and happiness will be studied, for which the current literature remains inconclusive, while especially the effects of *perceived* inequality lack empirical investigation. (2) Special attention will be given to the role of reference groups when analysing the effects of prosperity and inequality on life satisfaction, which are supposed to be crucial for demystifying the alleged paradoxes but lack empirical investigation yet. (3) For the analysis, advanced econometric methods will be applied compared to previous research which will increase the precision, robustness and validity of the findings. (4) Insights and implications for policy makers in Latin America will be derived how inequality and prosperity affect their people's happiness in consideration of the fulfilment of the SDGs.

The remainder of this paper will be structured as follows: Chapter 2 reviews the current happiness economics literature and will provide definitions of the concepts, introduce theories how wealth, inequality and other variables are respectively associated with happiness and what other studies found empirically. Moreover, in this section it will be reviewed, what kind of methodology previous research has applied, with what short comings it is accompanied and how these econometric and conceptional issues can be overcome. Chapter 3 elaborates on the employed data, elucidates the methodology applied as well as the variable operationalisation and discusses limitations. Chapter 4 presents the results of the analyses and discusses the findings. Chapter 5 concludes and indicates potential policy implications.

2 Literature Review

2.1 Definitions and Background

2.1.1 The Economics of Happiness

The economics of happiness describe an interdisciplinary approach by economics and psychological sciences, which aims for the assessment of welfare (Graham, 2005). The analysis of happiness is revolutionary (Frey, 2008) and a quite novel approach in economics (Delhey & Kohler, 2011; Graham, 2008) which is why "research remains in its infancy" (Schneider, 2016, p. 1730). However, according to Hulme and Toye (2006), such a cross-disciplinary approach is crucial and must be striven for especially when analysing well-being to enhance the coherence and the social relevance of the respective findings.

In traditional economics, welfare is equalled utility (Mota, 2007). Yet, a paradox arising through the economics of happiness seems to challenge this assumption: whilst the overall level of well-being does not increase as nations become wealthier over time, within and between countries a tendency can indeed be found that wealthier people are on average happier than poorer ones at a certain point of time (Easterlin, 1974) – the so-called Easterlin-paradox. This triggered a movement of rethinking within the discipline of economics and a new interdisciplinary research field emerged: the economics of happiness.

Traditionally, economists work with revealed preferences (Graham, 2008). However, revealed preferences are insufficient (Frey & Stutzer, 2002), since "happiness is only partially reflected in behavior" (Veenhoven, 2012, p. 67). High impracticability especially arises for revealed preferences when studying macroeconomic variables like inequality due to a limited perception scope of the subjects (Graham & Felton, 2006). Therefore, Frey and Stutzer (2002) refer to the subjective happiness approach, as opposed to the in economics dominating objective utility approach, as a "fruitful *complementary* path to study the world" (p.405). Thus, the economics of happiness do not aim for substituting income-based measures of welfare, but instead seek to complement them with more comprehensive measures of subjective well-being (Graham, 2005, 2008). In other words, it adds a dimension that is not yet covered by conventional economics (Diener & Suh, 1997; Beja, 2011). An empirical example for the complementary applicability is Bhutan, being the first country to implement a gross national happiness index to determine national progress in 2010 (Burns, 2012). Moreover, the happiness economics led to enhancements in the analysis of microeconomic phenomena and fostered the development of methods for the valuation of non-market goods such as health status or family size (Piekałkiewicz, 2017).

2.1.2 Happiness, Life Satisfaction and Subjective Well-Being

According to Berg and Veenhoven (2010), *happiness* is desirable and can be seen as a "highest order concept" that encompasses various dimensions in terms of life quality. Happiness is also often referred to as an ultimate goal of life (Frey & Stutzer, 2002). According to Veenhoven (2012), "overall happiness is the degree to which an individual judges the overall quality of his/her own life-as-a-whole favourably" (p.5).

In the discipline of psychology, a distinction between a *hedonic* and *eudaimonic* perspective on happiness is made. The former refers to the avoidance of pain and the aspiration for pleasure, with Daniel Kahneman as the most popular representative (Kahneman, Diener & Schwarz, 1999), while the latter sees happiness as "self-fulfilment", unleashing one's own natural potential through societal interplay (Lepenies, 2012). The hedonic perspective is more often referred to as *subjective well-being*, to which Diener and Suh (1997) attribute three interrelated components: pleasant affect, unpleasant affect and life satisfaction. While the former two refer to positive and negative sentiments and emotions, respectively, the latter accounts for the cognitive assessment of one's state of being. Berg and Veenhoven (2010) call the affective component *mood* (how the person feels) and the cognitive one *contentment* (congruence between life expectations and status quo).

Beja (2011) also states that happiness consists of two subsets: *subjective well-being* and *eudaimonia*. While the former includes the affective component of feeling good and the judgment component of *life satisfaction*, the latter refers to feeling good by performing a task well, i.e. experiencing the feeling of reward (Ryff, 2017). According to Beja (2014), life satisfaction is the most common measure for the judgement component of subjective well-being, constituting the most useful measure due to its stability, persistence and less volatility. This is because the processes that make an individual satisfied with life are quite similar among and transferable between people, decreasing vast and unmeasured volatility in subjective well-being (Beja, 2011). Also stressing on the ratiocinate component, Western and Tomaszewski (2016) state that "life satisfaction is an overall cognitive evaluation reflecting the circumstances of one's life" (p.5). An illustration of the different concepts and their interdependencies can be seen in Figure 1.
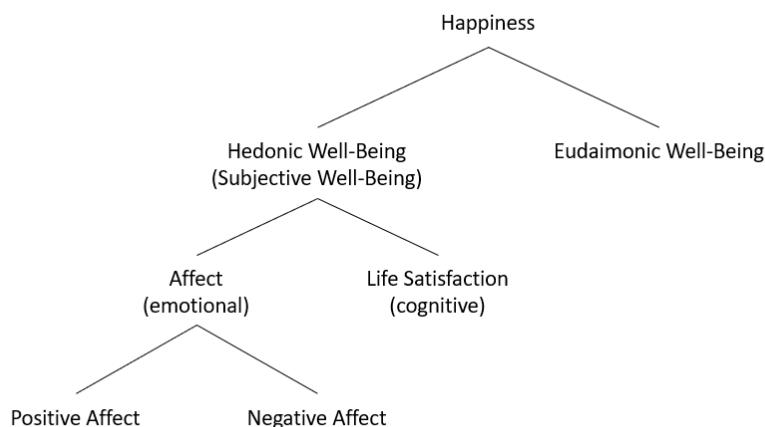
Figure 1 Concepts of happiness (author's own diagram)

Nevertheless, the terms of happiness, life satisfaction, and subjective well-being are often used interchangeably in academic studies (Alesina, Di Tella & MacCulloch, 2004; Delhey & Kohler, 2011; Graham & Felton, 2006; Veenhoven, 2012; Wu & Li, 2017; Piekałkiewicz, 2017), especially in economic ones, which will also be done in this study. Even if they were treated as different variables through differently framed questions, a high correlation between happiness and life satisfaction would still be found (Alesina, Di Tella & MacCulloch, 2004), as well as between subjective well-being and life satisfaction (Ngamaba, Panagioti & Armitage, 2018), justifying the interchangeable use of the terms.

2.2   Relationship between Inequality and Happiness

2.2.1   Theories and Hypotheses

In literature and policies, there is an ongoing discussion between representatives of the utilitarianism and the egalitarianism. While the former pursues the maximisation of individual utility and thus focuses on income maximisation, the latter aims for an equal income distribution and favours measures to reduce income inequality (Gandelman & Porzecanski, 2013). Illustrating this theoretical and political trade-off, Beja (2011) states that on the one hand, inequality is "a contradiction to the basic principles of justice and democracy that hold the fabric of society together" (p.23), on the other hand "perfect equality should not be the goal" (p.22). This ambiguity can also be found on an individual's perception level, since some people perceive inequality as a "social evil" (Alesina, Di Tella & MacCulloch, 2004, p. 2010), relating it to increased criminality and the endangerment of property rights, and thus develop an aversion against it due to self-preservation. On the other hand, Beja (2014) talks about "social blindness" (p.154), since people tend to accept inequality as a normal state of affairs. He, however, also states that this is a distorted perspective which must be broken urgently via transformative processes of increasing awareness, consciousness and understanding about inequality.

According to Ferrer-i-Carbonell and Ramos (2014), there can be three ways of how inequality influences an individual's happiness[3]: (1) self-interest, i.e. the perception of either losing out or benefiting from inequality, (2) regard for others, i.e. people genuinely care for each other and social preferences such as fairness determine the inequality (dis)like, and (3) relative concerns, i.e. individuals compare themselves with others, which is why the income distribution of the reference group matters for the taste of equality. Following Buttrick, Heintzelman and Oishi (2017), inequality tends to make societal status more salient, increasing social contrasts and augmenting the tendency of peer comparison, which make especially people at the lower end of the social ladder feeling worse-off. This effect is moderated through feelings of envy and

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[3] For a more detailed discussion of theories and channels through which inequality effects happiness, please refer to Senik (2009) and Schneider (2016).

Table 1 Theories and hypotheses for the relationship between inequality and happiness

Theory/ Hypothesis	Description	Expected effect on happiness	Source
Activation	Income inequality stimulates people to become more active (privately and economically) which in return fosters happiness	positive	Berg and Veenhoven (2010)
Diversity and niche finding	Economic imbalance is a sign of diversity representing the existence of different societal lifestyles and sub-cultures that allow people to find their niche, resulting in higher happiness	positive	Berg and Veenhoven (2010)
Social mobility	Citizens that perceive a higher social mobility in society anticipate the possibility to move upward the social ladder in the future (positive), while a negative relationship is expected when citizens feel entrenched in the social bottom line	positive (high mobility) negative (low mobility)	Alesina, Di Tella and MacCulloch (2004) Clark (2003)
Social comparison (relative income)	Individuals tend to socially compare themselves to others leading to less happiness for the ones that have comparatively lower incomes, *et vice versa*	positive (the relatively rich) negative (the relatively poor)	Hopkins (2008) Schneider (2016) Veenhoven (2012)
Taste for equality	People have a "taste for equality", i.e. they have an inner preference for equally distributed income	negative	Alesina, Di Tella and MacCulloch (2004) Senik (2009)
Social capital	The *social capital hypothesis* states that in unequal societies individuals experience less social support and lack institutional and interpersonal trust leading to a decreased life satisfaction	negative	Buttrick, Heintzelman and Oishi (2017) Schneider (2016)
Institutional/ infrastructural externalities	Institutional and infrastructural externalities such as crime decrease happiness when inequality is high	negative	Schneider (2016) Zmerli and Castillo (2015)
Habituation effects	A certain amount of income inequality is considered as "normal" by society leading to indifference	indifferent	Beja (2011)

perceived unfairness. A summary of the main dominating theories of how economic inequality affects happiness is given in Table 1. However, as one can see there are theories and channels that predict an overall negative relationship between inequality and happiness, while others assume a positive or even no relationship. Other theories state that the relationship depends either on contextual variables or on socio-economic variables on the individual level, making the relationship an unsolved puzzle.

2.2.2   Perception of Inequality

Many researchers use actual income inequality and underlie implicitly that individuals are omniscient with full knowledge of their surroundings. Thereby, the fact is ignored that economic inequalities are a highly complex social phenomenon for which the application of aggregated income data may be insufficient and too abstract. Instead, the perceived rather than the factual inequalities may be more important although barely ever tested for empirically yet (Schneider, 2016, p. 1731). Ferrer-i-Carbonell and Ramos (2014) as well as Dolan, Peasgood and White (2008) also state that it is perceived income inequality that matters, not objective inequality. This is true because inaccurate perceptions, paired with unbiased errors, lead to an underestimation of the true coefficient – so-called attenuation biases arise (Ferrer-i-Carbonell & Ramos, 2014). Nevertheless, there is a research need of analysing how actual and perceived income ranks and social status impacts upon subjective well-being and to identify to whom people compare themselves (Dolan, Peasgood & White, 2008). According to Ferrer-i-Carbonell and Ramos (2014), especially between-group inequality is differently perceived as within-group inequality, which has been very rarely tested yet in happiness studies. Furthermore, the interpretation of inequality matters: Is it perceived as God-given, as unfair, as legitimate? If this interpretation changes, the relationship between well-being and inequality changes as well (Buttrick, Heintzelman & Oishi, 2017). Especially the social mobility hypothesis mainly represented by Alesina, Di Tella and MacCulloch (2004) is often brought up to be a crucial perception component albeit not being empirically tested yet due to the lack of suitable data. Therefore, based on this and the previous section, the following three hypotheses were derived:

H1   *Economic inequality has a negative relationship with happiness, cross-sectionally as well as over time.*

H2   *Between-reference-group inequality matters to a higher extent for Latin Americans than within-reference-group inequality.*

H3   *The perception of inequality, especially fairness and social mobility, is a crucial moderator for the effect of inequality on an individual's happiness.*

2.2.3   Empirical Evidence from other Studies

Analysing 119 nations and the respective relationship between income inequality and happiness, Berg and Veenhoven (2010) found that in Western countries a strong negative relationship prevails while in Asia, Eastern Europe and Latin America a slight positive relationship was found. For Africa, however, no clear relationship could be found. In line with that, Rözer and Kraaykamp (2013) analysed 195.091 individuals from 85 different countries

around the world and found that people are on average much happier in unequal countries compared to people living in equal nations. Focussing on urban regions in China, Smyth and Qian (2008) found that the higher income inequality is perceived by individuals, the lower the reported levels of happiness are. Wu and Li (2017) also analysed rural and urban regions in China, finding a negative relationship between income inequality and happiness, in both local and aggregated data, while local economic growth has a positive effect. Analysing Europe and America, Alesina, Di Tella and MacCulloch (2004) found that the respective citizens tend to be less happy when income disparities are high. However, this effect was the strongest for the poor in Europe and the rich in America. Using repeated cross-sectional data from 1972 to 2008 for America, Oishi, Kesebir and Diener (2011) found that income inequality is negatively associated with happiness, moderated through perceived fairness and general trust and only applicable for lower-income respondents.

2.3 Other Determinants of Happiness

2.3.1 Income, Wealth and Relative Concerns

Over the decades, "social progress" has been primarily seen as material welfare (Beytía, 2016). Nevertheless, the relationship between income and happiness is the "most studied and least well understood relationship" (Graham, 2008, p. 26). From a theoretical perspective, higher income translates into more societal prestige paired with higher opportunities to buy material goods and services that an individual desires, and thus higher utility (Frey & Stutzer, 2002). In other words, income allows individuals to meet their (material) needs and goals (Diener & Suh, 1997). However, applying adaptation and aspiration level theory from psychology, the effects of additional material goods, i.e. increased wealth, wear off over time due to a process of hedonic adaptation. In other words, individuals continuously adapt their aspiration levels, lowering them as soon they achieved something materially or immaterially. This means that they will always strive for accomplishing more, being never satisfied because of their insatiable wants (Frey & Stutzer, 2002).

