EUROPEAN SOCIETIES
2021, VOL. 23, NO. 2, 255–284
https://doi.org/10.1080/14616696.2020.1832238

Migrants' subjective well-being in Europe: does relative income matter?

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ABSTRACT

This paper contributes to the growing field of inquiry that investigates migrants' subjective well-being by analysing the role of income, relative to two reference groups: natives and other migrants. Using data collected by the European Social Survey from 2002 to 2018, we constructed two measures of economic distance to compare each migrant's economic situation with that of natives and other migrants with similar characteristics. Our results indicate that when the disadvantage between the migrant and the reference groups becomes smaller, eventually becoming an advantage, the migrant's life satisfaction increases. Such relationship is stronger when migrants' income is examined relative to natives than when compared with migrants'. This suggests that upward comparison is more important than downward comparison for migrants' subjective well-being. We also show that the relationship between relative income and subjective well-being is stronger for second-generation migrants and for those with more formal education. Finally, we show that subjective measures both at the individual (feelings about one's own economic condition) and societal (feelings about the national socio-economic-institutional condition) levels moderate the relationship between relative income and subjective well-being.

ARTICLE HISTORY Received 9 July 2019; Accepted 30 September 2020

KEYWORDS Subjective well-being; relative income; migrants; subjective measures

1. Introduction

Happiness may be the ultimate goal of life, but it is not an immutable concept and depends heavily on life circumstances. Questions about 'happiness' and 'life satisfaction' are typically used to measure subjective well-being (hereafter SWB), which is an individual's

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evaluation of their own life as a whole (van Praag *et al.* 2003). In this article, we contribute to the study of SWB across Europe by testing the role of migrants' relative economic position, compared with relevant reference groups. In their discussion of migrants' happiness, relative to that of the general population, Hendriks and Bartram (2018) suggest that we need detailed information on the factors that contribute most to the happiness of this distinct group of people.

Prior studies have explored the association between income and SWB (Bartram 2011); variability of migrants' SWB by their country of origin (Amit 2010; Amit and Risse 2014); decline of SWB with increased length of stay in the destination country (Obućina 2013); and change in SWB from the first to the second generation (Safi 2010). However, limited research has investigated migrants' SWB, relative to reference groups in their destination country (Liu *et al.* 2019; Gelatt 2013; Bălțătescu 2014, 2007, and 2005).

This paper uses income, relative to that of natives and of migrants already present in the host country, as a means of understanding variation in migrants' SWB. We operationalise migrants' level of 'relative income' by defining two measures of economic distance that compare a migrants' position with the average of two reference groups: natives and migrants, grouped by gender, age, educational level, actual country of residence and area of origin. Compared with previous research, our approach provides a more precise indication of the distance between each individual and the targeted reference group, because we rely on a large set of segmenting variables (e.g. Melzer and Muffels 2012; Firebaugh and Schroeder 2009; Brown *et al.* 2008; Clark *et al.* 2008a; Ferrer-i-Carbonell 2005; Luttmer 2005; Veenhoven 1991). We also extend the existing literature by scrutinising group-specific heterogeneity in the relation between relative income and SWB by migrants' generation and educational level. Most studies (e.g. Clark *et al.* 2008a, 2008b; Hendriks and Burger 2019) have used objective measures to proxy subjective evaluation of an individual's economic position, referring to this approach evaluation as 'social comparison'. However, these objective data often lack subjective information that is necessary for social comparison. Here, we evaluate, in a final step, whether subjective and attitudinal variables mediate the relationship between relative income and migrants' SWB.

Our main research questions were:

(1) Is income relative to two reference groups (natives and other migrants) associated with migrants' SWB and, if so, to what extent?
(2) Are there group-specific variations in the relationship between relative income and SWB by educational level and generation of migration?
(3) Do subjective and attitudinal variables mediate the relationship between migrants' relative income and SWB?

To address these questions, we use data collected from 2002 to 2018 by the European Social Survey (ESS). These data include extensive coverage of European countries and were collected with a level of methodological rigour that ensures a high degree of comparability between countries (Jowell *et al.* 2007).

2. Background

2.1. Relative income and SWB

The seminal paper of Easterlin (1974) suggested that income plays a minor role in happiness, once an individual rises above subsistence level (the so-called 'Easterlin paradox'). He also argued that happiness is strongly influenced by 'relative status'. The theory of relative deprivation was originally described by Festinger (1954) and Runciman (1966), then applied to migration and further developed by Stark (1991) and Stark and Taylor (1989) to explain the decision to migrate more than the relationship between migration, integration and changes in SWB.

