Inequality and Happiness

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Abstract

The happiness literature empirically shows that individuals are happier not necessarily if they live in a country with high economic growth, but most important if they live in cohesive societies, with more equality (not only in terms of income), less poverty, higher social capital, and jobs for everybody. This chapter relates to this literature and examines the link between inequality and happiness or life satisfaction. Section "Inequality and Happiness" presents a literature review on the correlation between inequality and happiness. In the review, special attention is given to the mechanisms that explain preferences for equality. Although the income inequality literature has emphasized the distinction between objective inequality (e.g., measured with the Gini) and perceived inequality, the happiness literature has not considered this distinction. Nevertheless, one would expect individuals to show a stronger correlation between

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perceived, rather than with objective, inequality and well-being, preferences, and behavior. Section "Inequality and Happiness" briefly discusses this. Section "Happiness Inequality" describes first the incipient literature on happiness or life satisfaction inequality trends, which is mostly descriptive. While policy makers and researchers have focused on income (and, to a lesser extent, health) inequality, the distribution of happiness has been largely ignored. Nevertheless, happiness distribution is a relevant measure of welfare and should be on the agenda of policy makers. In this literature, happiness inequality is typically measured with the standard deviation, an inequality index thought for cardinal variables. A priory this is an important shortcoming as happiness is measured as an ordinal discrete variable. Therefore, it is of crucial importance to analyze the impact of measuring happiness inequality by means of indices designed for ordinal measures. This chapter contributes to the happiness literature by presenting the first empirical study that, using data on 56 countries, measures happiness inequality with 20 different indices designed for ordinal data and compares them with the standard deviation by means of rank correlations.

Introduction

Many individuals seem to be happier if living in societies that are more equal and cohesive than the ones they currently live in, although there are important differences depending on both, individuals' characteristics and attitudes (e.g., income, age, social norms, political views, and risk attitudes), as well as on the political, economic, and institutional context where individuals live.

There are various reasons why individuals might care about the level of income inequality in their country. For example, individuals, depending on their own socioeconomic characteristics and own experience, might be worried to end at the bottom of the income distribution or might assign a higher probability to experience a negative income shock. In addition, individuals might worry about things that correlate with inequality and affect everybody living in the same society, such as social stability, cohesiveness, or crime rate. For example, the literature points to a clear correlation between inequality and social capital. Oishi, Kesebir, and Diener (2011) find not only a negative correlation between inequality and happiness, but also between inequality and whether respondents reported higher levels of trust and perceived others to be fairer. Similarly, Fehr et al. (2020) provide causal evidence of the impact of unfair inequality on individuals' social capital measured in terms of trust and trustworthiness. Finally, individuals might also genuinely care about the others, especially if they believe that income inequality is the outcome of an unfair process. Nonetheless, there are also individuals who do not dislike inequality, for example, because they think they can win from it or because they believe inequality is driven by effort rather than luck (for a review of the literature see Alesina and Giuliano 2011).

Section "Inequality and Happiness" will focus on examining preferences for (in) equality by reviewing the literature that studies the correlation between income inequality in the country or region of residence and individuals' self-reported life satisfaction or happiness. The findings from the happiness literature are consistent (and can be compared) with those from the literature based on individuals' self-reported preferences for redistribution. In other words, the correlation between inequality and happiness can be interpreted as individuals' preferences for equality. Consistent with this, the results show similar patterns (also in terms of heterogeneity across types of individuals) as the literature that measures (in)equality preferences using questions of the type: "The government should reduce income differences between the rich and the poor."

Individuals' preferences for equality however might go beyond income inequality. Individuals are happier if living in societies that are more cohesive, more equal, with less poverty and more employment, with strong social capital and shared norms, and with a sustainable use of the natural capital (see the chapters of this Handbook on ▶ "Institutions and Life Satisfaction"; ▶ "The Easterlin Paradox"; ▶ "The Well-Being Implications of Being Out of the Labor Force"; ▶ "Unemployment and Subjective Well-Being"; and ▶ "Happiness and Ecology"; as well as DeNever et al. (2018), and Helliwell, Huang, and Wang (2016)). Although economic growth tends to correlate with all these, policy makers can take decisions that, with the same degree of economic development, might lead to more stable and sustainable societies. Therefore, it is important to move beyond income inequality and extend the study to the distribution of happiness.