While intangible matters are intuitively and affectively appraised, the assessment of tangible items such as income follows a cognitive and comparative evaluation (Veenhoven, 2012). Thus, even if increased income was able to increase human welfare, one has to be cautious because of the importance of relative income: If the income of a certain part of the population increases, but at a slower pace than that of the reference group, then these "relative losers" could feel left behind, leading to decreased life satisfaction. Consequently, people with constant or decreasing income during a period of economic growth will be less happy (Ball & Chernova, 2008). Frey and Stutzer (2002) also stress on the fact that individuals compare themselves to other individuals, e.g. regarding income, consumption, status, or utility, making relative income an important measure in happiness studies.

Empirically, Ram (2010) found a positive and significant relationship between income and happiness when studying cross-country differences worldwide. Ball and Chernova (2008) found that more absolute income as well as more relative income tend both to increase an

individual's happiness, while the latter has an even higher impact than the former. Analysing 18 Latin American countries in 2004, Graham and Felton (2006) conclude that especially relative differences matter for Latin Americans and this even above and beyond total income, while perceived opportunities and status play a major role for their happiness as well. Also explicitly looking at the importance of individuals' wealth in developing countries, He, Cheng, Bishwajit and Zou (2018) analysed women in Nepal and found that females with lower wealth status state poorer subjective health, quality of life and happiness. Using a longitudinal Australian panel survey of Queensland with three waves, Western and Tomaszewski (2016), however, found no statistically significant effect of income on life satisfaction. Nevertheless, even if income and wealth may not have the largest direct effects on happiness, they can indeed have a big impact through indirect effects, i.e. improvements of non-monetary areas of life, such as health, institutions or education, which matter to a great extent for people's happiness (Ball & Chernova, 2008; Senik, 2014).

2.3.2   National Prosperity and Economic Growth

Easterlin (1974) was the first to analyse the relationship between economic growth and happiness and came to the conclusion that, albeit rich individuals tend to be happier on an individual's level, across nations average national happiness does relate to a nation's wealth. He could also not find any evidence for a longitudinal relationship between the two variables analysing the USA between 1944 and 1970, a period of massive economic growth. According to Diener and Suh (1997) there is a low correlation between objective circumstances and subjective well-being. Nevertheless, analysing 42 countries worldwide, Schyns (2002) found a positive but weak relationship between individual income and life satisfaction as well as between national economic prosperity, i.e. GDP per capita, and the latter. Moreover, she found that especially the poorer population was less happy in poorer countries as compared to the ones in richer nations, while the poor exhibit a higher variance in life satisfaction than the rich at the same time. Focussing on developed Western nations, Oswald (1997) found that economic progress does indeed buy extra happiness, but only to a marginally small amount. Analysing 46 Countries between 1981 and 2012, Mikucka, Sarracino and Dubrow (2017) found that economic growth in form of GDP per capita increases life satisfaction when accompanied by increasing social trust and, for rich economies, combined with a decline in income inequality. Especially the relationship between inequality and economic growth is a heated discussion in literature, since increasing income inequality seems to be an inevitable by-product of increasing economic growth (Gandelman & Porzecanski, 2013). Hence, these adverse distributional consequences of growth, i.e. economic inequality, may counteract the positive pecuniary effects (Ball & Chernova, 2008). However, at the aggregate level, there is a huge lack of direct evidence regarding the relationship between national wealth and happiness, due to data limitations and methodological issues (Senik, 2014). Therefore, the last two hypotheses were derived based on the reviewed literature of this and the previous section:

> *H4   Prosperity is positively related with happiness on an individual level as well as on a country level, cross-sectionally and over time.*

2.3.3   Non-Pecuniary Determinants

Although monetary variables seem to matter to people, non-pecuniary factors tend to have larger effects on happiness than relative or absolute income changes (Ball & Chernova, 2008). Analysing Swedish micro-data, Gerdtham and Johannesson (2001) show that income, health and education are positively related with happiness, whereas unemployment, urbanisation, being single and male gender is negatively associated with it. Frey and Stutzer (2002) state that democracy has a positive relationship with happiness, while inflation and unemployment are negatively associated with happiness. Especially demographic and socioeconomic factors play a major role for an individual's happiness. Consistent relationships that were found in most of the previous studies are, that age exhibits a U-shaped relationship with happiness, that divorced individuals and unemployed people are on average less happy, while being better educated, married and female tend to be positively associated with happiness, respectively (Beja, 2011; Dolan, Peasgood & White, 2008; Smyth & Qian, 2008). Analysing the major papers in the field of happiness economics since 1990, Dolan, Peasgood and White (2008) found that, although poor health, divorce, unemployment and lack of social contacts tend to be strongly negatively related with subjective well-being, methodological, theoretical and operationalising problems and differences limit the generalisation of these findings.

2.4   The Case of Latin America

Particularly the mismatch between Latin America's high economic inequality and high general life satisfaction makes it an interesting target for happiness economics studies. However, Latin America managed to decrease inequality during the commodity boom in the 2000s significantly due to reallocation of income from the middle class to the poor, unemployment reduction, improvements in the minimum wage and the promotion of labour market formalization (Sánchez-Ancochea, 2019). At the same time, GDP per capita generally increased within the region over time although being relatively constant over the last couple of years. In accordance with the findings of Gasparini, Cruces and Tornarolli (2016), the continuous reduction of the Gini compared to the increase in GDP per capita in the 21st century can be seen in Appendix A. Nevertheless, the income of the elite (top 1%) seems to remain stable and high in Latin America compared to other world regions.

One indicator for income inequality, which illustrates Latin America's elite-driven development model, is the share of pre-tax national income of the top 1% population which can be seen in Figure 2 (WID, 2020). Latin America exhibits the highest share for the top 1% income earners since 1990 with e.g. 27,87% in 2016, indicating high income inequality and a distorted picture of the income distribution to the advantage of the elite. Therefore, unlike the

inequality deduction, the elite share of the income distribution is rather constant until 2000 and even slightly increasing in the 21st century.
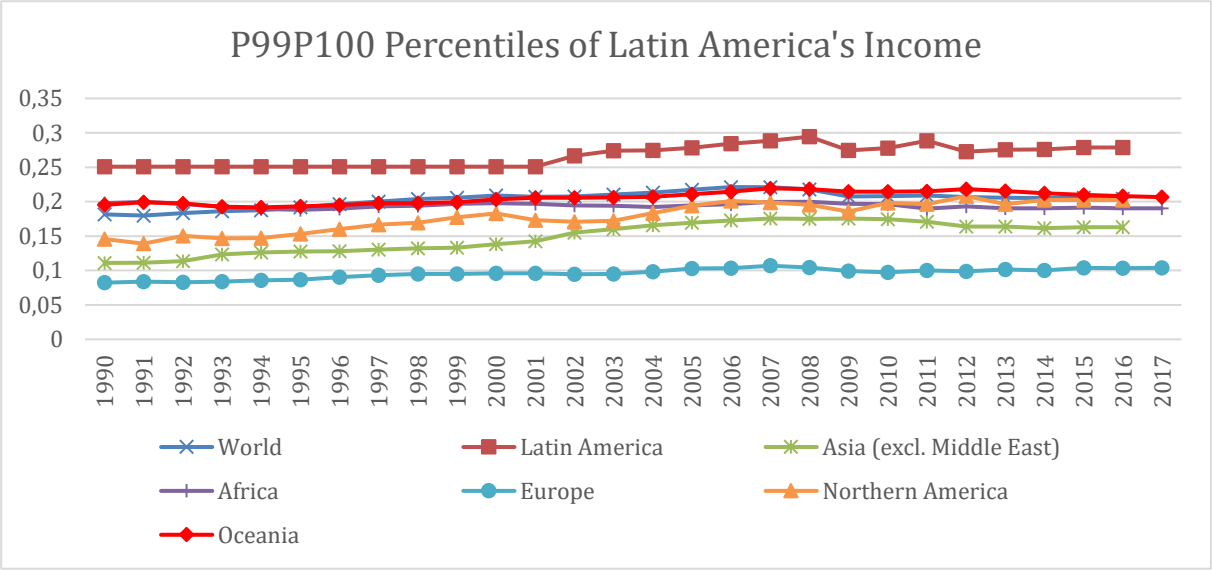
Figure 2 Income inequality in Latin America: P99P100 income percentiles. Source: WID (2020)

On the other hand, Latin American countries exhibit the highest happiness worldwide (Figure 3) according to the Happy Planet Index[4] (HPI, 2020) with three Latin American countries representing the top three: Costa Rica (44.7), Mexico (40.7) and Colombia (40.7).
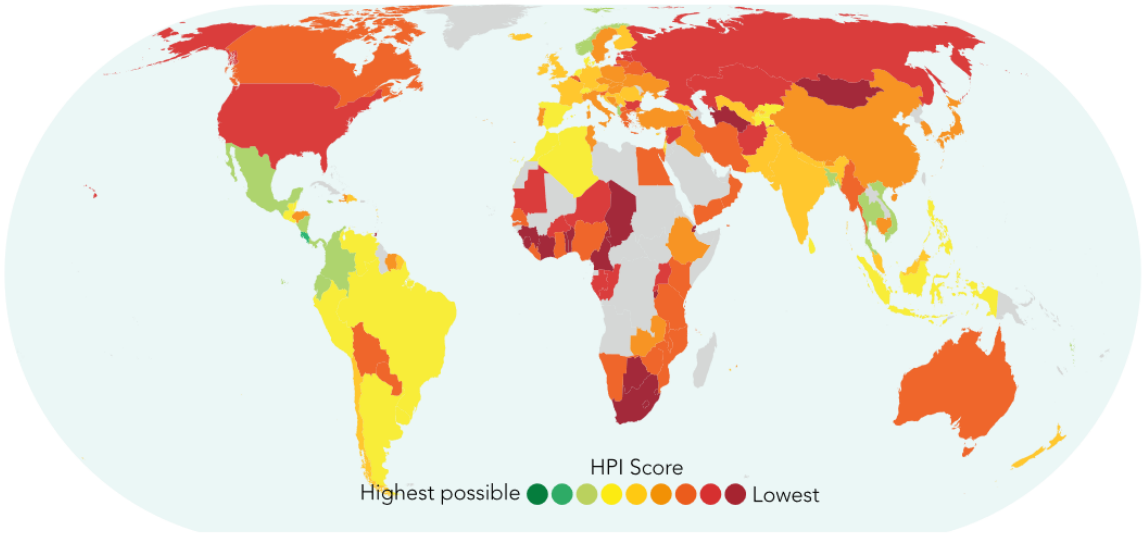
Figure 3 Countries of the world by Happy Planet Index score 2016. Source: HPI (2019).

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[4] The HPI measures human well-being. It was introduced by the New Economics Foundation in 2006 and is one of the most successful global measures for happiness and sustainability (Bondarchik, Jabłońska-Sabuka, Linnanen and Kauranne , 2016).

Looking at Latin America's development, Beytía (2016) refers to Latin America's discrepancy between happiness and the human development index (HDI), an alternative development measure to the conventional GDP, as a "macrosocial singularity". He traces it back to the fact that money in objective (income) as well as subjective (financial satisfaction) terms and health are less associated with happiness in comparison to the US and Western Europe, while educational level seems to be not related to happiness at all. Instead, family bonds, i.e. dense social relationships and close reciprocal ties, are the key source of Latin Americans' happiness. This may be the case because Latin America is culturally different to Western world regions and can be rather classified as a collectivistic culture compared to individualistic cultures such as the US, therefore cherishing cultural and interpersonal virtues to a different extent (Diener & Suh, 1997).

Moreover, for Latin America different relationships and effect magnitudes in comparison to OECD countries are to be expected, since Latin American countries experience shocks more frequently, exhibit greater macro-economic volatility and lack social safety nets (Ruprah & Luengas, 2011). Applying a systematic review and meta-analysis of studies on the relationship between happiness and inequality, Ngamaba, Panagioti and Armitage (2018) found that there is a statistically significant difference between the effects of inequality on happiness in developed (positively associated) and developing countries (negatively associated), making national economic development a crucial moderator. For example, while inequality in the US or Europe may be a sign of income mobility and induce opportunities (Alesina, Di Tella & MacCulloch, 2004), inequality in Latin America is perceived as perpetual disadvantage of the poor, being more beneficial for the rich (Graham & Felton, 2006). Additionally, in two studies it was shown, that inflation and unemployment are negatively related to subjective well-being in Latin America (Graham & Pettinato, 2001; Ruprah & Luengas, 2011). The only study explicitly looking at inequality and happiness in Latin America was conducted by Graham and Felton (2006) who, however, focused mainly on analysing relative cross-sectional relationships and micro-level variables influencing this relationship. Therefore, this thesis aims to fill the gap of empirical evidence for Latin America (Ram, 2010). It will provide new insights for policy makers in Latin America and other developing countries by analysing not only objective but also perceived economic inequality, showing how economic prosperity and happiness relate, identifying the reference group Latin Americans compare themselves to and the effects on life satisfaction as well as potential policy implications.

2.5   Review of Methodology of Previous Research

Previous happiness economics studies are methodologically deficient regarding various dimensions: analysis of small samples with a focus on developed countries, missing differentiation between micro- and macro-level variables, no inclusion of a time dimension, insufficient use of control variables, and the inappropriate aggregation of individual level variables (Mikucka, Sarracino & Dubrow, 2017). Particularly striking is the fact that cross-sectional mono-level studies are predominating this field of study (Ngamaba, Panagioti &

Armitage, 2018), as opposed to longitudinal multilevel analyses, which may lead to vast statistical and conceptual issues.

2.5.1 Mono- versus Multilevel Analysis

Following Hox (1995), one major *conceptual* issue of mono-level[5] analyses (e.g. only individual or only national level) is the misinterpretation of general effects. The two most-known fallacies are the *ecological fallacy,* i.e. the interpretation of aggregated data at the individual level (Robinson, 1950), and the *atomistic fallacy*, i.e. drawing inferences at the macro-level based on analyses performed at the micro-level (Hox, 1995).

Another major set of problems of mono-level analyses is of *statistical* nature and arises through the analysis of variables from different levels on only one common level. Firstly, when microlevel data from many subunits is aggregated into fewer values on the macro-level, information gets lost which decreases the explanatory power as well as precision significantly (Mikucka, Sarracino & Dubrow, 2017). Through this aggregation of data on the national level, the error term of the individual level is averaged out, thus only representing between-country differences of happiness (Schyns, 2002). In other words, personality traits and other individual characteristics are averaged out, resulting in higher and spurious correlations (Diener & Oishi, 2000). Secondly, disaggregating macro-level data from a few superordinate units to many micro-level subunits, treating each value as independent information, results in an artificial "blow-up". This, in return, leads to the fact that significance tests will reject the null-hypothesis much more often than assumed by nominal alpha level, i.e. spurious significances will be found (Hox, 1995).

However, these conceptual issues, i.e. fallacies, as well as the statistical issues can be overcome by applying a multilevel approach (Hox & Kreft, 1994) which can be defined as follows:

> Multilevel analysis is a methodology for the analysis of data with complex patterns of variability, with a focus on nested sources of such variability – pupils in classes, employees in firms, suspects tried by judges in courts, animals in litters, longitudinal measurements of subjects, etc. (Snijders & Bosker, 2011, p. 1).