Clark *et al.* (2008a) state that individuals compare themselves to those they consider similar (i.e. external reference points) and, as a result, relative income is the 'status return' from income. Several scholars have asserted that SWB depends more strongly on people's perception of income in relation to past income and on the perceived incomes of their peers than on their absolute income level (Hendriks and Burger 2019; Clark *et al.* 2008a, 2008b; Easterlin 2004; Clark and Etilé 2008; Ball and Chernova 2008; McBride 2001), while others (Hagerty 2000; Melzer and Muffels 2012; Caporale *et al.* 2009; Scoppa and Ponzo 2008) find that the effect of absolute income is larger than that of relative income. Caporale *et al.* (2009) found that the income of a reference group negatively affects SWB, even after controlling for absolute income and other personal and demographic characteristics. Similarly, Senik (2009)

found that income comparisons impact SWB *per se* and that people suffer from relative deprivation, rather than from absolute income inequality.

The literature on migrants' economic and social integration and assimilation across Europe is extensive, most often investigating integration parameters such as education (e.g. Kunz 2014), occupation and wage (e.g. Semyonov *et al.* 2014; Creese and Wiebe 2012), or linguistic distance (e.g. Strøm *et al.* 2018; Chiswick and Miller 2002). Economics research on migrants' integration uses Alba and Nee's (1997) definition of assimilation; a migrant group assimilates if there is a 'reduction of differences between similar native groups over time'. For example, migrant performance in the labour market is compared to that of a native worker with the same characteristics, such as gender, age, education, family structure and/or workload. Typically, there is an underutilisation of migrant workers skills which affects also their wages, and declines as their time in the destination country increases. However, the probability that a first-generation migrant's wage equals that of a non-migrant counterpart is low (Algan *et al.* 2010). Frequently, segmentation of the labour market continues to negatively impact second-generation migrants' wages more than real job discrimination does (Strøm *et al.* 2018). Despite the domination of integration and assimilation theories in the migration literature and the growing body of research on migrants' SWB, few empirical studies have been conducted on the relationship between migrants' income, relative to their specific reference groups, and SWB.

The relation between relative income and migrants' SWB likely varies between upward comparisons – to others whose wealth, fame, or status is in some way superior – and downward comparisons to those whose status is inferior (Liu *et al.* 2019; Lahusen and Kiess 2018; Prilleltensky 2012; Oshio *et al.* 2011; Boyce *et al.* 2010). Downward comparison increases people's positive self-perception, while upward comparison has the opposite effect (Fiske 2011; Delhey and Kohler 2006). Luttmer (2005) found that upward comparisons lead to more critical evaluations of one's own life and reduce SWB, while downward comparisons lead to less critical evaluations and increase SWB. Gokdemir and Dumludag (2012) showed that, for Turkish immigrants residing in the Netherlands, absolute income does not affect the level of life satisfaction, while comparisons of income and social status to those other groups do, especially upward comparison with Dutch natives. Gelatt (2013) suggests that migrants simultaneously maintain reference groups in their destination country and their country of origin with a strength that varies by country of origin.

2.2. Group-specific heterogeneities

The relationship between relative income and SWB may be strongly moderated by generation and educational level. Several studies have found differences in the level of SWB by generation and length of stay in the receiving country. For instance, Arpino and de Valk (2018) observed that the gap in SWB is greater between first-generation migrants and natives than between second-generation migrants and natives. Safi (2010) confirmed this change in SWB from the first to the second generation, while Obućina (2013) found that migrants' SWB declined as the length of stay in Germany, their destination country, increased. Hendriks and Burger (2019) suggest that, although migrants initially have as reference group comprised of people from their home countries, their frame of reference partially shifts over time toward natives and other migrants in their host country.

Education also influences SWB. Clark and Oswald (1996) suggest that this effect may be due to the positive relationship between education and aspirations. Moreover, migrants who have obtained higher educational levels may have more contacts with the native community (De Palo *et al.* 2007), with whom they may tend to build comparisons. Migrants' level of education also influences their probability of being employed, the stability of their employment and the discrimination they experience in the labour market (van Tubergen *et al.* 2004; Heath *et al.* 2008). These labour market outcomes may shape the relationship between relative income and SWB.