Accordingly, section "Happiness Inequality" will focus on life satisfaction or happiness inequality. While policy makers and researchers have focused on income (and, to a lesser extent, health) inequality, the distribution of happiness has been largely ignored. Nevertheless, happiness distribution is a relevant measure of welfare and should be on the agenda of policy makers. This section will first describe this incipient literature on happiness inequality trends and argue that more research on happiness distribution is key. In this literature, authors compare happiness inequality across time and countries and typically measure it with the standard deviation, an index designed for cardinal variables, such as income. Nevertheless, happiness is an ordinal discrete variable and therefore using the standard deviation might be an important shortcoming. This chapter will contribute to the literature by empirically analyzing the impact of measuring happiness inequality with the standard deviation, an index thought for cardinal data. To this end, the chapter includes the first empirical study that, using data on 56 countries, measures happiness inequality with 20 different indices designed for ordinal data and afterward compares them, by means of rank correlations, with the standard deviation.

Inequality and Happiness

Objective Income Inequality and Happiness

There are different reasons put forward in the literature as to why individuals might dislike or not income inequality. The literature is very rich, but for reasons of space the arguments will only be briefly listed. For an extended survey and references, the reader can see Ferrer-i-Carbonell and Ramos (2014). First, depending on individual characteristics, individuals might lose out or win from more redistribution. In this case, for example, individuals with higher education would be expected to be less inequality averse than those with lower education or worse economic prospects. This is, those with better prospects of mobility might dislike inequality less, or even prefer inequality if they expect to be able to move upward in the income distribution. In addition, inequality might be associated to negative externalities, such as crime or social instability that individuals might dislike. Third, individuals could genuinely care about the rest of the population, especially if they believe that falling at the bottom of the income distribution might be partly explained by luck (or socioeconomic circumstances) and not only by effort.

There is a large literature studying individuals' preferences over redistribution or equality by means of direct questions (e.g., on whether the government should redistribute income) or of experiments in the laboratory (Alesina et al. 2018). This literature aims at disentangling individuals' preferences over equality and redistribution as well as understanding what shapes these preferences, notably whether it depends on self-interest motives, political opinions, feelings of fairness, or perceptions of equal opportunities and current income inequality (Alesina and Giuliano 2011). This chapter reviews the literature that takes a different approach and proxies preferences over income inequality by the correlation between different measures of income inequality and self-reported happiness or life satisfaction (see the ► "Measuring Subjective Wellbeing" chapter of this handbook).

This literature mostly uses the Gini as a measure of income inequality and finds, for many countries, inequality aversion. That is, a large percentage of individuals show a negative correlation between self-reported happiness or life satisfaction and the current level of income inequality in their countries or region, although there are important differences across individuals and countries (for an overview see Clark and D'Ambrosio 2015). This literature estimates a life satisfaction or happiness equation that controls for individual characteristics and includes the current inequality in the region or country. The regression typically includes time and region fixed effects to control for those characteristics that correlate both, with happiness and the gini, such as social stability. This means that identification comes from time variation within the same region (or from those few individuals that might move from one region to another) and it is therefore curtailed to understand time variation across regions. Finally, and since the data is clustered at the regional level, researchers need to implement methods to correctly estimate the standard errors (see, for example, Powdthavee, Burkhauser, and DeNeve (2017), for one possible approach).

In a recent study, Powdthavee, Burkhauser, and DeNeve (2017) use Gallup World Poll data combined with income inequality measures from the World Top Incomes Database and find a negative correlation between life satisfaction (and happiness) and income concentration, using 24 countries in the years 2005–2013. Using data from European and World Values Surveys from 1981 to 2004, Verme (2011) also finds a negative correlation between income inequality, as measured by the Gini coefficient, and life satisfaction, a result which is robust to different inequality measures and across groups of countries. This negative relationship is replicated in many studies: see Graafland and Lous (2018) for a study with 21 OECD countries; Oishi and Kesebir (2015) for a study with 16 developed and 18 Latin American countries; Alesina et al. (2004) for 12 European countries; and Schwarze and Härpfer (2007) for Germany. Income inequality also correlates negatively with life satisfaction in different Asian countries, such as India (Lakshmanasamy and Maya 2020) and Vietnam (Tran and Nguyen 2018). In China, Lei et al. (2018) find a negative correlation between consumption inequality and life satisfaction, a correlation that is stronger for those at the bottom half of the consumption distribution. Similar results are found in other non-European or US countries, such as South Africa (Kollamparambil 2020).