Although many researchers still stick with the "conventional" econometric models, Schyns (2002) states that using multilevel analyses in quality of life (i.e. happiness) research "is not really a matter of taste but of necessity" (p.11). Three major advantages of multilevel analysis in comparison to mono-level regressions are: Firstly, it assigns variability to the level where it belongs since individuals (micro-level) and countries (macro-level) have both their own respective error variance (i.e. heterogeneity), making it possible to analyse inter-level differences in variance (Jones & Duncan, 1998). Secondly, it can be differentiated between

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[5] "Formulated generally, a level is a set of units, or equivalently a system of categories, or a classification factor in a statistical design. In statistical terminology, a level in a multilevel analysis is a design factor with random effects" (Snijders, 2005a, p. 663).

main effects of macro-level variables on life satisfaction and main effects of the individual level on life satisfaction, while interactions between both levels can be analysed as well (Schyns, 2002). Thirdly, since multilevel models combine micro- and macro-level variables, they are maximizing the use of available information (Mikucka, Sarracino & Dubrow, 2017). However, albeit of the various advantages compared to conventional econometric methods in the happiness economics, i.e. mono-level analysis, multilevel analysis in happiness research "is still in its infancy" (Schyns, 2002, p. 10).

2.5.2   Multilevel Analysis of Longitudinal Cross-Sectional Data

Since standard cross-sectional multilevel models do not account for serial correlation among the disturbances of the macro-level equation, it can lead to inflated error-terms on the macro-level, reflecting the effects of omitted time series (DiPrete & Grusky, 1990). Thus, accounting for cross-level and temporal differences is imperative for the refinement and increased reliability of prior research results (Mikucka, Sarracino & Dubrow, 2017) as well as for drawing causal links (Ngamaba, Panagioti & Armitage, 2018). However, it is important to keep in mind that cross-sectional relationships (e.g. between levels of happiness and levels of inequality) as focused on by previous research, may differ from longitudinal relationships (e.g. between trends of happiness and trends of inequality), which is why mixing them would be inaccurate.

Many previous studies that use national-level longitudinal cross-sectional data employ "fixed effects", also called "within" models because of using only within-country variation over time, as opposed to "between" models that include between-country variation. These "within" models include dummy variables without accounting for time-invariant country-level variables since they would be collinear with the respective country dummies, which enables the researcher to control for among-country but not across-country differences (Fairbrother, 2011). Theoretically, the best way to combine within- and between-country variation is to use multilevel analysis for panel data (Frey & Stutzer, 2002; Lepenies, 2012), which, unfortunately, is often not possible due to the lack of adequate data sets and the availability of such surveys, especially on the country or cross-country level. However, another way to overcome the neglection of time-invariant as well as country- or region-specific determinants of reported life satisfaction is by analysing cross-sectional data over several time periods – so-called *repeated cross-sectional* data (Frey & Stutzer, 2002). Repeated cross-section data allows for the incorporation of changes over time of inequality aversion in happiness equations (Ferrer-i-Carbonell & Ramos, 2014).

One of the very rare studies that actually used multilevel analysis of repeated cross-sectional data in Latin America is Fierro (2019), who analysed the relationship between indigenous people, their recognition and democracy. Regarding the happiness economics in Latin America, only one known paper applies multi-level analysis, which is by Weitz-Shapiro and Winters (2011), who analyse the relationship between voting and life satisfaction, albeit only using cross-sectional data. To the best of the author's knowledge, a happiness study analysing the relationship between life satisfaction, economic prosperity and inequality based on repeated cross-sectional and applying a multi-level approach has never been conducted in Latin America so far.

3 Data and Research Methods

3.1 Data

The population of study are individuals in Latin America. The subject of study is Latin America as a whole since the existing literature focus is distorted to the advantage of individual countries, while world regions such as Latin America remain understudied (Berg & Veenhoven, 2010). Furthermore, this allows for analysing a larger sample, leading to higher consistency and robustness of the results (Graham, 2005). The two main sources of information for the quantitative analysis of this thesis are data sets from the surveys conducted by the Latinobarómetro (2020a) and macro-economic data from the World Bank (2020a, 2020b). The Latinobarómetro is an annual public opinion survey across 18 Latin American countries, whose design and thematic focus resemble the ones of the Euro-Barometer (Ruprah & Luengas, 2011).

In total, eleven years between 2005 and 2018 have been pooled, excluding the year 2015 because the question about possession of drinking water was not asked, which was needed for the calculation of the wealth index, which is a crucial variable for this paper. Moreover, the years 2012 and 2014 are not included, since no surveys have been conducted in these years. The year 2005 was chosen as the first year because from this year on, the availability of the variables relevant for this paper was given. Moreover, since 2005 the representativeness of each survey accounts for 100% for almost all countries (Latinobarómetro, 2020b). Thus, the provisional raw sample encompasses 237,151 individuals in total, pooled from eleven annual surveys, each containing between 1000 and 1250 respondents per country. In some of the surveys, observations for respondents from Spain were included, which is not part of Latin America, and were thus dropped ($N = 14,857$). Life satisfaction is the independent variable of interest included in all econometric models, consequently observations with missing data for it were excluded ($N = 1,287$). Marital status, i.e. being single, married or divorced, is a main control variable being included in all analyses, therefore respondents with missing data for this variable were dropped as well ($N = 1,249$). Moreover, GDP per capita data retrieved from the World Bank was available for all years and countries except for Venezuela in 2016, 2017, and 2018, which is why these observations were excluded ($N = 3,590$). Lastly, after calculating the wealth index based on the possession of nine different items, observations with missing data for this variable were dropped ($N = 6,735$). Hence, the final pooled data set consists of 209,434 observations which will be used for most of the analyses, except for the analysis of perceived inequality, where a restricted data set will be applied due to the limited availability of certain variables of interest. The consistent number of observations also allows for testing for model accuracy and quality between the different models to see if they improve through adding certain variables or interactions under the assumption of being parsimonious.

The type of the created data set can be classified as *repeated cross-sectional*. To be more precise, the data set consists of *longitudinal comparative* data which constitutes a sub-category of repeated cross-sectional data. This is the case because individuals are nested within macro-level units, i.e. countries, while nationality itself represents a crucial characteristics of the respondents at the same time, allowing for cross-country comparisons (Fairbrother, 2011).

3.2   Research Methods: Multilevel Modelling

For this thesis, a three-level model will be applied with individuals i nested within country-waves (also called country-years) y, nested within countries c. This three-level hierarchy is represented in Figure 4. The number of waves amounts to eleven for all countries, except for Venezuela, where the years 2016, 2017 and 2018 could not be included because of missing data, thus having 8 waves instead. The amount of waves applied in this paper are more than for example used by Mikucka, Sarracino and Dubrow (2017) who include only between two and six waves in their analysis of economic growth and life satisfaction. Regardless of that, it is not the average cluster size at level 3, but the total sample size at the country-wave level what matters for the statistical power (Snijders, 2005b) which is $N = 195$ in this analysis (compared to $N = 173$ in the previously mentioned paper).
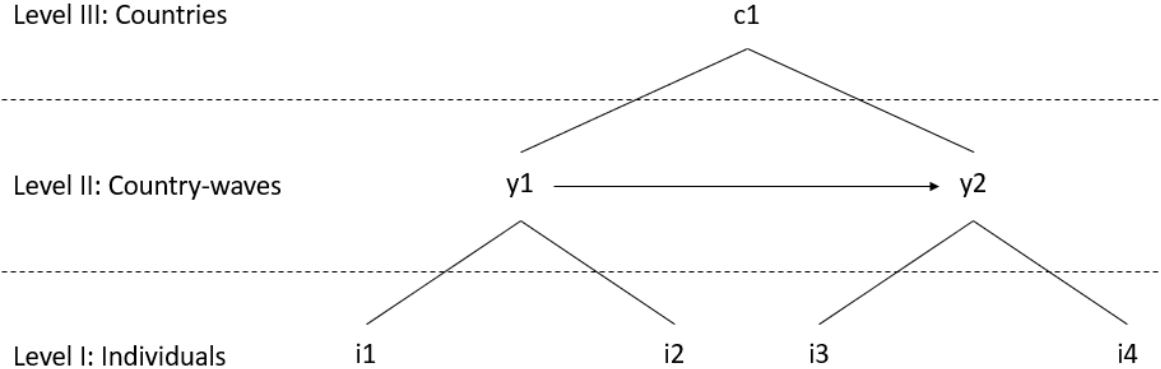
Figure 4 Illustration of the applied three-level model

The standard multilevel model is only based on two types of equations: micro-equations and macro-equations. While the former accounts for individual-level variation *within different contexts* (e.g. within countries), the latter explains *cross-context* variation (e.g. between countries) in these micro-parameters (DiPrete & Grusky, 1990). Applied to this thesis and following Mikucka, Sarracino and Dubrow (2017) for the model creation, the former is described by Equation 1 (Level 1) while the latter is given through Equation 3 (Level 3). Since this is a three-level model, the meso-Equation 2 (Level 2), representing the country-years, is added respectively:

$$lifesat_{iyc} = \alpha_{yc} + B_K X_{iyc} + B_L \Delta X_{yc} + B_M \mu X_c + \varepsilon_{iyc} \tag{1}$$

$$\alpha_{yc} = \gamma_c + \tau_{yc} \tag{2}$$

$$\gamma_c = \gamma_0 + v_c \tag{3}$$

In this model, life satisfaction ($lifesat_{iyc}$) is regressed on a set of individual- (i), country-wave- (y), and country-level (c) explanatory variables with the error-term ε_{iyc}. X_{iyc} reflects a vector of individual-level variables with B_K denoting a vector of the respective coefficients. ΔX_{iyc} is a vector of country-wave-level variables, while B_L denotes a vector of the respective coefficients. Lastly, μX_{iyc} represents a vector of country-level variables, while B_M is a vector of the respective coefficients.

The Equations 2 and 3 classify the model as a *random intercept model* due to the inclusion of the random intercepts τ_{yc} and v_c, being the only randomly varying coefficients. In other words, this allows mean life satisfaction to vary randomly among country-years as well as across countries. Testing for sensitivity and robustness, the above described models were extended through the inclusion of several random slopes.

3.2.1 Test for Necessity of Multilevel Modelling

However, an important question one may ask is: Is a multilevel model even necessary? Snijders (2005a) states that "to qualify as a non-trivial level in a multilevel analysis, the dependent variable has to show some amount of residual, or unexplained variation, associated with these units" (p.664). Applied to this thesis, in which life satisfaction (independent variable) of individuals (level-one units) nested within country-years (level-two units) nested within countries (level-three units) will be studied, it must be tested whether multilevel modelling is a suitable approach. Building up a three-level model as previously described, one underlies two main assumptions: (1) individuals of one country tend to have higher life satisfaction in one year than in some other years, and (2) individuals tend to have a higher life satisfaction in one country than in some other countries. These effects are, however, not completely covered by the included variables which is why the inclusion of levels, i.e. multilevel modelling, is econometrically necessary. To test if this is really the case, the residual variance in average life satisfaction within the population of country-years and countries will be calculated, respectively. If this residual variance amounts zero, the set of units analysed are not suitable as a level in the multilevel analysis (Snijders, 2005a). Put differently, a three-level model as used in this paper issues three variance components: (1) variance of residuals at level 1 ($\sigma^2_{individuals}$), (2) variation of the intercepts at level 2 ($\sigma^2_{country-years}$), as well as (2) the variation of the intercepts at level 3 ($\sigma^2_{countries}$) which add up to the total variance ($\sigma^2_{total} = \sigma^2_{individuals} + \sigma^2_{country-years} + \sigma^2_{countries}$). To capture the share of a variance component σ^2_i, the respective intraclass correlation coefficient (ICC_i) will be calculated:

$$ICC_i = \frac{\sigma_i^2}{\sigma_{total}^2} \qquad (4)$$

In general, the following applies: The higher the ICC, the more of the total variance can be explained by the respective variance component, increasing the necessity of multilevel modelling. However, even in the case of very small ICC, analysing hierarchical data using simple OLS regressions instead of multilevel models can lead to a serious inflation of type-I-errors which may lead to the fact that null hypotheses will be rejected too often (Musca, Kamiejski, Nugier, Méot, Er-Rafiy & Brauer, 2011). While some researchers take any value higher than zero as evidence for hierarchical structures and the need of multilevel modelling, Heck, Thomas and Tabata (2013) refer to a value of 0.05 as an often applied "cut-off" value. In addition, it will be tested whether the variance components are statistically different from zero with a multiparameter variance component test, the so-called likelihood-ratio test, which would also make multilevel modelling imperative if it is statistically significant.

3.2.2   Linear versus Logit Regressions

A challenge regarding the measurement of happiness is that treating this ordinal concept as a cardinal one by applying a linear statistic approach, i.e. characterising it as equidistant, must, theoretically speaking, lead to biases (Gandelman & Porzecanski, 2013; Graham, 2008). In other words, happiness data should be treated rather as a categorical instead of as a continuous variable. To address this issue, Beja (2011), for instance, uses an ordered probit regression as suggested by econometric theory. Empirically, however, ordered probit or logistic regressions (happiness as an ordinal categorical variable) provide very similar results as obtained through linear (mostly OLS) regressions (happiness as a cardinal continuous variable) regarding direction, significance and magnitude (Graham, 2005; Western & Tomaszewski, 2016; Wu & Li, 2017). Addressing this issue specifically, Ferrer-i-Carbonell and Frijters (2004) found that in happiness regressions the significance as well as the sign of the estimated coefficients are robust for cardinal methods (e.g. linear regressions) and ordinal methods (e.g. ordered probit or logit regression models). That is why linear OLS models are the most common in happiness studies due to their practical applicability and the facilitated interpretability (Schneider, 2016). For the same reasons, linear multilevel models instead of probit multilevel models will be applied for testing the hypotheses.

3.2.3   Longitudinal versus Cross-Sectional Effects

To capture differences between cross-sectional and longitudinal effects of the variables of interest, group mean centring will be conducted. Fairbrother and Martin (2013) were the first to use group mean centring in a three-level model based on individual-level survey data to distinguish between cross-sectional and longitudinal variation of the variables of interest. Following them, the subsequent steps were proceeded for the following variables: income Gini, wealth Gini, wealth GE(2) and GDP, which are denoted as X_i in the following.

Firstly, the mean of the variable X_i was calculated across all level-2 units, i.e. country-waves, for each country, capturing the time-invariant effect of cross-country differences in X_i on the independent variable. The average values of macro variables were labelled as $\mu Gini_{income}$, $\mu Gini_{wealth}$, $\mu GE(2)_{wealth}$ and μGDP, which are all country-level variables. Secondly, to determine the longitudinal effects of X_i on life satisfaction within one country, the overall country mean μX_i is subtracted from each country-year variable X_i, i.e. $\Delta X_i = X_i - \mu X_i$. Hereby, one obtains the country-wave variables $\Delta Gini_{income}$, $\Delta Gini_{wealth}$, $\Delta GE(2)_{wealth}$ and ΔGDP.

To summarise, through this procedure the time-invariant component (μX_i, a country level variable) and the time-variant component (ΔX_i, a country-wave level variable) were obtained. This allows for the separate but simultaneous analysis of the cross-sectional and longitudinal effects because of orthogonality of the created variables (Fairbrother, 2011). The interpretation of the coefficients of the country means (μ) and the changes over time (Δ) is similar to within-individual and between-individual effects in panel data regressions (Mikucka, Sarracino & Dubrow, 2017). For instance, in a regression with life satisfaction as the dependent variable, the coefficient of $\Delta Gini_{wealth}$ represents the difference in life satisfaction which is accompanied by a one-unit change of wealth inequality over time. In contrast, the coefficient of $\mu Gini_{wealth}$ provides information regarding the change of life satisfaction that comes along with a one-unit change of wealth inequality between countries[6].