2.3. The role of subjective evaluations

Several studies have used relative income as a proxy for social comparison (e.g. Clark *et al.* 2008a, 2008b; Hendriks and Burger 2019). However, this practice goes beyond the informative capacity of relative income, referring to the evaluation of one's societal position, relative to some reference groups. To gain a deeper understanding of social comparison mechanisms, subjective measures, such as feelings or attitudes, should be taken into account. For instance, Bălțătescu (2005) refers to 'social comparison', using subjective variables about an individual's evaluation of the socio-economic environment. He found that migrants have a higher degree of satisfaction with societal conditions than natives, supporting the model of social comparison. Hendriks and Burger (2019) used four subjective variables (economic satisfaction, government satisfaction, trust in

public institutions, social trust) and found that wavering perceptions of the host country's socio-economic and institutional conditions were associated with less positive SWB trajectories among diverse, first-generation immigrants in Europe. In summary, subjective measures may have an important role in mediating the relationship between income – both absolute and relative – and SWB.

2.4. Other correlates of SWB

The association between relative income and SWB may be confounded by several factors (Hooghe and Vanhoutte 2011). Demographic confounders include gender, age, marital status, and presence of children in the household. Women are generally less satisfied with their lives than men (e.g. Tesch-Römer *et al.* 2008). The effect of age is unclear, with research identifying a U-shape, others an inverted U-shape and others a linear relationship (for a review, see López Ulloa *et al.* 2013).

The empirical literature suggests that relationship status – being in a partnership – is positively linked with SWB (e.g. Vignoli *et al.* 2014). Although some studies have found a positive association between parenthood and happiness (Kotowska *et al.* 2010), others have shown that having children imparts either non-significant or negative effects on levels of SWB, when bias resulting from selection into parenthood is removed (Clark and Oswald 2002; Clark *et al.* 2008b).

Other confounding factors are related to an individuals' health and socioeconomic position. SWB is positively connected with good physical health, a relationship that is bidirectional and mediated by various factors (for a review, see Cross *et al.* 2018). Education and employment status are markers of individual autonomy, intellectual ability and independence (e.g. Argyle 1999) and may affect migrants' SWB. Residential area – urban, suburban, etc. – is also important, since migrants are often concentrated in relatively deprived areas (Simpson *et al.* 2009), a factor that may affect their SWB (Knies *et al.* 2016).

The relationship between religion and SWB has been widely explored in the literature (for a review, see Tay *et al.* 2014). Most findings suggest a positive association between SWB and religious involvement (Lelkes 2006), religious beliefs and intrinsic religiousness (Diener *et al.* 2011), and church attendance (Lim and Putnam 2010).

In addition, migrants' country of origin is crucial, potentially reflecting varying job opportunities, social exclusion or discrimination, and affecting both relative income and SWB. Empirical research in Sweden

(Rydgren 2004, le Grand and Szulkin 2002) and France (Silberman *et al.* 2007; Simon 2003) has found that immigrants from Western countries do not face particular problems to integrate into the labour market, while immigrants from other areas – especially Africa, Asia and Latin America, in the case of Sweden, and French former colonies and/or predominantly Muslim countries, in the case of France – are more disadvantaged in the labour market.

3. Data and methods

3.1. Data

We used the cumulative dataset of the ESS, a repeated, cross-sectional survey involving 33 countries[1] conducted semi-annually from 2002 to 2018. We evaluated SWB using the question on life satisfaction: '*All things considered, how satisfied are you with your life as a whole nowadays?*' measured on an 11-point scale, ranging from 0 (extremely dissatisfied) to 10 (extremely satisfied).

We first used the complete ESS dataset of 318,044 individuals (272,230 natives and 45,814 migrants) to form in-sample reference groups and compute relative income measures for migrants. We noted some differences between natives and migrants in the distribution of the absolute income variable. For natives the modal class was the 8th decile of income, the median was 5 and the mean value was 5.45 (SD 2.65); for migrants the modal class was the 4th decile, the median was 5 and the mean value was 5.27 (SD 2.62). As expected, migrants were income-disadvantaged, compared with natives. According to prior research (Liu *et al.* 2019; Prilleltensky 2012; Luttmer 2005), migrants' income, relative to natives, can be considered an upward comparison, while comparison with other migrants' income is a downward comparison. This interpretation should be taken cautiously, because it implies that our measure includes a subjective evaluation of relative income, while it is only an objective measure.