For Eastern European countries however, the evidence is mixed: while Sanfey and Teksoz (2007) find a negative correlation between income inequality and life satisfaction, Senik and Grosfeld (2010) find that during the first years of transition, income inequality was positively correlated with life satisfaction in Poland. These latter authors argue that inequality during the first years of transition was seen in Poland as a transitory cost of moving to a market economy as well as a sign of own future income increases. Nevertheless, Senik and Grosfeld (2010) find that the initially positive correlation between life satisfaction and inequality (measured with the Gini) turned negative as time passed, inequality did not decrease, and trust on institutions deteriorated.

Evidence on the Mechanisms Explaining Preferences for Income Inequality

As for the theoretical and empirical literature using direct questions on preferences for redistribution (e.g., Alesina and Giuliano 2011), one of the main focus of the happiness literature has been to understand the mechanisms and reasons that explain this negative correlation by focusing on differences on inequality aversion across individuals and countries. The main drivers of these differences can be classified into two: individual characteristics on one side, and the institutional and political context as well as the social norms in the country on the other side. In other words, the heterogeneity found on the dislike for inequality has been explained by two main categories: the heterogeneity that depends on individuals' characteristics (such as, income and education level, personality, empathy, beliefs and political views, and risk attitudes) and the one that depends on the political and institutional context.

The latter would explain that, in general, the negative correlation between income inequality and happiness is stronger in those contexts where individuals think that the current income distribution is the outcome of an unfair process in which, for example, luck or family context play a more important role than individual effort. This is, in contexts of perceived low intergenerational mobility individuals tend to be more inequality averse, which is consistent with survey and experimental data (Alesina et al. 2018). Similarly, individuals can show preferences for inequality in uncertain and changing contexts (Senik and Grosfeld 2010, the Poland case discussed above) or in times of low inequality when they believe it is easier to move up within the income distribution (Yu and Wang 2017; Tavor et al. 2018). This last result is corroborated with the Latin America Barometer cross-section data by Graham and Felton (2006), as they show that living in both high and low inequality countries leads to the highest unhappiness, while those in mid-inequality countries are the happiest.

Heterogeneity in the dislike of income inequality also depends on individuals' characteristics. One expects individuals from higher socioeconomic status to be less inequality averse to the extent that they have a lower probability to end up at the bottom of the distribution. Nonetheless, individuals' empathy might be a most important driver and thus can explain, in certain contexts, that richer individuals show more inequality aversion than the poorest (Alesina et al. 2004). Individual risk aversion is another determinant of the heterogeneity in the dislike of income inequality. For example, individuals who report a large degree of willingness to take risks (2.6% of the sample) do not show a negative correlation between income inequality and life satisfaction in Germany for the years 2004–2013 (Ferrer-i-Carbonell and Ramos 2019). This correlation however is partly driven by individual characteristics (gender, education, and income) that also correlate with risk attitudes. In other words, risk attitudes as well as individual characteristics shape the correlation between income inequality and happiness.

Individuals' attitudes and beliefs are also an important variable generating heterogeneity. These beliefs and attitudes are, at the same time, related to the political and institutional contexts, i.e., the two are interrelated. For example, income inequality might be seen as positive and an opportunity to end up at the top of the income distribution, only if individuals perceive that the probability depends on effort rather than on luck or nepotism. This entails that individuals' dislike of inequality might depend on the perception of their belonging to a fair and cohesive society. The importance of perceived mobility on shaping the correlation between income inequality and life satisfaction is confirmed in Bjornskov et al. (2013), who use a large set of countries with data from the World Value Survey (1990–2008) and find that the negative correlation between income inequality and life satisfaction depends on fairness perceptions. Similarly, Alesina et al. (2004) claim that the negative relationship between life satisfaction and income inequality found in Europe disappears in the US data (except for the subsample of richer and leftish individuals in the data), as the US citizens perceive their society to be more mobile, which is consistent with the literature on preferences for redistribution (Alesina and La Ferrara 2005). This result however is in contradiction with Oishi, Kesebir, and Diener (2011) who

find, using the General Social Survey from 1972 to 2009, a negative correlation between happiness and income inequality in the USA, which disappears for higher income individuals. Using the same data until l996, Blanchflower and Oswald (2003) also find a negative relationship between happiness and income inequality in the USA, although the coefficient is small.