3.2.4 Control Variables

The insufficient inclusion of control variables, i.e. a low value of degrees of freedom, may lead to spurious correlations and significances because of omitting potentially confounding variables (Mikucka, Sarracino & Dubrow, 2017). Moreover, responses to happiness questions tend to be *homeostatic*, meaning that they gravitate around a positive value over time, the so called "set point". Triggered by external events, responses can fluctuate in the short term, through e.g. positive or negative one-time events, or in the long term through major life events such as marriage or unemployment. Therefore, controlling for these variables is necessary to avoid biases (Western & Tomaszewski, 2016).

Thus, following previous happiness studies, the following socio-demographic control variables will be included in all models: gender, age, age squared, education, marital status (i.e. dummies for being married and divorced), and employment status (i.e. dummies for being a student, unemployed, self-employed and retired) (Beja, 2011; Graham & Pettinato, 2001; Ruprah & Luengas, 2011; Wu & Li, 2017). As consistently proven in previous studies, age is expected to exhibit a U-shaped relationship with happiness, being divorced, unemployed or self-employed are expected to be negatively related, whereas being better educated, married, a student, retired

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[6] In the whole paper, μX_i variables will be referred to as either "cross-sectional", "time-invariant" or "level" variables, while ΔX_i will be referred to as the "longitudinal", "time-variant", "trend" or "growth" variables.

and female are expected to be positively related with happiness, respectively (Beja, 2011; Dolan, Peasgood & White, 2008; Smyth & Qian, 2008).

3.3   Reference Group Analysis

3.3.1   Average and Relative Reference Group's Wealth

To get more insights into how national prosperity influences individual well-being, the importance of relative prosperity compared to an individual's reference group will be analysed. Three different channels may be relevant when looking at relative economic prosperity: Friedman and Ostrov (2008) refer to "envy" to describe the negative effect on an individual's utility (i.e. happiness) that an income increase of a person richer than the individual has. They further describe "pride" as the negative effect on utility that generally prevails if the income of others increase. Lastly, Hopkins talks about "compassion" when models assume a positive effect of own income increases but a negative one for the difference between one's own income and that of others, which is supposed to be less effective for explaining the Easterlin paradox. Thus, in this paper we rely on the models used by Luttmer (2005) and Di Tella and MacCulloch (2003), which cover envy and pride and are also used by Graham and Felton (2006).

Following Luttmer (2005), let Y denote the independent variable (i.e. life satisfaction), X being a vector for all other included variables, $wealth$ represents individual's wealth and $avgwealth$ the reference group's average wealth. The reference group in this paper is defined by the individual's social class within the same country.

$$Y = X\beta + avgwealth\beta_1 + wealth\beta_2 \qquad (5)$$

In addition, following Di Tella and MacCulloch (2003), with the goal of distinguishing between average and relative wealth effects, the difference between the respondent's wealth and average wealth ($relwealth$) was calculated.

$$relwealth = wealth - avgwealth \qquad (6)$$

Although Equation 7 provides the same information as Equation 5, one can now differentiate between the respective effects of relative and average wealth on happiness:

$$Y = X\beta + avgwealth\beta_1 + relwealth\beta_2 \qquad (7)$$

This kind of model covers "pride" and "envy" and is also called "keeping up with the Joneses" or simply "model of mean-dependence" (Hopkins, 2008, p. 356). Applied to this thesis, $avgwealth$ will be the level (μavgwealth) as well as the trend (Δavgwealth) of average national wealth of an individual's social class, respectively. This allows to differentiate between cross-sectional and longitudinal relative comparisons, which has, according to this author's state of knowledge, never been analysed in this form before.

3.3.2 Within- and Between-Group Inequality

Similar to the relative wealth approach, it will be analysed how inequality influences an individual's happiness in consideration of the person's reference group, i.e. a person's social class within the same country. Previous research on happiness and inequality has not yet made the crucial distinction between within-group and between-group inequality, which could explain the mixed findings because people may perceive inequality within their own reference group differently than between reference groups (Ferrer-i-Carbonell & Ramos, 2014). To do so, the reference group was defined as the respondent's social class within the same country. It is assumed that an individual perceives wealth inequality within her own social class as more acceptable than she[7] does between her social class and others. This may be the case because she thinks that differences within her own socioeconomic class, i.e. within-group inequality, can be traced back to ambition and work effort. Between-group inequality, however, may matter to a higher extent if the individual thinks that in which socioeconomic class you end up is rather based on external factors such as coming from a good home as opposed to internal efforts, perceiving this inequality as unfair and unjust. To test this assumption, wealth inequality will be split up into within-group and between-group inequality based on the individual's respective social class, which thus constitutes the reference group. Since the Gini does not satisfy additive decomposability (Shorrocks, 1980), another inequality measure will be used. This has also another advantage, since, according to Ferrer-i-Carbonell and Ramos (2014), concurrent research analysing the relationship between happiness and inequality misses out on measuring income inequality via different inequality measures, which would increase the robustness of the findings and help understanding which "types" of inequality matter for individuals. One measure with the advantage of being additive composable, allowing for the distinction between within-group and between-group inequality, is the single parameter generalized entropy class $GE(\alpha)$. Since the wealth index also contains values of zero, only $GE(\alpha)$ with $\alpha = 2$ could be calculated using Jenkins (1999) *ineqdec0* command in Stata. $GE(2)$ represents half the square of the coefficient of variation which is an inequality measure that is more sensitive to differences at the top of the distribution (OECD, 2013). $GE(2)$ was derived based on the following calculation:

$$GE(2) = \frac{1}{2} * \sum_{i=1}^{n} \left[\frac{1}{n} * \left(\frac{wealth_i}{m} \right)^2 - 1 \right]. \tag{8}$$

Note, that the same denotation as for the variables of the Gini calculation applies. $GE(2)$ can be additively decomposed with $GE_W(2)$ as within-group inequality and $GE_B(2)$ as between-group inequality:

$$GE(2) = GE_W(2) + GE_B(2), \tag{9}$$

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[7] Examples and arguments made in this paper apply equally to both genders if not denoted otherwise. However, for the sake of ease of reading, only the female pronouns (she/her) will be used without discriminating any gender.

while the following applies:

$$GE_W(2) = \sum_{k=1}^{K} v_k^{-1} * s_k^2 * GE_k(2). \tag{10}$$

With $v_k = \frac{n_k}{n}$, denoting the number of individuals in subgroup k divided by the total number of persons, i.e. the subgroup population share, s_k is the share of total wealth held by the individuals in subgroup k, i.e. the subgroup wealth share. Lastly, $GE_k(2)$ denotes the inequality for subgroup k, calculated as if the subgroup was a separate population.

3.4   Perceived Inequality

Using a cross-level interaction between the dummy variable measuring the unfairness of the income distribution and the actual inequality measures should test for possible moderating effects of perceived unfairness. Moreover, it is hypothesised that people who perceive their personal economic mobility to be low will be on average less happy living in a country with high inequality, while the opposite applies for the ones that think that their future economic situation will improve. When it comes to trends of inequality, it is assumed that perceptions of the future national economic situation are decisive, since people may accept increases in inequality if the general economy benefits from it. These statements will be tested via cross-level interactions between national inequality and the respective moderating variables.

3.5   Variable Operationalisation

The variables were operationalised based on the pooled data set from the Latinobarómetro (2020a) as well as from the World Bank (2020a, 2020b). The descriptive statistics of all employed variables sorted by levels can be seen in Appendix B.

Life Satisfaction (Dependent Variable)

The data for life satisfaction will be obtained from the question "Generally speaking, would you say you are satisfied with your life? Would you say that you are: (a) very satisfied, (b) fairly satisfied, (c) not very satisfied, (d) not at all satisfied?" which is originally a categorical variable with four categories, but it will be treated as a continuous one (as discussed in Section 3.2.2). A country level breakdown for the study period, as well as a trend analysis of life satisfaction over time for Latin America can be seen in Figure 5.
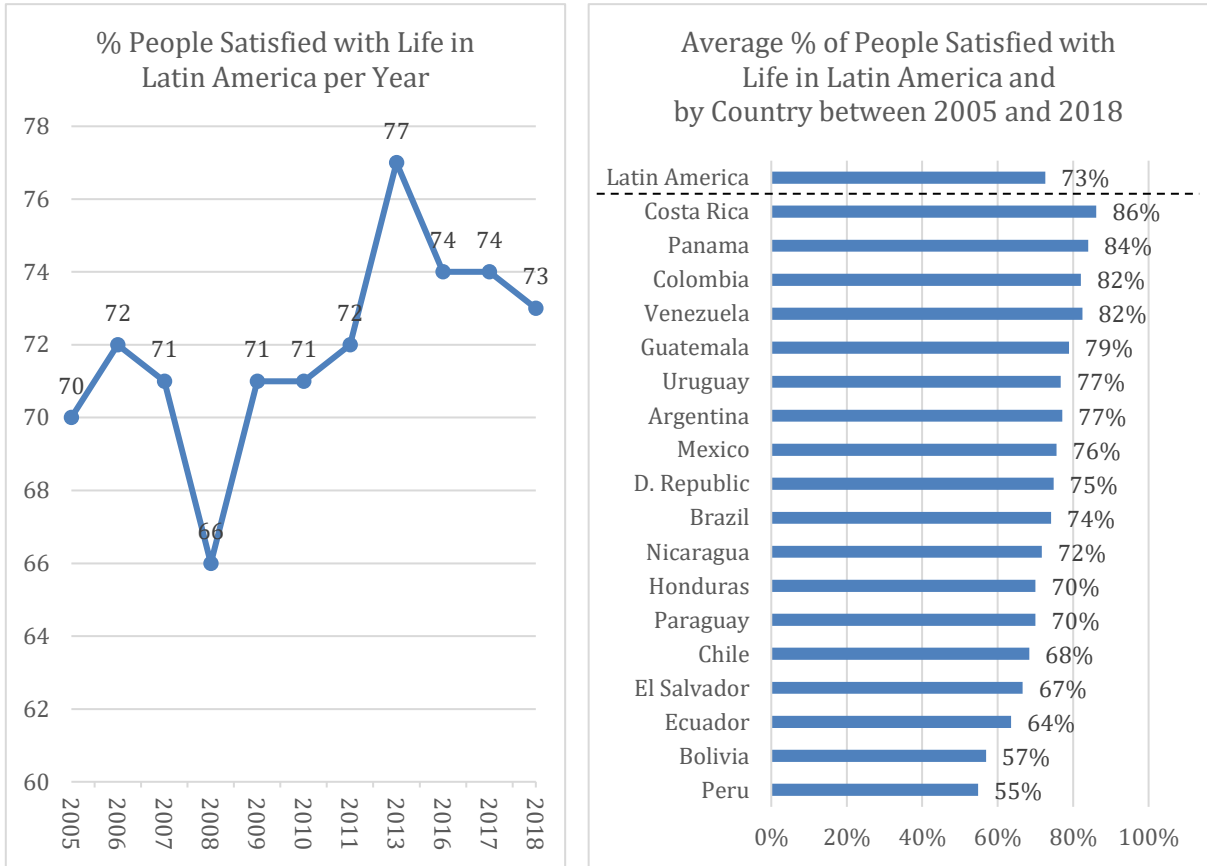
Figure 5 Trends of Latin America's life satisfaction and country-specific division

Note: Percentage of people satisfied with life in total Latin America (left graph) and per country (right graph) between 2005 and 2018. Illustration of share of respondents that stated to be "very satisfied" or "fairly satisfied" with life. Only data from Latinobarómetro surveys employed in this paper included in both graphs. Source: Latinobarómetro (2020a, 2020b).

Economic prosperity (Wealth and GDP)

Income measurement in developing countries is a challenge, since the share of the informal sector is relatively high, meaning that no fixed wages can be listed (Graham & Felton, 2006). Thus, as a measure for individual-level objective prosperity will be a wealth-index which was calculated based on the ownership of nine different goods and assets (X_i). The following items were coded as dummy variables and then added up for each respondent: computer, washing machine, telephone with a fixed network, mobile telephone, car, sewerage system, drinking water, hot water and owning a house. Thus, this key variable can take values between 0 and 9.

$$wealth = \sum_{1}^{9} X_i \qquad (11)$$

National objective prosperity will be measured via the logarithm of a country's GDP per capita measured in current US Dollar from the World Bank. This is done to increase external validity as well as to avoid multicollinearity between individual-level and country-level wealth, which would have been the case by including an internally created variable.

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Economic Inequality (Wealth and Income)

The national Gini coefficient is the most popular indicator in economic inequality studies (Schneider, 2016) and is used in several studies analysing the relationship between happiness and income inequality (Beja, 2011; Berg & Veenhoven, 2010; Delhey & Kohler, 2011; Ram, 2010; Wu & Li, 2017). Therefore, the respective national Gini coefficient from the World Bank in each country in each year will be used as a measure for objective income inequality (World Bank, 2020b). However, it is rather used as a sensitivity check due to missing data which may bias the interpretability.

Income inequality is, however, only one way of measuring economic inequality. The other way is using wealth inequality, for which the Gini of the wealth index has been calculated. To obtain it, the Stata command *ineqdec0* from Jenkins (1999) has been used. The calculation is based on the following: Consider $i = 1, \ldots, n$ as a population of individuals with the wealth $wealth_i$ respectively. Let m denote the arithmetic mean wealth, then the Gini coefficient is calculated based on the formula

$$Gini = 1 + \frac{1}{n} - \frac{2}{m * n^2} \sum_{i=1}^{n} (n - i + 1) * wealth_i \tag{12}$$

where individuals are ranked in ascending order of $wealth_i$. To calculate Gini on the country as well as the country-year level, the total population was split into mutually exclusive and collectively exhaustive subgroups $k = 1, \ldots, K$. Then the Gini was calculated for each of the country subgroups ($K = 18$) and the country-year groups ($K = 195$) respectively using loops in Stata. The wealth Gini exhibits a strong negative relationship with GDP (Appendix C). As a different measure for inequality and as an additional sensitivity check, the generalized entropy class GE(2) was calculated whose calculation and purpose was described in Section 3.3.2.

Reference Group Variables

One question given in the survey is "Imagine a staircase with 10 steps, in which on the first step are located the poorest and on the 10th step, the richest. Where would you put yourself on this staircase?" which will be referred to as the "economic ladder question" and it will be used to address perceived status based on the respondent's wealth. This allows to identify, to whom people compare themselves and across which spatial dimensions (e.g. internationally, intra-nationally, and locally). Moreover, the reference group of interest for this paper will be the respondent's social class. To obtain this variable, a question was used which addresses the assessment of the interviewee's socioeconomic level, which is based on quality of dwelling, quality of furniture and the interviewee's general appearance, amongst others. The following categories of a Likert scale were given: "very bad", "bad", "average", "good" and "very good". The former two have been summarised as "low social class", the average category serves as "middle social class" and the last two were recoded as "high social class". Thus, a categorical variable with three categories was created: "low", middle" and "high" social class.