Then we conducted our analysis on the migrants' sample[2]. The mean age of migrants was 45.98 years, 52.60% were women ($N = 24{,}097$), 59.57% were employed an average of 39.2 h per week. The modal value

[1]Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, United Kingdom, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, Turkey.

[2]We consider migrants both first generation (born abroad) and second generation (born in country with one or both parents born abroad). Natives are those born in country with both parents born in country.

of migrants' life satisfaction was 8, the median was 7 and the average was 6.71 (SD 2.37). Complete descriptive statistics are reported in the Appendix (Table A1).

3.2. Analytical strategy

Extending existing studies, which individualise reference groups using a few characteristics simultaneously (e.g. Melzer and Muffels 2012; Firebaugh and Schroeder 2009; Brown *et al.* 2008; Clark *et al.* 2008a; Ferrer-i-Carbonell 2005; Luttmer 2005; Veenhoven 1991), the two reference groups we used to compare migrants' income were: (i) natives of the same gender, age[3] and level of education[4], residing in the same host country and (ii) migrants of the same gender, age, level of education and area of origin[5], residing in the same host country.

Typically, relative income is calculated as the share of income on the mean or median value of the reference group (D'Isanto *et al.* 2016; Clark *et al.* 2008a; Scoppa and Ponzo 2008). We adapted this approach to use the income decile, which is the only income variable measured by the ESS[6]. For each individual *i*, the two variables describing relative income (RI) were calculated as the distance between the current income decile and the median value of the corresponding reference group:

$$RI\_natives_i = I_i^{g,a,e,c} - \bar{I}_{natives}^{g,a,e,c} \quad (1)$$

$$RI\_migrants_i = I_i^{g,a,e,c,o} - \bar{I}_{migrants}^{g,a,e,c,o} \quad (2)$$

where *g* is gender, *a* is age class, *e* is education level, *c* is the receiving country and *o* is the area of origin. Relative income variables range from −9 to +9 and, by definition, have a mean of about zero. Negative

[3]After McBride (2001), we used ten-years age classes (except the first and last open ones): < = 30 years old, >30 & < = 40 years old, >40 & < = 50 years old, >50 and < = 60 years old, >60 years old.

[4]We coded education as a dummy: low education (lower secondary education – EISCED2 as the highest level) and medium-high education (high secondary education – EISCED 3 and higher). We used the same threshold to split the sample by level of education (section 4.3).

[5]After Arpino and de Valk (2018) and Senik (2014), we used area of origin instead of country for two reasons. First, the small sample size of some nationalities in some receiving countries can lead to imprecise estimations. Second, for round 1 only the area of origin was available. A different coding of area of origin has been used to run a robustness check (see Appendix).

[6]For the first three rounds of ESS, income was measured via a variable with twelve modalities with which the respondents indicate their total net income. To harmonise these data with income codified in deciles of income in subsequent rounds of ESS, we collapsed the first two modalities into one and the last two categories into one, obtaining ten modalities also for the rounds ESS1-3. The distribution of this new variable is similar to the distribution of income level in ESS4-9, further supporting our choice of variables. We conducted a robustness check to test our strategy (results reported in the appendix).

values indicate that the individual has a disadvantage compared to the reference group, while positive values indicate that they have an advantage. Increasing relative income indicates that the migrant's disadvantage, relative to the reference group, diminishes and eventually becomes an advantage.

To address research question 1, we assumed cardinality of our SWB measure and, following standard practice (e.g. Hendriks and Burger 2019; Arpino and de Valk 2018; Senik 2014; Gelatt 2013; D'Isanto *et al.* 2016), estimated our regressions using ordinary least squares models:

$$SWB_i = \alpha + \beta_1 \cdot RI\_natives_i + \beta_2 \cdot X_i + \varepsilon_i \quad (3)$$

$$SWB_i = \alpha + \beta_1 \cdot RI\_migrants_i + \beta_2 \cdot X_i + \varepsilon_i \quad (4)$$