Measured or Perceived Inequality?

Arguments trying to explain why income or wealth inequality can have a detrimental effect on individual subjective well-being assume that people know what the level of inequality is and that the researcher knows what is the inequality definition that individuals care about (Clark and D'Ambrosio 2015). Most of the literature discussed in section "Objective Income Inequality and Happiness" measures inequality with the Gini and therefore assumes that individuals care more about the middle part of the distribution. However, individuals may give more weight to the lower (or upper) tail of the distribution. If this is the case, other inequality indices would capture better what matters for individuals when thinking of inequality. A notable exception is Powdthavee, Burkhauser, and DeNeve (2017) who measure inequality as the percentage of wealth held by the top 10% richest individuals and finds similar results as the papers using the Gini coefficient. In this line, Bussolo et al. (2021) show that individuals' perceptions of inequality relate to a broader definition of inequality that correlates with poverty or unemployment (with the lower tail of the income distribution). Others however argue that it is not that individuals have a different concept of inequality, but rather that people misperceive inequality, as well as inequality trends and own position in the distribution (Gimpelson and Treisman 2018; Norton and Ariely 2011; Hauser and Norton 2017).

While the literature shows a stronger correlation between perceived rather than actual levels of inequality and behavior and preferences for redistribution (Bussolo et al. 2021; Hauser and Norton 2017; Niehues 2014), to the best of the knowledge of the authors, there is only one paper that examines happiness to conclude that the Gini has a stronger and more robust effect on European's self-reported happiness than perceived inequality (Schalembier 2019). This is a contradictory finding and it would be important to replicate it with other data and countries. While the literature on perceived inequality is large, there is only this paper that examines inequality aversion by means of a happiness question and uses perceived, rather than measured, inequality. An important limitation is that most papers measure inequality perceptions in ways that are not consistent with the inequality indices typically used in the studies that use actual inequality. This implies that one cannot directly compare the sign and size of the effects of perceived and actual inequality on well-being. The happiness literature has an opportunity to contribute to the debate on perceived inequality and its importance for behavior and preferences.

Happiness Inequality

Income inequality is not the only inequality societies should be concerned about. Besides income, individuals' well-being depends on other outcomes, such as health, housing, job quality, education, financial stress, leisure time, or empowerment. Nevertheless, the inequality literature has mainly focused on income inequality (and health inequality to a lesser extent), which represents a very crude approximation to well-being inequality. There is however a small growing literature that uses self-reported measures of satisfaction to estimate happiness inequality. Happiness inequality can be understood as a measure of welfare inequality to the extent that happiness is a proxy measure for welfare that encompasses not only the economic situation of the individual, but also their labor market participation, health status, family situation, and social capita endowments. That is, happiness inequality includes not only material inequality, but also, for example, health, job, and social participation inequality. This literature, which is mostly descriptive, uses the standard deviation of happiness in a country as a measure of happiness inequality, and compares it across countries and over time.

Happiness average and inequality, both, differ largely across countries. While some countries report average happiness levels as high as 7.8 (Finland), 7.7 (Denmark), 7.6 (Switzerland), or 7.5 (Iceland) on a 0 to 10 scale, other countries have averages below 3 with Afghanistan (2.6), South Sudan (2.8), Zimbabwe (3.3), and Rwanda (3.3) at the bottom of the list, according to the World Happiness Report 2020. According to the World Happiness Report (2016), the standard deviation of happiness (a measure of happiness inequality) in the 2012–2015 period was smallest for Western Europe (1.944) and largest for Middle East and North Africa (2.452), while the world average "inequality" was at 2.243. By country the lowest happiness inequality was Bhutan (1.294), Comoros (1.385), the Netherlands (1.397), Singapore (1.538), and Iceland (1.569); all of which are fairly small and homogenous countries. At the bottom there is South Sudan (3.044), Sierra Leone (3.008), Liberia (3.003), Dominican Republic (2.874), and Honduras (2.819). In general, well-being inequality is higher in Latin America and Africa, while is lower in Western Europe, North America and Oceania, and South Asia (Helliwell et al. 2020).