Perception of Economic Inequality

To assess the perception of unfairness of the national income distribution, a question was used which specifically asked for it with the possible answers "very fair", "fair", "unfair" and "very

unfair". This was re-coded as a dummy variable with the first two categories accounting for 0 and the last two for 1. To address perceived economic mobility, two different questions were used as a source. Firstly, "In the next 12 months, do you think your economic situation and that of your family will be much better, a little better, about the same, a little worse or much worse than now?", which will serve as a proxy for perceived personal economic mobility. Secondly, "And over the next 12 months do you think that, in general, the country's economic situation will be much better, a little better, about the same, a little worse or much worse than now?", which will be used to address perceived national economic mobility. Each of the variables contains five different categories: "much worse", "a little worse", "about the same", "a little better" and "much better".

Control Variables

In addition to the analysed variables, a bunch of individual-level variables were created to account for individual characteristics and demographic features of the respondent that are proven to influence an individual's happiness. Firstly, to account for the respondent's sex, a dummy variable was created with being male denoting "1" and being female "0". The respondent's age was retrieved as a continuous variable. In addition, a categorical variable based on a question asking for the respondent's years of education was transformed into a continuous one. The categories between "without education" to "12 years" were coded as "0" to "12" years, respectively. In addition, "incomplete university" was coded as "14", "completed university" as "16", "high school/ academies/ incomplete technical school" as "13", and "high school/ academies/ complete technical school" as "14" years respectively. This is based on the fact that university degrees usually last four years and technical schools two years, while taking the average duration for incomplete studies. Based on a question about the marital status, dummy variables for being married and being divorced were created respectively. Analogously, dummy variables for being unemployed, self-employed, retired and being a student were obtained from a question asking for the respondent's current employment situation.

3.6   Limitations and Potential Biases

The database of the World Bank is used by most researchers, e.g. in the case of the Gini coefficient, which implies an assumed reliability and trustworthiness of the data, even though this does not consequently eliminate the potential existence of biases and measurement errors. However, recognizing that this database may not be free of biases and given the fact that its usage seems to be literature standard, this paper will refrain from a detailed discussion of its limitations. Looking at the Latinobarómetro though, Graham (2005) warns that order biases may arise when life satisfaction questions are not placed in the beginning of the survey leading to potential distortions and interferences by prior questions. She further states that framing biases may result from specific phrasing or changing reference norms. However, looking at the questionnaires of the surveys, one can see that the life satisfaction question was the first question asked and framing biases can mostly be excluded, since the framing of the questions included in this paper was relatively constant across all countries and over time. An omitting bias may arise to due to the missing inclusion of health, which is an important determinant and

control variable in happiness studies (Gerdtham & Johannesson, 2001), albeit not available in the surveys. It is also possible that certain data and variables are not missing at random. For example, especially the upper and lower ends of an income distribution often do not state their incomes (Sánchez-Ancochea, 2019). This might be solved by using the wealth index based on the possession of certain goods, decreasing the probability of this issue to arise. A clear case of data, which is not missing at random, is the Gini coefficient of the World Bank where data was hardly evident for poorer countries, such as Venezuela and Nicaragua, as well as for richer countries, such as Chile or Mexico (see Appendix D). This could thus lead to distortions of the results. Therefore, the World Bank Gini was merely used as a robustness check and to increase external validity of the findings.

Further biases may arise because individual answers depend on the mood, context and timing of the survey execution (Graham & Felton, 2006). In addition, with cross-sectional data one can neither account for individual changes in one's life situation nor adjust the measurements for individual personality traits leading to potential distortions (Graham, 2005; Western & Tomaszewski, 2016). The best way to overcome these potential distortions would be to use panel data which is however rarely available in happiness studies, especially for whole countries or world regions, such as Latin America (Frey & Stutzer, 2002). To at least account for country-specific variation and variability over time, repeated cross-sectional data was used. Nevertheless, the responses to happiness and life satisfaction questions exhibit great consistency within and across countries (Alesina, Di Tella & MacCulloch, 2004; Graham & Felton, 2006). In other words, if cross-sectional data is large enough, data is consistent over time and space (Graham, 2005, 2008). Furthermore, happiness data can be seen as reliable and robust (Beja, 2011), since they pass "validation exercises" of psychologists confirming that the expressed happiness is congruent with the revealed one, measured through physical reactions (Alesina, Di Tella & MacCulloch, 2004).

4   Results

4.1   Prosperity and Inequality Models

Table 2 represents the results of multilevel estimations on life satisfaction of the null model, which only contains the effect of the fixed and random intercepts, and further five models, exploring the relationship between prosperity and life satisfaction as well as between economic inequality and life satisfaction: Model 1 includes all individual-level control variables and accounts for levels and trends of GDP. Model 2 adds the individual-level dimension of prosperity through the inclusion of individual wealth. Model 3 explores additionally the relationship between wealth inequality (cross-sectional and longitudinal) and life satisfaction. Model 4 further adds interactions between the national state of prosperity (i.e. µlnGDP) and life satisfaction. Finally, Model 5 takes the interaction between inequality trends (ΔGini) and economic growth (i.e. ΔlnGDP) into account. All models are based on 209,434 individuals nested within 195 country-years nested within 18 Latin American countries.

Starting with the null model to assess the necessity of multilevel modelling, one can see that the country-level ICC amounts to 0.052 while the country-year ICC equals 0.076. Both values are higher than 0.05, supporting the need for multilevel modelling (Heck, Thomas & Tabata, 2013). In addition a likelihood ratio test was run, which is a multiparameter test that is suitable for variance components testing, especially with large samples as this one (Berkhof & Snijders, 2001). In other words, the likelihood ratio test compares a model that includes the intercept variance estimates with one that excludes them. If the p-value is below 0.05, this is an indication for significant variability in the intercepts. For the null model, a $\chi^2(2) = 15644.88$ with $p = 0.00$ is obtained, indicating substantial clustering and making multilevel modelling necessary.

The control variables exhibit all the expected signs while being statistically significant over all models. Age has a U-shaped relationship with life satisfaction, first decreasing and then increasing. A higher education, being married, retired and student exhibit each a positive coefficient while being divorced, unemployed and self-employed show a negative sign, respectively. The only variable that deviates from the "standard" effects found in the literature is gender, which is usually assumed to be positive for females, i.e. females are supposed to be happier on average than men. This, however, does not seem to be the case in Latin America where males appear to happier on average than females, a relationship that was also found by other studies analysing Latin America (Graham & Felton, 2006).

Accounting only for longitudinal and cross-sectional national prosperity in Model 1, GDP growth has a statistically positive and significant effect on life satisfaction while the level of national prosperity is positive but remains statistically insignificant. However, controlling for individual wealth in Model 2 lets economic growth become insignificant, which shows how

Table 2 Multilevel analysis of economic prosperity and inequality on life satisfaction

	Null M.	Model 1	Model 2	Model 3	Model 4	Model 5
Individual level						
age		-0.015***	-0.016***	-0.016***	-0.016***	-0.016***
		(-20.91)	(-23.06)	(-23.06)	(-23.06)	(-23.06)
age squared		0.000***	0.000***	0.000***	0.000***	0.000***
		(19.10)	(19.99)	(19.99)	(19.99)	(19.99)
education years		0.022***	0.011***	0.011***	0.011***	0.011***
		(44.88)	(21.36)	(21.37)	(21.37)	(21.35)
married		0.029***	0.033***	0.033***	0.033***	0.033***
		(5.87)	(6.72)	(6.73)	(6.73)	(6.74)
divorced		-0.072***	-0.058***	-0.058***	-0.058***	-0.058***
		(-9.47)	(-7.65)	(-7.64)	(-7.64)	(-7.64)
male		0.019***	0.014***	0.014***	0.014***	0.014***
		(4.76)	(3.47)	(3.47)	(3.47)	(3.47)
unemployed		-0.158***	-0.150***	-0.150***	-0.150***	-0.150***
		(-18.57)	(-17.73)	(-17.74)	(-17.74)	(-17.74)
self-employed		-0.017***	-0.014**	-0.014**	-0.014**	-0.014**
		(-3.59)	(-3.11)	(-3.12)	(-3.12)	(-3.13)
retired		0.028**	0.027**	0.027**	0.027**	0.027**
		(2.99)	(2.85)	(2.86)	(2.86)	(2.86)
student		0.054***	0.022*	0.022*	0.022*	0.023*
		(5.81)	(2.43)	(2.43)	(2.43)	(2.44)
wealth			0.047***	0.047***	0.047***	0.047***
			(43.16)	(43.15)	(43.15)	(43.15)
Country-year level						
ΔlnGDP		0.117***	0.075*	-0.041	0.549	-0.030
		(3.59)	(2.34)	(-0.85)	(0.58)	(-0.64)
ΔGini				-0.018**	0.074	-0.019***
				(-3.17)	(0.80)	(-3.44)
ΔGini # μlnGDP					-0.011	
					(-1.01)	
ΔlnGDP # μlnGDP					-0.068	
					(-0.64)	
ΔGini # ΔlnGDP						-0.031*
						(-2.39)
Country level						
μlnGDP		0.048	0.025	0.047	0.042	0.056
		(0.57)	(0.29)	(0.57)	(0.51)	(0.66)
μGini				0.016	0.016	0.018
				(1.13)	(1.12)	(1.20)
AIC	396480	392237	390387	390380	390383	390376
Model's df	0	12	13	15	17	16
Country ICC	0.059	0.069	0.071	0.064	0.063	0.067
Country-year ICC	0.084	0.091	0.092	0.084	0.083	0.086
N(individuals)	166396	166396	166396	166396	166396	166396
N(country-years)	155	155	155	155	155	155
N(countries)	18	18	18	18	18	18

Note: t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

important it is to control for individual-level prosperity when analysing the effect of macro-variables on micro-variables. Individual's wealth is positive and statistically significant for all models, showing that, on average, the higher the respondent's wealth is, the higher will be her life satisfaction. Thus, wealth seems to have a positive relationship with life satisfaction but only on the individuals' level, since country-wave level GDP growth (ΔlnGDP) as well as a nation's GDP per capita (μlnGDP) remain statistically insignificant over the different models. Thus, the hypothesis H4 can only be partly confirmed in that sense that individual wealth seems to be important for a person's life satisfaction and is positively associated with it, while no empirical evidence can be found for the macro-variables, i.e. the level of economic development and economic growth.

Model 3 accounts for trends and levels of wealth inequality which are however not statistically significant and remain that way over the different models. Model 4 shows that inequality does not seem to depend on the level of national prosperity. Lastly, Model 5 accounts for the interaction between trends in GDP and inequality which is negative and statistically significant, indicating that if economic growth comes along with an increase of wealth inequality, this impacts an individual's life satisfaction negatively. Based on these findings, H1 cannot be affirmed, even when controlling for the country's different wealth, objective inequality measures do not seem to have a statistically significant influence on a person's well-being. However, when economic growth is accompanied by an increase in inequality at the same time, this has a statistically significant negative influence on an individual's happiness.

To measure the goodness fit of the respective estimated statistical models, Akaike's information criterion (AIC) is shown, with a lower value indicating a better model fit. All models show improvements in comparison with the null model while the Models 2 and 5 seem to have the best fit. As a robustness check of the findings as well as to increase external validity, Appendix E contains the same analysis but using the Gini of income inequality from the World Bank instead. The magnitudes, signs and significances remain the same, with the only add-on that growth of income inequality is already statistically significant and negative as a stand-alone measure. The robustness check models, however, contain only a sample of 166,396 respondents nested within 155 country-waves nested within 18 countries. This is the case due to missing data of the World Bank Gini estimates which is why the interpretation of the results of World Bank Gini models have to be treated with caution as discussed in Section 3.6.

4.2   Deep-Dive: The Importance of Reference Groups

When it comes to economic prosperity and status, it is assumed that people compare themselves to people within the same social class, while the latter can then be described as reference group. Firstly, it was tested if this is really the case and if so, on which spatial dimensions such a comparison is happening. The economic ladder question (ELQ) will be used to address this topic. On one hand, it gives one information about the perceived status effect as one component of wealth utility and, on the other hand, it provides information, about whom individuals compare themselves to. Following Graham and Felton (2006), Figure 6 shows on which levels of spatial spheres individuals compare themselves to each other.
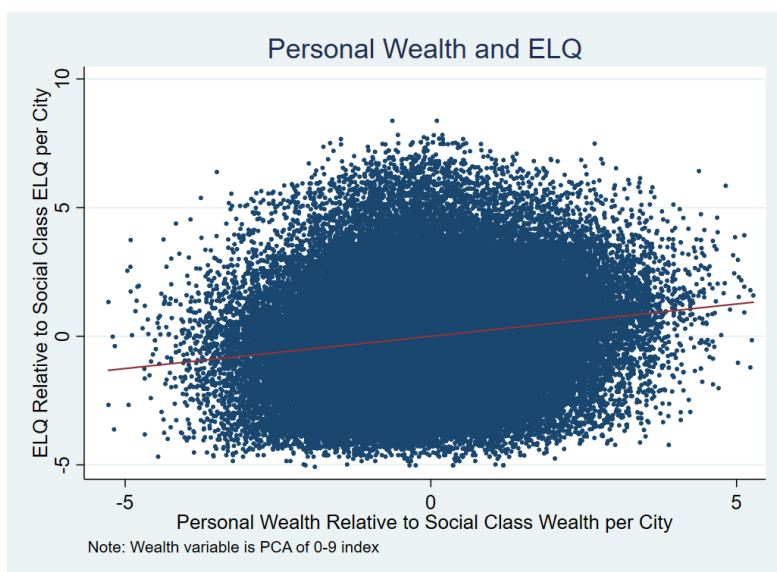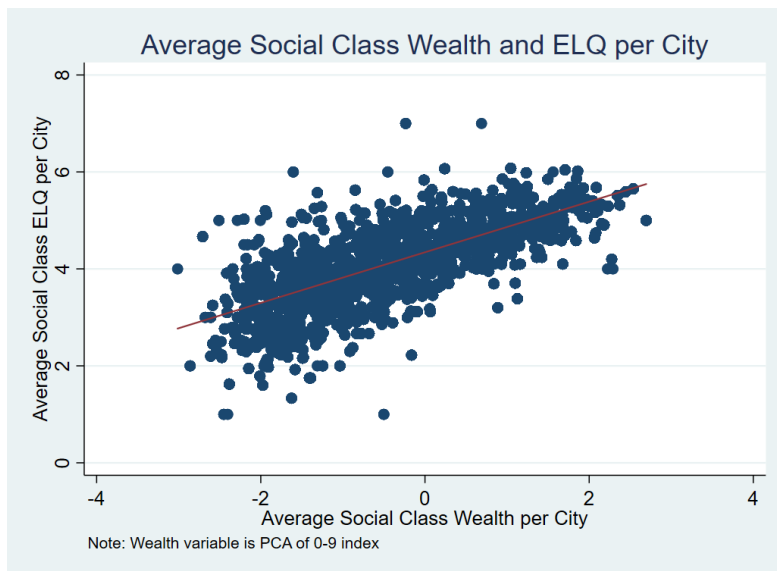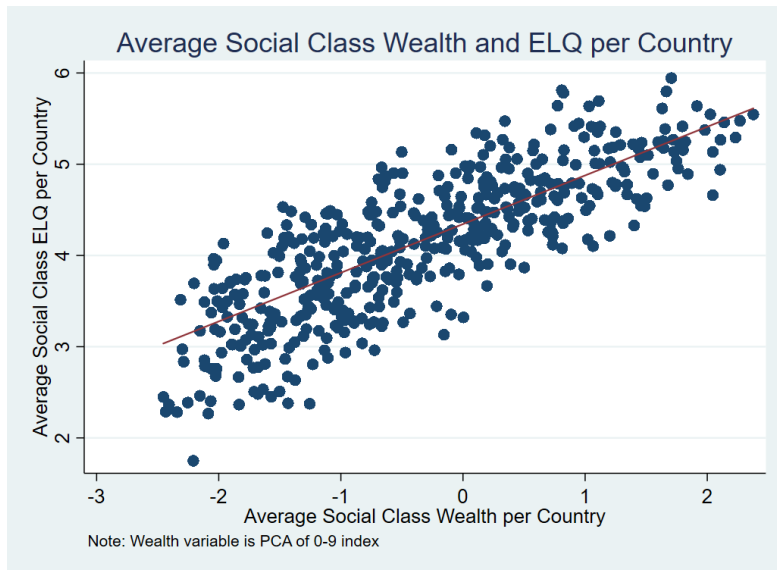
Figure 6 Identification of reference groups via ELQ

As one can see, there is an almost perfect linear relationship between the average social class ELQ score and the average social class wealth per country-year. This shows that people make international comparisons. Furthermore, there is a positive linear relationship between average social class ELQ and the average wealth per city[8] per country-wave, indicating intra-country comparisons. Lastly, one can see that people also make local social class comparisons when judging their own economic status. These findings are consistent with Graham and Felton (2006) who, however, define the reference group only by the spatial dimension (i.e. country, city or local comparisons) independent of an individual's social class. Nevertheless, their findings could now also be shown to be consistent for Latin America over time since the previously named authors only use cross-sectional mono-level analysis.