In both equations individual SWB is affected by income, relative to a reference group (RI) – natives in equation (3) and migrants in equation (4). X_i is a vector of covariates included in the model to adjust for possible confounders of the relationship between relative income and SWB. These covariates include gender, age, age-squared[7], relationship status (living with a partner), number of persons living in the household, presence of children living in the household, health (5 ordinals ranging from 'very bad' to 'very good'), residential area (big city, suburban, town or small city, country village/farm or home in the countryside), logged years of education, current employment status (employed, unemployed searching for a job, all other statuses)[8], number of working hours, declared level of religiosity ('not at all religious', 'low degree of religiosity', 'high degree of religiosity'), presence of any religious affiliation, migrant generation, area of origin[9] ('Europe 27', 'other European countries', 'North America and Oceania', 'Southern and Central America', 'Asia', 'North Africa', 'other African countries', 'born in country'[10]). In addition, all models included

[7]Squared age was included to account for a possible non-linear effect. We did not apply any upper age threshold, because we chose to consider migrants of all ages, and few elder migrants were surveyed. In addition, applying a threshold (e.g. 65 years) did not affect estimates (results available upon request).

[8]We could not add variables describing type of occupation (ISCO classification, type of organisation the individual works, or has worked for) because these variables had too many missing values. This causes a reduction of the sample, especially in the models on subgroups. We ran some models using dummies for type of organisation (this variable included fewer missing values), but none of them were significant. Results are available upon request.

[9]Following ONU classification, we included Mexico in Central America (https://data.un.org/en/iso/mx.html). We also included the rest of North America (USA and Canada) and Oceania in the same group, because they have similar economic conditions. In addition, low numbers of immigrants from Oceania could introduce bias into model estimates.

[10]To avoid problems of collinearity, we used second generation as reference. This allowed us to exploit at the same time variation in SWB by second-generation-immigrant status (reference) and, for first generation immigrants, by area of origin. A similar approach has been used in Holland and de Valk (2013). Differences by generation are analysed in depth in section 4.2.

standard controls for pooled data: country of destination dummies[11] and year dummies. ε_i is an error term that captures idiosyncratic shocks or unobserved respondent characteristics. Regressions were run with robust standard errors clustered at country level[12]. All estimates were weighted by a combined weight obtained as design weight × population weight (see ESS 2014 for details).

The first set of models was estimated without absolute level of income. In the second set, we included absolute income to account for its potential to inflate coefficients of relative income[13].

To address research question 2, we split the sample by generation and level of education prior to running a set of models.

To address research question 3, we examined whether subjective perceptions mediate the relationship between relative income and SWB. We included additional variables, measuring 'feeling about household income nowadays' (coded as four dummies: 'living comfortably', 'coping', 'difficult', 'very difficult'). These variables indicate an individual's perception of their condition. Furthermore, to account for individuals' perceptions of living conditions in their destination countries, we added five variables that describe how an individual feels about some aspects of well-being in the country. These variables, which account for the 'immigrant's societal perception' (Hendriks and Burger 2019) include[14] satisfaction with the present state of the national economy, the government, the way democracy works, the current state of education and the current state of health services, measured on an 11-point scale from 'extremely dissatisfied' to 'extremely satisfied'. We ran a principal component analysis (PCA) on the five original variables, then using the score of the first component as a variable[15]. We refer to this new synthetic variable as 'feelings about socio-economic-institutional conditions in the country'.

[11]We did not add destination regions, because both the prevalence of missing values (>50%) and small sample size of migrants for each region and year could lead to biased estimates.

[12]Cluster standard errors were used to correct for possible violations of independence between individuals in the same country, i.e. factors that did not vary across individuals in the same cluster but varied across clusters.

[13]We added three dummies (low income: from the 1st to the 4th decile; medium income: from the 5th to the 7th decile; high income: from the 8th to the 10th decile) instead of all deciles for two reasons. First, some deciles' variables were not significant. Second, collinearity with main explanatory variables may cause erroneous subgroup estimates.

[14]To avoid drastic reduction of the sample, we used only those variables for which the number of missing values was reasonable, following Bălțătescu (2005) and partially Hendriks and Burger (2019).

[15]We ran a PCA with varimax rotation to the set of original variables, obtaining a first component with an eigenvalue of 2.938, explaining around 60% of the initial variance.