While for most countries income inequality has, although at very different speeds, increased since the 1970s or 1980s (Alvaredo et al. 2018), the few empirical existing literature seems to indicate that happiness or life satisfaction inequality, measured as the standard deviation, has been decreasing over the same years, at least until 2007 in those countries that experience economic growth (Clark et al. 2015; Veenhoven (2005) with data from 1973 to 2001). These last authors argue that happiness inequality has decreased in those countries that have experienced economic growth due to the increasing availability of (some) public goods. In the USA (Stevenson and Wolfers 2008) results point to the same direction: happiness inequality has decreased since the 1970s and until 2006 (the last year of their data). Becchetti, Massari, and Naticchioni (2014) use the German SOEP (1992–2007) to examine the drivers of life satisfaction inequality trends and conclude that education and unemployment have a significant impact on reducing and increasing life satisfaction inequality,

respectively. All these papers use data until around 2006/2007, before the last economic financial crisis and the Covid19 pandemics (see also Kalmijn and Veenhoven 2005). Most recent evidence (Helliwell et al. 2020) points that happiness inequality has increased since 2012 everywhere around the world, except for Europe (both Western and Central and Eastern Europe), where it has remained fairly stable.

Happiness inequality, and not only happiness per se, should be a priority for policy makers to the extent that inequality is not only unfair (even more so if generated through circumstances and not efforts), but it is also a source of discontent, instability, and loss of human capital. In a recent paper, Goff, Heliwell, and Mayraz (2018) find a stronger correlation between satisfaction with life and satisfaction with life inequality than with income inequality. From a policy perspective, happiness inequality provides information on the distribution of individuals' subjective well-being that goes beyond income inequality and alerts policy makes and society about the need (or not) to implement policies addressed to those at the bottom of the distribution. Over the years the happiness literature has provided sufficient evidence to contribute to design and prioritize policies aimed to improve well-being, especially of those at the bottom. These recommendations also take into account individuals' partial adaptation to some circumstances.

The most widely used index to measure happiness inequality is the standard deviation (e.g., World Happiness Report as well as the above-mentioned papers), which is thought for cardinal continuous variables. However, as the specialized literature on inequality measurement has pointed out (Allison and Foster 2004), inequality indices suitable for variables measured in a ratio scale are not suitable for ordinal variables, such as self-reported individual happiness, usually elicited from answers on an ordinal Likert-type scale. One problem, for instance, is that these indices (such as the standard deviation) use the mean as the point of centrality to evaluate the spread. However, with ordinal data, the value of the mean depends on the scale used and it is thus an inappropriate reference benchmark, as standard deviations will change when the scale used changes. In other words, the standard deviation is not scale independent.

The recent literature on the measurement of inequality using ordinal variables has developed two broad types of indices. The first type of index measures inequality as spread about the median (Allison and Foster 2004; Abdul Naga and Yalcin 2008; Apouey 2007). Maximum inequality then is attained when half the population has the lowest value on the ordinal scale while the other half has the highest one. Because of this, Jenkins (2021) defines them as measuring inequality in terms of polarization. A second type of index requires, first, to define a measure of individual status – which maps the ordinal data into a cardinal indicator – and then to aggregate individuals' distances between status and a reference point. In this line, Cowell and Flachaire (2017) define status of a given individual i as the proportion of individuals with lower status than individual i. In our concrete case, this would be the proportion of individuals reporting a happiness (or satisfaction level) lower than the one reported by the individual. Then, inequality is operationalized as the aggregate distances between each individual's status and a reference point, where the reference point is defined as the maximum value of status. Building on axioms that resemble

those used in "standard" inequality measurement, they characterize a family of inequality indices that allows the analyst to decide what weight is placed on small status values relative to high status values. Within this same tradition, Jenkins (2021) suggests measuring inequality as one minus twice the area beneath the Generalized Lorenz (GL) curve for status. The GL curve for status plots cumulative status per capita against cumulative population share of individuals ranked in ascending order of status. According to the indices that belong to this second type, a completely polarized distribution of status does not yield maximum inequality, as, for instance, a uniform distribution of status results in a larger value of those indices. All the indices referred to above are scale independent, except Allison and Foster's (2004), for which the maximum value depends on the number of categories.

The definition of status is key for the second type of indices. Following the standard practice in the income distribution literature, Cowell and Flachaire (2017) and Jenkins (2021) define the status of a given individual by his/her position in the distribution (in this case, the happiness distribution). A feature of this definition is that the status of individuals belonging to a given category or scale level is independent from the way the other categories are structured. That is, it does not matter for his/her status how many categories there are below or above an individual's category. While this could be seen as a positive feature, a counter-argument is that the well-being gap between the highest and the lowest categories is larger than that between two adjacent categories, and this should be incorporated into an inequality measure (Jenkins 2021).