In Table 3 it is analysed how these reference groups influence the effect of prosperity as well as of inequality on life satisfaction. Models 1-3 analyse the importance of average wealth and relative wealth, respectively. Models 3-6 split national inequality into within- and between-group inequality and analyse their respective effects. In detail, Model 1 accounts for an individual's wealth as well as for the respective reference group's average national wealth, represented by a cross-sectional (μavgwealth) and longitudinal (Δavgwealth) component. Model 2 accounts for the relative wealth with regard to the cross-sectional component, while Model 3 accounts for the longitudinal component of relative wealth. Wealth cannot be included due to reasons of multicollinearity. Moreover, the information content of the first three models is the same, as reflected in the constant AIC, since, as described in the methods chapter, this approach does not add new information but makes the effects of relative and average wealth lucid instead. Model 4 is exactly the same as Model 3 from the previous analysis with the main difference of using the general entropy class GE(2) instead of the Gini to measure wealth inequality. On the one hand, this is a sensitivity test of the results found before, on the other hand, this is necessary to be able to split inequality into within-group and between-group inequality. This is done in Model 5 while controlling for the person's social class at the same time. Finally, Model 6 accounts for interactions between social class and within-group and between-group inequality levels respectively, to test for perception differences of the country's state of inequality.

As one can see in Model 1, the average national wealth of the reference social class has a statistically significant, positive effect on life satisfaction, while the average wealth growth of the reference social class has a slightly negative but insignificant effect. The social class categories remain insignificant for the first three models. As shown in Model 2, the relative national reference group's wealth is statistically significant and positive. This means that, if an individual has less wealth than her social class on average in the country, relative wealth contributes to less than average life satisfaction, while for individuals above average wealth, it contributes to more than average happiness. This is the case because relative wealth is calculated by subtracting average wealth from individual wealth, which becomes negative when the latter is smaller than the former. Nevertheless, the effect of average wealth is positive,

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[8] For this purpose, a distinction between small rural towns (< 5,000 inhabitants), medium-sized cities (>5,000 but <100,000 inhabitants) and large metropolitan cities (>100,000 respondents or national capital) has been made.

Table 3 Multilevel analysis of relative wealth and within- and between-group inequality

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Individual level						
wealth	0.032***			0.047***	0.033***	0.032***
	(30.66)			(48.00)	(31.27)	(30.79)
relμwealth		0.032***				
		(30.66)				
relΔwealth			0.032***			
			(30.66)			
LSC	-0.007	-0.007	-0.007		-0.109***	-0.116***
	(-0.52)	(-0.52)	(-0.52)		(-20.44)	(-7.33)
HSC	-0.015	-0.015	-0.015		0.107***	0.105***
	(-0.92)	(-0.92)	(-0.92)		(25.93)	(9.77)
LSC # μGE$_W$(2)						1.290***
						(4.65)
HSC # μGE$_W$(2)						-1.394***
						(-6.33)
LSC # μGE$_B$(2)						-3.312***
						(-4.34)
HSC # μGE$_B$(2)						3.914***
						(6.38)
Country-year level						
Δavgwealth	-0.007	-0.007	0.025*			
	(-0.75)	(-0.75)	(2.51)			
ΔGE(2)				-0.480		
				(-1.14)		
ΔGE$_W$(2)					-0.320	-0.301
					(-0.63)	(-0.60)
ΔGE$_B$(2)					-1.053	-1.017
					(-0.89)	(-0.86)
Country level						
μavgwealth	0.082***	0.114***	0.082***			
	(7.60)	(10.63)	(7.60)			
μGE(2)				0.059		
				(0.04)		
μGE$_W$(2)					4.745*	5.020*
					(2.00)	(2.11)
μGE$_B$(2)					-15.835*	-16.704**
					(-2.46)	(-2.60)
AIC	494556	494556	494556	495991	494614	494519
Model's df	15	15	15	15	19	23
Country ICC	0.071	0.071	0.071	0.059	0.041	0.041
Country-year ICC	0.092	0.092	0.092	0.080	0.063	0.063
N(individuals)	209434	209434	209434	209434	209434	209434
N(country-years)	195	195	195	195	195	195
N(countries)	18	18	18	18	18	18

*Note: t statistics in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. All models are further controlled for all individual-level control variables, Models 3-6 also for μlnGDP and ΔlnGDP. LSC/HSC = low/high social class.*

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statistically significant and much larger than of relative wealth (0.114 compared to 0.032 respectively). If one puts both effects together (0.114-0.032), one receives the positive total effect of the social class' state of average wealth on an individual (0.082) because of the dominating average effect, as seen in Model 1. In other words, looking at cross-sectional relative comparisons, the positive social class' average wealth is decisive in determining the total effect and not the relative positioning.

Model 3 discloses relative and average longitudinal effects of the social class' average wealth within a country. As one can see, the longitudinal average effect is positive and statistically significant (0.025) which means that, if one's social class average wealth increases over time, it affects one's happiness positively. Longitudinal relative wealth, however, is also statistically significant and amounts to 0.032. This means that, if average wealth of one's social class increases over time, but one's personal wealth remains unchanged, this would affect the individual's happiness negatively. Interesting herein is that, when looking at the longitudinal dimension, relative wealth has a higher impact which leads to the negative total effect in Model 1 (0.025-0.032=-0.007). Put differently, relative comparisons dominate when looking at changes of average wealth of one's social class over time.

Based on Model 1-3 the hypothesis H5, that relative wealth matters to a big extent for Latin American's life satisfaction, can be confirmed. However, this is especially true for the longitudinal component of national wealth of one's social class, i.e. wealth growth. For the cross-sectional component, i.e. the level of wealth of one's social class, average wealth effects are dominating. This seems to be an important distinction which has not been made so far in the existing literature. To check for robustness of the findings, the same models were run with a person's average social class wealth within one's city instead of looking at the country level, while the same effects could be found (see Appendix F)

Model 4 tests if the same effects can be found when using GE(2) instead of the Gini as a measure of wealth inequality. Indeed, the effects are still insignificant with the effect of inequality growth having a negative sign and the state of inequality having a positive sign. To explore why this is the case, both effects were split into within-group and between-group effects with one's national social class as a reference group. As one can see in Model 5, belonging to a high social class makes people happier than belonging to the middle class, while the opposite applies for individuals belonging to a low social class. The longitudinal effects of within- and between-group inequality remain insignificant and both negative. However, the level of within-group inequality appears to be statistically significant and positive. This means that, if inequality within one's social class within one's home country is high, this has a positive effect on the individual's happiness. The level of between-group inequality, however, reveals the opposite with a statistically significant negative sign, indicating that a high inequality between the social classes within one's country has a negative effect on a person's well-being.

Lastly, Model 6 analyses if the effects found in Model 5 are in fact moderated and perceived differently among the different social classes. Indeed, as one can see, members of a low social class are on average happier, when within-social-class inequality is high, than individuals of the middle social class, while individuals being in a high social class tend to be on average less happy. The contrary is the case for between-social-class inequality: for respondents belonging

to a low social class, between-social-class inequality has a negative effect on their happiness compared to people of the middle class, while people of a high social class are on average more satisfied with their lives when between-social-class inequality is high. Moreover, one can also see a continuous model improvement among Model 3-6, indicated by the decreasing AIC.

To conclude, H2 can be confirmed insofar that especially for the level of inequality in a country between-reference-group inequality seems to matter to a larger extent than within-group inequality, while the former is negatively related with personal happiness and the latter positively. Moreover, it could be found that the relationship between between-group and within-group inequality and life satisfaction is vastly dependent on a person's own social class: For low social classes within-group inequality seems to have a positive effect on happiness and between-social-class inequality is negatively associated with it, while for people belonging to a high social class the opposite applies. To check for the robustness of the results, Model 6 was modified in three different ways: (1) Random slopes for a country-year level variable (ΔlnGDP) and individual level variables (age, age squared, wealth and education years) were included to allow for random cross-country differences in the effect of the respective variables on life satisfaction, since the failure to include random slopes may lead to anti-conservative standard errors (Bell, Fairbrother & Jones, 2019). (2) As seen in Figure 5 the economic crisis in 2008 had a vast impact on Latin Americans' life satisfaction. Thus, to assure that the results are not driven by potentially spurious correlations linked to the crisis, the year 2008 was excluded from the analysis. (3) Lastly, to account for a potential omitted variables bias, a dummy for personal trust and a categorical variable for religious commitment were included. As one can see in Appendix G, the results are consistent with the main analysis.

4.3   Perceived Inequality: Unfairness and Social Mobility

Lastly, in Table 4 it will be analysed how the perception of inequality influences the effects of inequality on an individual's life satisfaction. Following Buttrick, Heintzelman and Oishi (2017) it will be tested if the perception of unfairness is a moderator of the influence of inequality on life satisfaction. In addition, following Alesina, Di Tella and MacCulloch (2004), the social mobility hypothesis will be tested through the usage of cross-level interactions between objective national inequality levels and trends with the person's perception of the future personal and the country's economic situation. Model 1 tests for the cross-level interaction between perceived income distribution unfairness and actual inequality. Model 2 accounts for interactions between national inequality trends and an individual's perception of the future economic situation of the country, while Model 3 includes interaction terms of perceptions of the prospective personal economic situation with the general inequality level of the country. Finally, Model 4 accounts for both interactions simultaneously. The number of individuals, country-years and countries deviates from the previous analyses due to limited data availability, since the questions for the variables of interest were not asked in every year. Consequently, for Model 1 the years 2005, 2006 and 2008 could not be included, while the data for the Model 2-4 was given for all years but a few observations were missing per year because of non-response of the questions.

Table 4 Multilevel analysis of perception of income distribution unfairness and social mobility

	Unfair distrib.	National situation	Personal situation	National (left) and personal (right) economic situation	
Individual Level					
Unfair	-0.180***				
	(-6.44)				
Unfair # ΔGini	0.182				
	(1.06)				
Unfair # μGini	-0.055				
	(-0.49)				
much worse		-0.199***	-0.160**	-0.104***	-0.088
		(-29.00)	(-3.12)	(-14.29)	(-1.72)
a little worse		-0.117***	-0.156***	-0.073***	-0.111***
		(-21.77)	(-4.83)	(-13.35)	(-3.42)
a little better		0.098***	0.078***	0.062***	0.037
		(21.51)	(3.72)	(13.10)	(1.77)
much better		0.283***	0.223***	0.191***	0.129***
		(36.06)	(6.61)	(23.05)	(3.80)
much worse # ΔGini		-0.408*		-0.659**	
		(-2.00)		(-3.24)	
a little worse # ΔGini		-0.275		-0.306	
		(-1.74)		(-1.96)	
a little better # ΔGini		-0.039		0.049	
		(-0.29)		(0.37)	
much better # ΔGini		0.716**		0.878***	
		(3.16)		(3.90)	
much worse # μGini			-0.799***		-0.852***
			(-4.00)		(-4.28)
a little worse # μGini			-0.144		-0.184
			(-1.11)		(-1.42)
a little better # μGini			0.037		0.077
			(0.43)		(0.90)
much better # μGini			0.183		0.286*
			(1.32)		(2.07)
Country-year level					
ΔGini	-0.076	-0.262	-0.272	-0.287	
	(-0.14)	(-0.71)	(-0.77)	(-0.81)	
Country level					
μGini	0.214	0.231	0.237	0.264	
	(0.17)	(0.19)	(0.20)	(0.22)	
AIC	340831	436850	435436	434214	
Model's df	18	23	23	31	
Country ICC	0.062	0.061	0.058	0.060	
Country-year ICC	0.078	0.081	0.077	0.079	
N(individuals)	145001	186792	186792	186792	
N(country-years)	141	195	195	195	
N(countries)	18	18	18	18	

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models are further controlled for all individual-level control variables as in Table 2 as well as for wealth, μlnGDP and ΔlnGDP. Model 2-4 refer to the respondent's perceived personal/ national future economic situation respectively.

One can see in Model 1 that perceived unfairness of the income distribution does not constitute a moderator for the effects of actual inequality on life satisfaction. However, people perceiving the income distribution as unfair are on average less happy than the ones perceiving it as fair. As shown in Model 2, individuals that have the impression that the future situation of the national economy will become either "a little worse" or "much worse" are on average less happy than individuals that think that the situation will stay the same. Thereby, the effect of the extreme perception (i.e. "much worse") is stronger in magnitude than the less pessimistic one (i.e. "a little worse") while both are statistically significant. Vice versa, people thinking that the national economy will be "a little better" or "much better" are on average happier than people believing that the situation will remain the same. Analogously, both categories are statistically significant, and the extremer perception is much higher in magnitude. Looking at the interaction with longitudinal inequality, one can see that the extreme perceptions (i.e. "much worse" and "much better" future national economic situation) are statistically significant with the former being negative and the latter positive. In other words, an increase in national inequality makes people, who think the economy's situation will much worsen in the future, less happy than the ones that think it will stay similar, while it makes people expecting a large economic improvement on average happier.

Looking at Model 3, the same statistically significant relationships can be found for the opinion about the future personal economic situation of the individual. Individuals that think that their personal economic situation will be "much worse" or "a little worse" ("much better" or "a little better") will be on average less happy (happier) than the ones that think it will remain the same, with the more extreme perceptions having the larger effects. Regarding the interactions between the people's opinion about their future prosperity and the general level of inequality in the country, the only statistically significant relationship is with perceiving future prosperity as "much worse" than today. Meaning that people with this respective perception will be on average less happy in a country with high inequality than people who think that their personal economic situation will not change in the future.