4. Findings

4.1. The role of relative income

Table 1 reports the results of models run on the whole sample to assess the role of relative income and address research question 1. Our analysis shows that, as the distance between the respondent's income and the median value of natives' income decreases (column 1), eventually becoming positive, their SWB increases ($\beta = 0.110$, p-value <0.001). We observe a similar pattern when the main explanatory variable is income relative to other migrants (column 2), although the coefficient is smaller ($\beta = 0.100$, p-value <0.001). This result may be explained by upward versus downward comparison (Liu *et al.* 2019; Gelatt 2013; Prilleltensky 2012; Fiske 2011; Luttmer 2005), and is consistent with literature according to which upward comparison predominate and consequently is more important in explaining SWB (Lahusen and Kiess 2018; Delhey and Kohler 2006; Clark *et al.* 2008a).

When the same models were fit with absolute income added (columns 3 and 4), we observe a reduction in the magnitude of the coefficients of income, relative both to natives ($\beta = 0.064$, p-value <0.001) and to migrants ($\beta = 0.038$, p-value <0.001). This result is likely due to the fact that the absolute value of income is embedded in our relative measures.

We find that absolute income has a stronger association with migrant's SWB than relative income. Although relative and absolute incomes are correlated (Scoppa and Ponzo 2008), relative income remains statistically significant even after the inclusion of absolute income, suggesting that our variable of interest is associated with SWB. The reduction of coefficients following inclusion of absolute income is more marked in models that include income relative to other migrants.

The other covariates included in the models are mostly in line with the classical findings in the happiness literature, which provides an indirect validation of our model[16]. Gender is not significant[17], while age displays a non-linear pattern, indicating that young migrants are more satisfied. Living with a partner is also associated with an increase in the SWB,

[16]Country-fixed variables (not reported) are all statistically significant but have different signs. In all four models, living in Switzerland, Denmark, Finland, Iceland, Luxemburg, Netherlands, Norway or Sweden is positively related to migrants' SWB, while the relationship is negative for all other countries. This result is consistent with Kogan *et al.* (2018) who found that migrants were likely to be more satisfied in countries that offer more welcoming social settings.

[17]In the online appendix, we have reported separate estimations by gender (Table A2). A Wald chi-square test shows that difference by gender for income relative to natives is not significant ($X^2(1) = 0.18$, $p = 0.667$), while the difference for the relative income with migrants is significant at 5% level ($X^2(1) = 4.10$, $p = 0.043$).

Table 1. Migrant's SWB and relative income.

		(1)	(2)	(3)	(4)
Income variables	Relative income (reference group: natives)	0.110***		0.064***	
		(0.012)		(0.010)	
	Relative income (reference group: migrants)		0.101***		0.038***
			(0.010)		(0.004)
	Absolute income *(ref. low)*				
	Medium			0.213***	0.312***
				(0.033)	(0.042)
	High			0.392**	0.576***
				(0.119)	(0.108)
Individual characteristics	Female	−0.005	0.020	0.020	0.041
		(0.024)	(0.026)	(0.027)	(0.027)
	Age	−0.069***	−0.070***	−0.073***	−0.075***
		(0.005)	(0.006)	(0.006)	(0.006)
	Age squared	0.001***	0.001***	0.001***	0.001***
		(0.000)	(0.000)	(0.000)	(0.000)
Health and socio-economic conditions	Health *(ref. very bad)*				
	Bad	0.958***	0.950***	0.958***	0.956***
		(0.196)	(0.191)	(0.195)	(0.192)
	Fair	1.868***	1.885***	1.866***	1.875***
		(0.136)	(0.125)	(0.135)	(0.129)
	Good	2.599***	2.624***	2.592***	2.600***
		(0.155)	(0.146)	(0.153)	(0.148)
	Very good	3.090***	3.129***	3.084***	3.101***
		(0.164)	(0.152)	(0.161)	(0.154)
	Years of full time education (log)	0.244***	0.244***	0.173***	0.139**
		(0.047)	(0.047)	(0.040)	(0.041)
	Working status *(ref. all the other conditions)*				
	Currently working	0.087**	0.108**	0.070*	0.069*
		(0.032)	(0.034)	(0.029)	(0.029)