The theoretical arguments to use inequality indices developed for ordinal variables instead of those developed for cardinal variables, as standard in the happiness literature, are clear-cut. Do these conceptual differences however make a difference when taken to the data? To the best of the knowledge of the authors, there are only two papers using some of the inequality measures designed for ordinal variables to examine happiness inequality. First, Jenkins (2021) uses life satisfaction data to illustrate his contribution to the literature, which consists of introducing a new inequality index and adding dominance results for the Cowell and Flachaire's inequality indices. Second, Dutta and Foster (2013) use the measures proposed by Allison and Foster (2004) and Abdul Naga and Yalcin (2008) to analyze happiness inequality for USA in the 1972–2011 period. Nevertheless, no study has so far compared the standard deviation, the most commonly used inequality measure in happiness economics, with the recent measures developed for ordinal data. Therefore, the World Value Survey (2005–2008) data for 56 countries used in Cowell and Flachaire (2017) has been borrowed, and present estimates of all these inequality measures (19 in total) to check whether measures developed for ordinal data order the 56 countries differently than the ordering obtained from the standard deviation. In these data, life satisfaction is measured in a scale from 0 to 10 and compares 20 inequality measures.

Since different inequality indices cardinalize disparities in a different way, when examining the performance of different indices, it makes little sense to directly compare their values. Comparing instead how different indices order different distributions is much more meaningful. This is exactly what is shown in Table 1.

Table 1 Rank correlation between the standard deviation and other happiness inequality measures designed for ordinal data

	AF	AJ	A (0.5)	A (1)	A (2)	ANY (1,1)	ANY (2,1)	ANY (1,2)	ANY (4,1)	ANY (1,4)	CFd (0)	CFd (0.25)	CFd (0.5)	CFd (0.75)	CFu (0)	CFu (0.25)	CFu (0.5)	CFu (0.75)	Jd	Ju
First type																				
AJ	0.99																			
A(0.5)	0.97	0.94																		
A(1)	0.99	0.97	0.98																	
A(2)	0.99	0.97	0.96	0.99																
ANY (1,1)	0.99	1.00	0.94	0.97	0.97															
ANY (2,1)	0.92	0.93	0.90	0.89	0.87	0.93														
ANY (1,2)	0.97	0.98	0.93	0.95	0.94	0.98	0.97													
ANY (4,1)	0.57	0.59	0.59	0.55	0.51	0.59	0.81	0.71												
ANY (1,4)	0.96	0.97	0.92	0.93	0.93	0.97	0.97	0.99	0.71											
Second type																				
CFd (0)	0.65	0.61	0.71	0.69	0.66	0.61	0.62	0.64	0.48	0.63										
CFd (0.25)	0.86	0.82	0.88	0.90	0.88	0.82	0.73	0.78	0.32	0.79	0.77									
CFd (0.5)	0.86	0.81	0.88	0.90	0.88	0.82	0.75	0.79	0.38	0.80	0.84	0.99								
CFd (0.75)	0.86	0.82	0.88	0.90	0.88	0.82	0.73	0.78	0.32	0.79	0.77	1.00	0.99							

(continued)

Table 1 (continued)

	AF	AJ	A (0.5)	A (1)	A (2)	ANY (1,1)	ANY (2,1)	ANY (1,2)	ANY (4,1)	ANY (1,4)	CFd (0)	CFd (0.25)	CFd (0.5)	CFd (0.75)	CFu (0)	CFu (0.25)	CFu (0.5)	CFu (0.75)	Jd	Ju
CFu (0)	0.54	0.50	0.54	0.57	0.56	0.50	0.38	0.43	−0.13♦	0.45	0.38	0.79	0.72	0.79						
CFu (0.25)	0.80	0.75	0.81	0.83	0.82	0.75	0.66	0.71	0.20♦	0.73	0.66	0.98	0.94	0.98	0.89					
CFu (0.5)	0.74	0.70	0.76	0.78	0.77	0.70	0.60	0.65	0.11♦	0.66	0.60	0.94	0.90	0.94	0.94	0.99				
CFu (0.75)	0.80	0.75	0.81	0.83	0.82	0.75	0.66	0.71	0.20♦	0.73	0.66	0.98	0.94	0.98	0.89	1.00	0.99			
Jd	0.94	0.95	0.89	0.92	0.91	0.95	0.89	0.94	0.59	0.93	0.76	0.83	0.86	0.83	0.48	0.75	0.69	0.75		
Ju	0.81	0.82	0.74	0.78	0.79	0.82	0.74	0.78	0.28	0.80	0.50	0.85	0.80	0.85	0.82	0.89	0.89	0.89	0.81	
Std. Dev.	0.98	0.98	0.92	0.96	0.97	0.98	0.87	0.96	0.55	0.94	0.59	0.79	0.79	0.79	0.45	0.72	0.66	0.72	0.92	0.76