Lastly, in Model 4, the same relationships as in the previously described models could be found when including both variables and both interactions, with two small differences: (1) The interaction between thinking that one's future economic situation will be "much better" and the level of national inequality becomes statistically significant and positive. (2) Thinking that one's personal situation will become "much worse" and "a little better" become insignificant. For wealth, the expected positive and statistically significant relationship can be observed across all models, while the longitudinal and cross-sectional effects of inequality and economic prosperity remain statistically insignificant. Finally, there is a continuous improvement in the goodness of model fit from Model 2 to Model 4 as seen in the decreasing AIC.

Based on this analysis H3 can be confirmed since the perception of social mobility seems to be a determining factor for the relationship between inequality and happiness. In detail, a person's prospect of the country's economic situation is an important moderating factor for the perception of inequality growth, while the perception of the state of inequality is rather influenced by the individual's perception of her personal future economic situation. To check for robustness of the results, the same robustness checks as for within-group and between-group inequality were run and the results remain consistent with the main analysis (see Appendix H).

4.4 Discussion and Limitations

Firstly, this analysis aimed for identifying to which extent personal and national prosperity relates to Latin Americans' life satisfaction respectively. It was shown that an individual's wealth has a robust positive effect on subjective well-being. This finding is consistent with Graham and Felton's (2006) findings in a cross-sectional study of Latin America. However, for national prosperity the relationship remains less clear. No evidence could be retrieved that either the level or the growth of GDP has a significant effect on a person's happiness respectively. Nevertheless, when GDP growth is accompanied by an increase in inequality, this has a negative effect on a person's happiness. This shows the importance of looking at these macro-variables simultaneously, since their interaction effects may be more relevant than their individual effects. These moderating effects of inequality could already be shown by Mikucka, Sarracino and Dubrow (2017) as well as Oishi and Kesebir (2015), indicating that this relationship may be crucial for the disentanglement of the alleged Easterlin-paradox.

Moreover, when accounting for the role of reference groups, a positive relationship between happiness and the average national wealth of a person's social class could be found. In particular, it was shown that relative comparisons with one's social class matter especially for changes of average social class wealth over time. This means that an individual's happiness is negatively affected if the average wealth of the person's social class increases within the country, but not her own. However, looking at the not time-related cross-sectional dimension, one could see that in fact the positive effect of high average wealth of one's social class outweighs the negative effect of having less than average wealth. Although other research have already shown that relative income plays an important role in happiness economics (Ball & Chernova, 2008; Frey & Stutzer, 2002; Graham & Felton, 2006; Wu & Li, 2017), the distinction made in this paper between the longitudinal and cross-sectional dimension is novel and seems to be an important one for understanding the importance of relative comparisons.

Turning to the second research question, it was asked which kind of relationship between inequality and happiness prevails in Latin America and what role the perception of it plays. There was no significant relationship found between economic inequality and happiness per se, except for the interaction with economic growth as described before. However, when accounting for the relevance of reference groups, interesting insights could be retrieved: The level of between-social-class inequality affects members of low social class negatively, which may be the case because they are the ones that loose out, while the ones from high social class gain from this relationship, affecting their happiness positively. This may also reflect that members of a low social class perceive the income distribution as unfair, especially when the when the individual believes, that social class is rather determined by external factors, such as family inheritance or luck, instead of being earned by oneself. On the other hand, within-social-class inequality has a positive effect on life satisfaction for people from lower social class, which may be because it signals opportunities of social mobility. In other words, within-social-class inequality may imply the possibility to increase wealth within one's social class by working hard and due to effort, thus signalling opportunities and effecting happiness positively. This supports Ferrer-i-Carbonell and Ramos' (2014) hypothesis that the distinction between within-group and between-group inequality is a crucial one.

Finally, building up on the previous assumptions it was tested whether and to which extent unfairness and social mobility play a role for an individual and her happiness. One can conclude that especially the latter is deciding when it comes to the relationship between inequality and life satisfaction. Perception of unfairness of income distribution affects a person's happiness negatively but does not moderate the relationship with actual inequality. This contradicts the moderating effect of unfairness found by Oishi, Kesebir and Diener (2011) and Buttrick, Heintzelman and Oishi (2017). Following Beja (2011, 2014), this may be the case because the perception of an unfair income distribution already gained the status "normal", and hence does not affect one's happiness anymore. This can actually be seen in the fact that 79% of the whole sample perceive the income distribution in their country as either "unfair" or "very unfair". However, the perception of social mobility does indeed moderate the effect of inequality on happiness. If an individual expects that her economic situation will drastically worsen in the future, high levels of national inequality affect one's happiness negatively. This may be the case because the individual fears to be left behind and anticipates that she will be losing out in the game of inequality. A similar relationship was found between the country's future economic situation and growth in inequality. In this case, the prospective national economic situation may be signal for social mobility of one's social class, which has a positive effect on one's happiness, as seen in the reference group analysis. These findings confirm and show empirically that the social mobility hypothesis of Alesina, Di Tella and MacCulloch (2004) holds in the case of Latin America and that the individual's perception of social mobility seems to be crucial when it comes to how actual inequality affects a person's life satisfaction.

In conclusion, even though Latin America managed to improve the overall income distribution and established relatively steady economic growth within the 21st century, there is a continued need for decoupling this relationship as well as to break up the elite-driven development of the region (Sánchez-Ancochea, 2019). Additionally, inequality and poverty are both still very high in comparison to other world regions, making it imperative for Latin America to improve these dimensions with the overall goal of maximising their people's happiness (Rojas, 2020) but also to ensure social and political stability (Lustig, 2010).

However, despite of the comprehensive treatment and analysis of the employed data as well as the profoundly reasoned methodology, this study is not completely flawless. Firstly, due to the lack of data availability, panel data could not be used which would have been beneficial to account for person-specific personality traits. However, due to the employment of repeated cross-sectional data it was possible to at least account for longitudinal effects and national differences. Secondly, the inclusion of variable controls was limited by the availability of questions given in the surveys which did not include health, which is considered to be a crucial predictor when it comes to individual life satisfaction. Nevertheless, in all models the literature standard for employed controls was followed and even exceeded the amount of control variables included by many studies by far, while, additionally, conducting several robustness checks to assure reliability of the results. Thirdly, this study focusses mainly on correlations like many previous studies, which means that there is no proof of causality and even reversed causality is possible. That may be the case because it is plausible to assume that happiness leads to a higher working morale which would in return lead to higher economic growth or higher average wealth of one's social class.

5 Concluding Remarks

This study addressed the relationship between economic prosperity, inequality and life satisfaction in Latin America respectively. For this purpose, the following two research questions were derived:

RQ1   *What is the relationship between (perceived) economic inequality and happiness in Latin America and how does it change over time?*

RQ2   *What is the relationship between prosperity and happiness in Latin America and how does it change over time?*

To answer them, a pooled data set of repeated-cross-sectional surveys annually conducted by the Latinobarómetro was used for the analysis covering the years between 2005 and 2018. In order to answer the respective research questions, a three-level model was employed, where individuals were nested within country-waves nested within countries to analyse the hypotheses that were set based on the research questions. In addition, through cross-level group mean centring, a distinction between cross-sectional and longitudinal effects could be made which allowed for analysing levels and trends of specific variables separately.

This can be considered relevant, since policy makers who aim to maximise their population's satisfaction often have to face the quandary of striving for enhanced economic growth, which is allegedly increasing national welfare, while at the same time it may be accompanied by increasing inequality, which is often supposed to be harmful for the people's happiness. This study gives empirical insights, whether this dilemma really prevails, what the actual influence of the macro-variables on an individual's life satisfaction are and how they are moderated by people's perceptions and reference groups.

Summarising the main results of this paper, it was found that neither national prosperity nor inequality seems to be sufficient as a stand-alone determinant of an individual's life satisfaction. However, if inequality rises while economic growth is occurring, this has a negative effect on an individual's happiness. Another key insight of this study is that reference groups as defined by the person's social class matter to individuals in Latin America, when it comes to relative wealth but also regarding inequality. Relative wealth matters especially when the average wealth of a person's social class increases over time, but her personal wealth stays the same, leading to decreased happiness for this individual. Nevertheless, the fact itself that one's social class has a high average wealth affects one's life satisfaction positively. Moreover, for Latin Americans between-social-class inequality matters to a higher extent than within-social-class inequality and it is negatively associated with happiness. In detail, for people who belong to a lower social class, between-social-class inequality has a negative effect while within-social-class inequality has even positive effects on one's happiness, while the opposite applies for members of a high social class. Lastly, it was shown that perceiving the income distribution as

unfair lowers an individual's life satisfaction, while social mobility is a crucial moderator when it comes to the perception of actual inequality: The lower the perceived social mobility, the more negative is the effect of inequality on a person's happiness, while a perceived high social mobility can even make objective inequality have an positive effect on one's happiness.

Various policy implications can be drawn from the results: Due to the negative impact of economic growth accompanied by increasing inequality, it is imperative for policy makers to aim for breaking-up this hand-in-hand relationship and try to decouple these macro-phenomena. This is especially important for the regional development agenda in order to achieve the Goals 8 and 10 of the SDGs. Moreover, it could be shown that relative concerns matter to a high extent when looking at economic growth, which means that it is imperative that citizens do not feel left behind, since this would have detrimental effects on the happiness of the individuals that do not benefit from the increasing prosperity. Therefore, in line with Gaviria, Graham and Braido (2007) as well as Western and Tomaszewski (2016), the analysis of the most marginal groups of society regarding well-being is important for policy makers, since they experience the gravest levels of disadvantage and therefore exhibiting a major target group for policies. In line with that, Cramer and Kaufman (2011) showed that the demand for redistribution is especially high for the poorer parts of the population as well as for those who perceive social mobility to be low. However, as it was shown in this paper, neither national prosperity nor inequality are per se good or bad for an individual's happiness, but what matters are relative comparisons and perceptions. Thus, following the argumentation of Beja (2014), redistribution may not always be an adequate policy measure, but may in fact be counter-productive when the social context is not considered, decreasing people's work incentives and making people feel treated unfairly or unevenly. Instead, policy makers should aim for creating equal opportunities for people regarding social mobility, which should be openly and fairly accessible for everyone.

As happiness panel data becomes increasingly available and covers several years, it will be imperative for future research to use this kind of data to account for a person's personality traits and to test the found relationships in this study. Moreover, the advanced methodology applied in this study should be applied to more studies to account for variations at different levels when analysing nested data. Furthermore, more studies will be necessary to test, whether or not the same kind of relationships found in this paper can also be found for other developing countries. Latin America is culturally a relatively homogeneous world area compared to other world regions which is why other relationships may be expected in other countries or regions, that may be culturally different.

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7   Appendix

Appendix A Trends of inequality and GDP in Latin America in the 21st century.
Source: World Bank (2020a, 2020b).
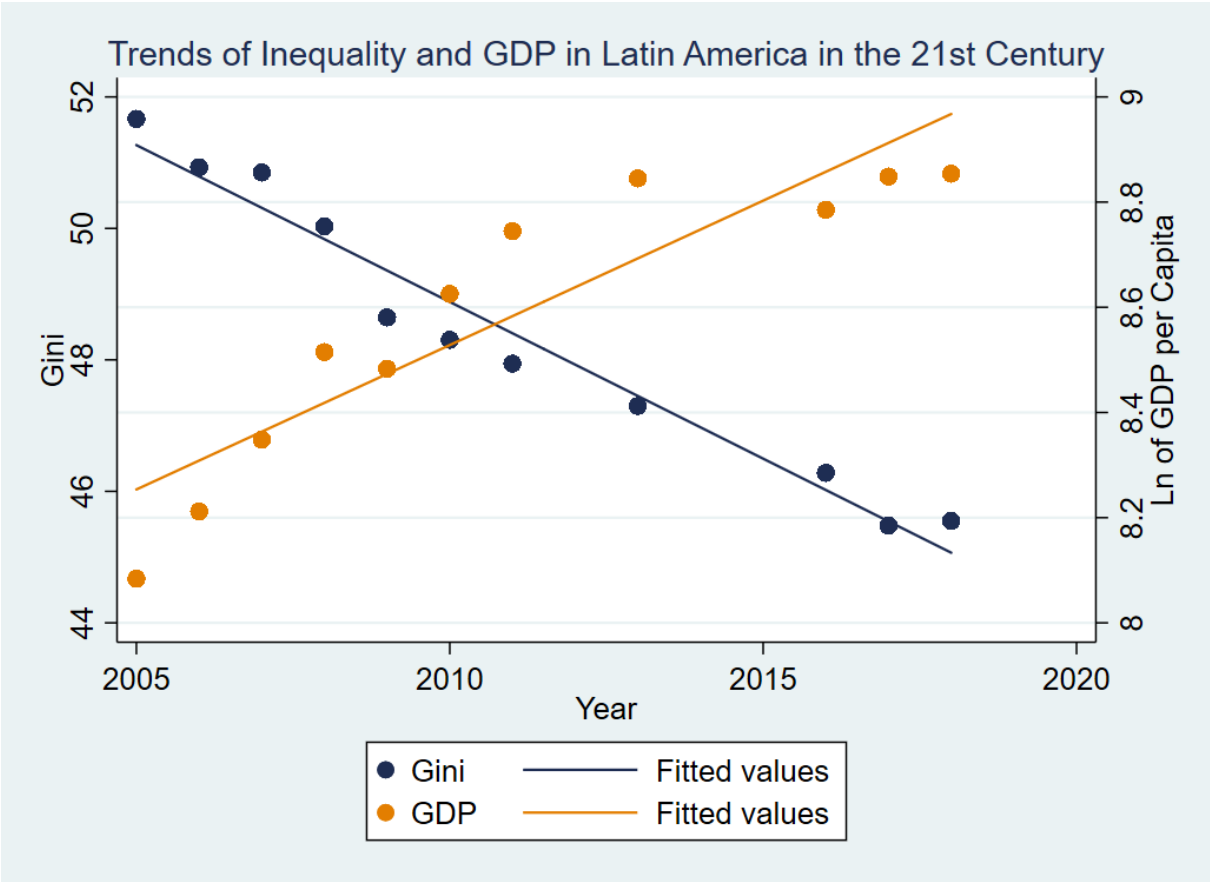
Note: GDP per capita increased for all Latin American countries from 2005 to 2018, comparing the start and end year. Inequality measured by the World Bank Gini decreased in all Latin American countries within this period, except for Costa Rica whose Gini kept relatively constant and even increased slightly over time (48 in 2018 compared to 47,5 in 2005).

Appendix B Descriptive statistics of employed variables

	Mean	SD	Min	Max	N
Individual level					
age	40	16.43	16	100	209434
age squared	1869.86	1502.71	256	10000	209434
education years	8.48	4.64	0	16	209434
married	0.56	0.50	0	1	209434
divorced	0.12	0.32	0	1	209434
male	0.48	0.50	0	1	209434
unemployed	0.06	0.24	0	1	209434
self-employed	0.33	0.47	0	1	209434
retired	0.07	0.25	0	1	209434
student	0.06	0.24	0	1	209434
social class	2.27	0.71	1	3	209434
wealth	4.96	2.29	0	9	209434
relμwealth	0	1.79	-7.71	6.81	209434
relΔwealth	4.96	2.25	-1.50	10.66	209434
unfair	0.79	0.41	0	1	145001
FPES*	3.42	0.95	1	5	196276
FNES**	3.06	1.06	1	5	194319
Country-year level					
ΔlnGDP	0	0.30	-0.78	0.56	209434
ΔGini$_{wealth}$	0	0.03	-0.10	0.08	209434
ΔGini$_{income}$	0	2.66	-7.17	9.13	166396
Δavgwealth	0	0.41	-1.66	1.50	209434
ΔGE(2)$_{wealth}$	0	0.03	-0.07	0.09	209434
ΔGE$_W$(2)	0	0.02	-0.05	0.10	209434
ΔGE$_B$(2)	0	0.01	-0.04	0.03	209434
Country level					
μlnGDP	8.57	0.63	7.38	9.40	209434
μGini$_{wealth}$	0.24	0.05	0.15	0.32	209434
μGini$_{income}$	48.68	3.59	43	54.60	209434
μavgwealth	4.96	1.42	2.19	7.71	209434
μGE(2)$_{wealth}$	0.10	0.04	0.04	0.17	209434
μGE$_W$(2)	0.07	0.03	0.02	0.13	209434
μGE$_B$(2)	0.03	0.01	0.01	0.05	209434

Note: *FPES= Future personal economic situation, **FNES= Future national economic situation

Appendix C Relationship between GDP and inequality and between GDP and wealth.
Source: Latinobarómetro (2020a) and World Bank (2020a, 2020b).

Relationship between GDP and Inequality

Note: beta coef = -.533, t-stat = -377.99, N = 209,434, R2 = .41

Relationship between GDP and Wealth

Note: beta coef = -.337, t-stat = -294.22, N = 209,434, R2 = .29
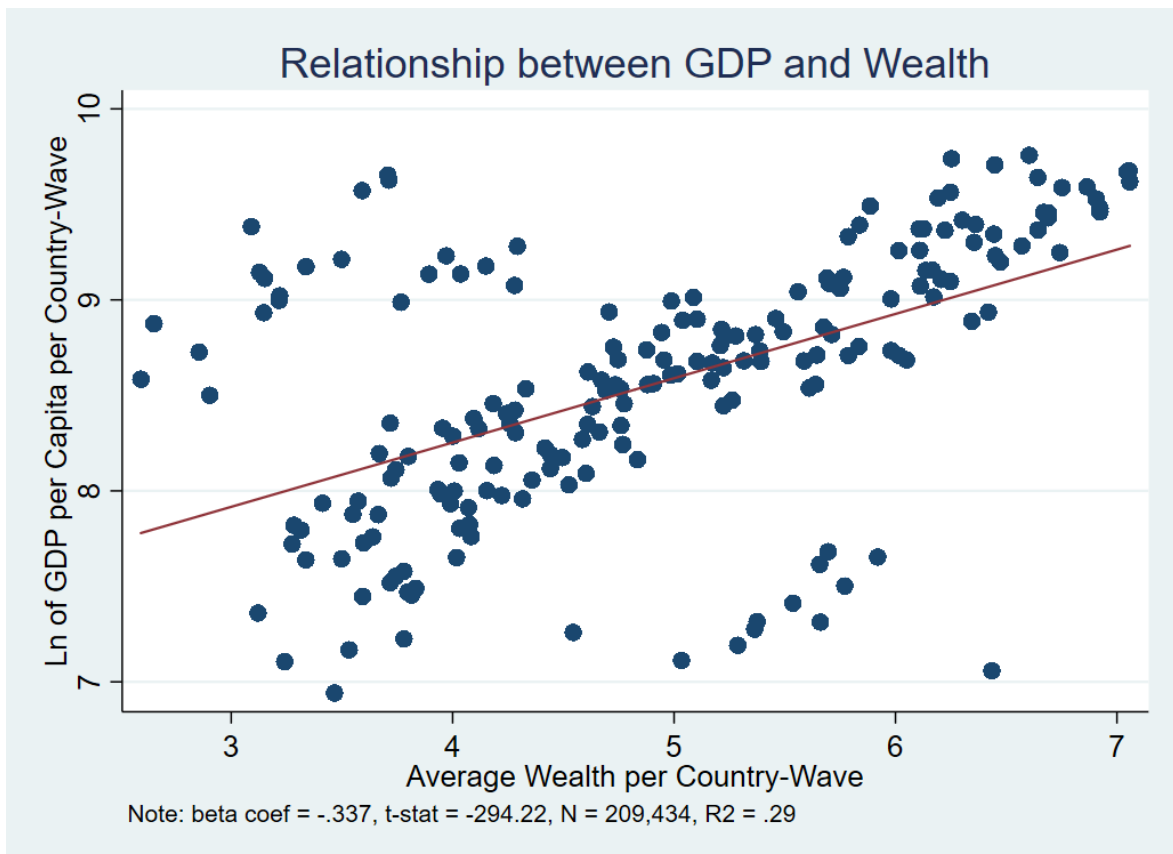
Appendix D Data availability of World Bank Gini.
Source: World Bank (2020b).

	2005	2006	2007	2008	2009	2010	2011	2013	2016	2017	2018
Argentina	x	x	x	x	x	x	x	x	x	x	x
Bolivia	x	x	x	x	x		x	x	x	x	x
Brazil	x	x	x	x	x		x	x	x	x	x
Chile		x			x		x	x		x	
Colombia	x			x	x	x	x	x	x	x	x
Costa Rica	x	x	x	x	x	x	x	x	x	x	x
D. Republic	x	x	x	x	x	x	x	x	x	x	x
Ecuador	x	x	x	x	x	x	x	x	x	x	x
Guatemala		x									
Honduras	x	x	x	x	x	x	x	x	x	x	x
Mexico	x	x		x		x			x		x
Nicaragua	x				x						
Panama	x	x	x	x	x	x	x	x	x	x	x
Peru	x	x	x	x	x	x	x	x	x	x	x
Paraguay	x	x	x	x	x	x	x	x	x	x	x
El Salvador	x	x	x	x	x	x	x	x	x	x	x
Uruguay	x	x	x	x	x	x	x	x	x	x	x
Venezuela	x	x									

Note: "x" means that the values for this country in this year were available, blanks indicate missing data.

Appendix E Robustness check: income inequality measured by World Bank Gini

	Null M.	Model 1	Model 2	Model 3	Model 4	Model 5
Individual level						
age		-0.015***	-0.016***	-0.016***	-0.016***	-0.016***
		(-20.91)	(-23.06)	(-23.06)	(-23.06)	(-23.06)
age squared		0.000***	0.000***	0.000***	0.000***	0.000***
		(19.10)	(19.99)	(19.99)	(19.99)	(19.99)
education years		0.022***	0.011***	0.011***	0.011***	0.011***
		(44.88)	(21.36)	(21.37)	(21.37)	(21.35)
married		0.029***	0.033***	0.033***	0.033***	0.033***
		(5.87)	(6.72)	(6.73)	(6.73)	(6.74)
divorced		-0.072***	-0.058***	-0.058***	-0.058***	-0.058***
		(-9.47)	(-7.65)	(-7.64)	(-7.64)	(-7.64)
male		0.019***	0.014***	0.014***	0.014***	0.014***
		(4.76)	(3.47)	(3.47)	(3.47)	(3.47)
unemployed		-0.158***	-0.150***	-0.150***	-0.150***	-0.150***
		(-18.57)	(-17.73)	(-17.74)	(-17.74)	(-17.74)
self-employed		-0.017***	-0.014**	-0.014**	-0.014**	-0.014**
		(-3.59)	(-3.11)	(-3.12)	(-3.12)	(-3.13)
retired		0.028**	0.027**	0.027**	0.027**	0.027**
		(2.99)	(2.85)	(2.86)	(2.86)	(2.86)
student		0.054***	0.022*	0.022*	0.022*	0.023*
		(5.81)	(2.43)	(2.43)	(2.43)	(2.44)
wealth			0.047***	0.047***	0.047***	0.047***
			(43.16)	(43.15)	(43.15)	(43.15)
Country-year level						
ΔlnGDP		0.117***	0.075*	-0.041	0.549	-0.030
		(3.59)	(2.34)	(-0.85)	(0.58)	(-0.64)
ΔGini				-0.018**	0.074	-0.019***
				(-3.17)	(0.80)	(-3.44)
ΔGini # μlnGDP					-0.011	
					(-1.01)	
ΔlnGDP # μlnGDP					-0.068	
					(-0.64)	
ΔGini # ΔlnGDP						-0.031*
						(-2.39)
Country level						
μlnGDP		0.048	0.025	0.047	0.042	0.056
		(0.57)	(0.29)	(0.57)	(0.51)	(0.66)
μGini				0.016	0.016	0.018
				(1.13)	(1.12)	(1.20)
AIC	396480	392237	390387	390380	390383	390376
Model's df	0	12	13	15	17	16
Country ICC	0.059	0.069	0.071	0.064	0.063	0.067
Country-year ICC	0.084	0.091	0.092	0.084	0.083	0.086
N(individuals)	166396	166396	166396	166396	166396	166396
N(country-years)	155	155	155	155	155	155
N(countries)	18	18	18	18	18	18

Note: t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix F Robustness check: average and relative social class wealth per city

	Model 1	Model 2	Model 3
Individual level			
wealth	0.034***		
	(31.41)		
relμwealth		0.034***	
		(31.41)	
relΔwealth			0.034***
			(31.41)
LSC	-0.078***	-0.078***	-0.078***
	(-8.10)	(-8.10)	(-8.10)
HSC	0.070***	0.070***	0.070***
	(6.60)	(6.60)	(6.60)
small town	0.024**	0.024**	0.024**
	(3.03)	(3.03)	(3.03)
big city	-0.049***	-0.049***	-0.049***
	(-7.09)	(-7.09)	(-7.09)
Country-year level			
Δavgwealth	-0.004	-0.004	0.030***
	(-0.67)	(-0.67)	(4.54)
Country level			
μavgwealth	0.027***	0.061***	0.027***
	(3.75)	(8.62)	(3.75)
AIC	494542	494542	494542
Model's df	17	17	17
Country ICC	0.058	0.058	0.058
Country-year ICC	0.080	0.080	0.080
N(individuals)	209434	209434	209434
N(country-years)	195	195	195
N(countries)	18	18	18

Note: t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models are further controlled for: age, age squared, years of education; dummies: married, divorced, male, unemployed, self-employed, retired, and student. Avgwealth refers to the average wealth of a person's social class within the same city within the same country. For this purpose, a distinction between "small town" (< 5000 inhabitants), "medium city" (>5000 but <100,000 inhabitants) and "big city" (>100,000 inhabitants or national capitals) was made.

Appendix G Robustness check: within- and between-group inequality

	Model 1 Random Slopes	Model 2 Without 2008	Model 3 Extra Controls
Individual level			
wealth	0.032***	0.031***	0.032***
	(9.39)	(28.52)	(28.02)
LSC	-0.111***	-0.127***	-0.100***
	(-6.86)	(-7.59)	(-5.71)
HSC	0.098***	0.102***	0.095***
	(8.56)	(9.02)	(8.00)
LSC # μGE$_W$(2)	0.585*	1.560***	1.420***
	(2.04)	(5.29)	(4.64)
HSC # μGE$_W$(2)	-0.536*	-1.467***	-1.455***
	(-2.28)	(-6.36)	(-6.03)
LSC # μGE$_B$(2)	-1.446	-3.658***	-3.932***
	(-1.82)	(-4.50)	(-4.82)
HSC # μGE$_B$(2)	1.749**	4.213***	4.122***
	(2.64)	(6.57)	(6.34)
Country-year level			
ΔGE(2)	0.043	0.032	0.030
	(0.86)	(0.81)	(0.71)
ΔGE$_W$(2)	-0.272	-0.312	-0.279
	(-0.54)	(-0.55)	(-0.55)
ΔGE$_B$(2)	-0.684	-0.214	-1.302
	(-0.59)	(-0.19)	(-1.09)
Country level			
μGE(2)	0.049	-0.001	0.002
	(0.52)	(-0.01)	(0.03)
μGE$_W$(2)	8.147**	5.016*	4.685*
	(2.82)	(1.99)	(2.05)
μGE$_B$(2)	-17.367*	-17.155*	-16.487**
	(-2.22)	(-2.52)	(-2.67)
AIC	493949	450467	409573
Model's df	23	23	27
Country ICC	0.060	0.046	0.038
Country-year ICC	0.079	0.064	0.060
N(individuals)	209434	190380	174402
N(country-years)	195	177	195
N(countries)	18	18	18

Note: t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models are further controlled for: μlnGDP, ΔlnGDP, age, age squared, years of education; dummies: married, divorced, male, unemployed, self-employed, retired, and student. Model 1 contains random slopes for ΔlnGDP, wealth, age, age squared and education years. For Model 2 the year 2008 was excluded. Model 3 was further controlled for personal trust and religious commitment.

Appendix H Robustness check: perceived inequality (unfairness and social mobility)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Individual Level						
Unfair	-0.170***		-0.172***		-0.182***	
	(-5.88)		(-5.94)		(-5.64)	
Unfair # ΔGini	0.210		0.235		0.224	
	(1.19)		(1.33)		(1.17)	
Unfair # μGini	-0.085		-0.084		0.006	
	(-0.72)		(-0.72)		(0.05)	
much worse # ΔGini		-0.641**		-0.698**		-0.905***
		(-3.16)		(-3.20)		(-4.04)
a little worse # ΔGini		-0.313*		-0.119		-0.182
		(-2.00)		(-0.71)		(-1.07)
a little better # ΔGini		0.067		-0.053		-0.040
		(0.51)		(-0.37)		(-0.28)
much better # ΔGini		0.901***		0.774**		0.718**
		(4.01)		(3.19)		(2.93)
much worse # μGini		-0.785***		-0.937***		-0.541*
		(-3.94)		(-4.51)		(-2.41)
a little worse # μGini		-0.160		-0.201		-0.162
		(-1.23)		(-1.46)		(-1.12)
a little better # μGini		0.014		0.040		0.072
		(0.16)		(0.44)		(0.75)
much better # μGini		0.202		0.282		0.376*
		(1.45)		(1.95)		(2.50)
Country-year level						
ΔGini	0.372	-0.249	-0.015	-0.033	0.050	-0.244
	(0.67)	(-0.70)	(-0.03)	(-0.09)	(0.09)	(-0.67)
Country level						
μGini	1.884	2.346	0.264	0.201	0.063	0.086
	(1.14)	(1.64)	(0.21)	(0.16)	(0.05)	(0.07)
AIC	306481	433648	306897	395037	253111	361140
Model's df	18	31	18	31	22	35
Country ICC	0.105	0.081	0.060	0.066	0.057	0.057
Country-year ICC	0.118	0.096	0.078	0.080	0.074	0.076
N(individuals)	131004	186792	131004	169431	108671	156023
N(country-years)	141	195	141	177	141	195
N(countries)	18	18	18	18	18	18

Note: t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All models are further controlled for: μlnGDP, ΔlnGDP, wealth, age, age squared, years of education; dummies: married, divorced, male, unemployed, self-employed, retired, and student. Model 1 contains random slopes for ΔlnGDP, wealth, age, age squared and education years. For Model 2 the year 2008 was excluded. Model 3 was further controlled for personal trust and religious commitment. Only the interaction "much better # μGini" was not significant in the Models 2 and 4 which however does not change the main interpretation of the results drawn from the main analysis.