Note: All correlations are statistically significant at 5% but those marked with ♦. Data comes from the fifth wave of the World Value Survey (2005–2008) for the following 56 countries: AR, AU, BF, BG, BR, CA, CH, CL, CN, CO, CSS, CY, DE, EG, ES, ET, FI, FR, GB, GE, GH, GT, HK, ID, IN, IQ, IR, IT, JO, JP, KR, MA, MD, ML, MX, MY, NL, NO, NZ, PE, PL, RO, RU, RW, SE, SI, TH, TR, TT, TW, UA, US, UY, VN, ZA, ZM

AF: Allison-Foster; AJ: Average Jump; A(α): Apouey with parameter α; ANY(α,β): Abul Naga-Yancy with parameters α and β; CFd(α): Cowell-Flachaire downward looking with parameter α; CFu(α): Cowell-Flachaire upward looking with parameter α; Jd: Jenkins downward looking; Ju: Jenkins upward looking; Std.Dev.: Standard deviation

Jenkins (2020) provides details about the above indices and provides a Stata command that estimates them all

In particular, this exercise consists of, first, estimating the inequality in each one of the 56 countries using each one of the 20 inequality indices. This way 20 distributions are obtained that order the 56 countries according to each one of the 20 inequality indices. Finally, how similar the 20 orderings are to each other is examined by means of the Spearman rank correlation. In contrast to other correlation measures, such as the Pearson correlation, the Spearman correlation works with rank-ordered variables. Thus, Table 1 presents the Spearman rank correlation between the country orderings that result from the most commonly used inequality indices for ordinal data (20 in total), and compares them with the country ordering that results from the standard deviation, which is the one usually used in happiness. A brief definition of the indices is provided in the Table 1 footnote – see Jenkins (2020) for further information about the expression of each index and particularities of its estimation. The table allows analyzing the difference between the standard deviation and the other two types of inequality measured for ordinal data. Overall, the orderings that result from the standard deviation and from the indices that measure inequality in terms of polarization are much correlated – see the last row of Table 1. The largest (0.98) and the lowest (0.55) correlations correspond to two of the indices of the two-parameter family proposed by Abdul Naga and Yalcin (2008). Their indices are a weighted difference between the cumulative share of individuals in the lower half of the distribution and the cumulative share in the upper half of the distribution. The two parameters of the family allow the analyst to choose the weights given to the two halves. The largest correlation corresponds to the index that weights the two halves equally, while the lowest correlation corresponds to an index that places substantially more weight to the dispersion below the median.

The rank correlations between the ordering stemming from the standard deviation and those resulting from the indices that aggregate individuals' distances between status and a reference point (type 2) are substantially smaller. In other words, the first type of measures ranks countries more similar to the standard deviation than the second type of inequality measures. Within the happiness inequality measures of the first type, the standard deviation is most dissimilar to those that place substantially more weight to the dispersion below the median.

Overall, the results from this empirical illustration suggest that estimated happiness inequality very much depends on the way one measures inequality. Two methodological choices seem to stand out from this illustration: whether one wants to measure inequality in terms of polarization or to aggregate individuals' distances between status and a reference point, and the weight one wants to attach to differences in the upper or lower part of the distribution. Notwithstanding this, more work is needed to understand better the empirical behavior of the various indices that have been developed to measure inequality when the variable of interest is ordinal. Most important, policy makers and researchers need to understand what is the measure that individuals have in mind (perceived inequality) and what is the inequality individuals care more about. In other words, it is crucial for policy makers and researchers not only to understand the differences across inequality measures and what these difference entail, but which measures reflect best individuals' perceptions and preferences.

It is clear that further research is needed not only from a methodological perspective (how to measure happiness), but also to understand happiness inequality and its evolution. Happiness inequality should be a policy variable to take into consideration when designing policies. In addition, happiness (and thus its inequality) have stronger predictive power to explain individuals' political attitudes, unrest, trust in institutions, and social capital formation in general (Helliwell et al. 2020) than income inequality. In other words, higher levels of happiness inequality generate unrest, lower social cohesion, and thus less social and economic development.

Summary

This chapter first reviews the literature that examines the correlation between income inequality (objective and perceived) and individuals' self-reported happiness and takes this correlation as an indirect measure of individuals' preferences for equality. Special emphasis is given to reviewing the literature on the mechanisms that explain these preferences over (in)equality, notably feelings of fairness, individuals' personality, and the institutional and political context where the individuals live. It concludes that most individuals and most countries show dislike for the current levels of income inequality, i.e., they would prefer to live in societies more equal than the ones they currently live in. Nevertheless, for some individuals (for example, risk taker individuals or rightist individuals in the USA) or for individuals in politically and economically unstable situations (such as the transition to the market economy experienced in Poland), the literature finds a positive correlation between inequality and happiness. This literature assumes that individuals know the level of inequality and that the researcher knows what is the inequality definition individuals care about. Individuals' inequality perceptions, however, might systematically differ from actual inequality and therefore it would be important to examine the role of these perceptions on happiness to understand individual preferences and behavior. To the best of the knowledge of the authors, there is only one paper that uses perceived rather than actual levels of inequality to estimate its correlation with happiness.

Most equal and cohesive societies with well-functioning institutions and high levels of social capital lead to sustained growth. Equality however goes beyond income equality and includes other relevant aspects for individuals' well-being, such as health, wealth, opportunities, and leisure. Happiness inequality can be used as a proxy measure for the broader concept of well-being inequality. The second part of this chapter consequently focuses on this inequality and argues that it is important for policy makers to understand happiness inequality, its trends, and its determinants to the extent that happiness is a proxy measure for welfare that encompasses not only the economic situation of the individual, but also their welfare in terms of, for example, labor market participation, health status, family situation, and social capita. The chapter goes over the little literature that examines happiness inequality trends over time and across countries. The main finding is that, in contrast with income inequality, happiness inequality has been decreasing since the 1970s, at least on those countries that have experienced economic growth. Most of the literature

however uses data up until around 2007 and therefore is unable to say anything about the impact of the economic and financial crisis of 2007/2008 and of the Covid19 pandemic. There is thus the need to extent the current research using recent data to examine the impact of the recent economic and health crisis and to better understand the causes (as well as consequences) of well-being inequality.

An important feature of the happiness inequality literature is that it is mostly (if not exclusively) based on the standard deviation as a measure of inequality. The standard deviation however is an index though for cardinal variables that, in addition, is not scale independent. This chapter contributes to this literature by providing the first empirical estimates of happiness inequality for 56 countries using 20 different indices designed for ordinal variables; and by comparing them with the results from using the standard deviation. The evidence presented in this chapter shows that the estimated happiness inequality depends on the way one measures inequality. It is therefore indispensable for policy makers and researchers alike to analyze the differences across inequality measures and to understand what these differences entail. Similarly, it is also important to understand which of these inequality measures reflects best individuals' perceptions and preferences. In other words, which inequality indices capture better what matters for individuals when they think of inequality. For example, the empirical exercise presented in this chapter shows that the standard deviation (the most widely used index to measure happiness inequality) correlates poorly with the inequality measures designed for ordered data that place substantially more weight to the dispersion below the median. Neverthe-less, Bussolo et al. (2021) show that individuals' perceptions of (income) inequality put more weight to the lower tail of the income distribution. If this is confirmed with happiness data, the standard deviation would be capturing a concept of inequality that diverges substantially from the inequality individuals perceive. If individuals' preferences and behavior depend on their perceptions, measuring happiness inequal-ity with the standard deviation might not be a good instrument to understand individuals' preferences and, for example, individuals' voting behavior.

Cross-References

► Happiness and Ecology
► Institutions and Happiness
► Measuring Subjective Well-Being
► The Easterlin Paradox
► The Well-Being Implications of Being Out of the Labor Force
► Unemployment and Subjective Well-Being

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