	Currently unemployed, actively searching for a job	−0.771***	−0.814***	−0.772***	−0.785***
		(0.103)	(0.100)	(0.101)	(0.099)
	Total hours normally worked	−0.002*	−0.002†	−0.002*	−0.002*
		(0.001)	(0.001)	(0.001)	(0.001)
Family and living area characteristics	Living with a partner	0.468***	0.508***	0.457***	0.468***
		(0.056)	(0.057)	(0.054)	(0.055)
	Number of family members	−0.005	0.005	−0.008	−0.006
		(0.028)	(0.027)	(0.027)	(0.027)
	Children currently living in the household	−0.163**	−0.177**	−0.165**	−0.172**
		(0.058)	(0.060)	(0.058)	(0.059)
	Living area *(ref. big city)*				
	Suburbs or outskirts of big city	0.137**	0.142**	0.130**	0.129**
		(0.040)	(0.043)	(0.038)	(0.038)
	Town or small city	0.133***	0.136***	0.131***	0.131***
		(0.022)	(0.023)	(0.022)	(0.022)
	Country village /Farm or home in countryside	0.152**	0.153**	0.146**	0.144**
		(0.046)	(0.050)	(0.047)	(0.049)
Religion	Level of religiosity *(ref. not at all religious)*				
	Low	0.022	0.015	0.023	0.020
		(0.054)	(0.054)	(0.055)	(0.056)
	High	0.356***	0.353***	0.358***	0.357***
		(0.065)	(0.068)	(0.067)	(0.069)
	Religious affiliation *(ref. no)*	0.007	−0.003	0.011	0.009
		(0.039)	(0.041)	(0.041)	(0.042)
Migration background	Area of origin *(ref. second generation, born in country)*				
	Europe 27	0.063	0.074	0.067	0.081
		(0.066)	(0.068)	(0.067)	(0.101)
	Other European countries	0.100	0.075	0.108	0.111
		(0.088)	(0.082)	(0.090)	(0.103)
	North America and Oceania	0.284*	0.367**	0.264†	0.295*
		(0.126)	(0.122)	(0.135)	(0.118)

(*Continued*)

Table 1. Continued.

	(1)	(2)	(3)	(4)
South and central America	0.120†	0.059	0.121†	0.107
	(0.067)	(0.065)	(0.065)	(0.086)
Asia	−0.029	−0.082	−0.026	−0.035
	(0.060)	(0.075)	(0.056)	(0.051)
North Africa	−0.152†	−0.236**	−0.147†	−0.170
	(0.076)	(0.072)	(0.076)	(0.118)
Other African countries	−0.433***	−0.490***	−0.431***	−0.447***
	(0.045)	(0.058)	(0.040)	(0.048)
Constant	4.778***	4.677***	4.856***	4.851***
	(0.260)	(0.276)	(0.270)	(0.290)
Observations	45,814	45,814	45,814	45,814
R-squared	0.258	0.254	0.260	0.259

Notes: The Table reports coefficients of OLS estimates based on ESS data (2002–2018). The dependent variable is 'Life satisfaction'. All models control also for country dummies and year dummies (not reported). Robust standard errors (corrected for heteroskedasticity) and clustered at country level are reported in parentheses (N. clusters = 33).
†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

while the presence of children living in the household is negatively related to migrants' SWB. SWB increases with education and employment, while being unemployed decreases SWB, as does the increase in the number of working hours. SWB is positively associated with better [perceived] health. Being religious is associated with higher levels of SWB, although religious affiliation itself is not significant. Living in suburban or smaller areas, rather than is large urban environments, is associated with higher SWB.

Compared with the second generation born in the host country, first-generation migrants from North America and Oceania report higher levels of SWB, as well as migrants from Central and South America (but the coefficients are not statistically significant when controlling also for absolute income). Migrants from Other African countries and North African Countries report lower levels of SWB. This finding suggests that forced migration, which may be more common from Africa, and chosen migration, which is more typically observed from wealthier regions, such as North America and Oceania, have an opposite relationship with SWB in the host country. These differences may also reflect initial economic conditions of migrants and different levels of socio-economic integration within the host society and its labour market. A sensitivity check (briefly described in the Appendix) assures the robustness of our findings to a different specification.

We present all following models including the absolute value of income, which partially absorbs the magnitude of relative income. The coefficients of both relative income variables in the estimates presented hereafter increase if we exclude absolute income from model equations (results available upon request).

4.2. Group-specific heterogeneities

Following suggestions in the literature, we have run the main models separately on the first and second-generation subgroups, additionally splitting the sample by gender (Table 2). These estimates show three main results. First, the importance of relative income for the second generation is higher than that for the first generation[18]. Second, the magnitude of the

[18] A Wald chi-square test confirmed that the differences between the coefficients of the variable 'relative income with natives' of the first and the second generation are significant at 1% in the total sample (models 1 and 2), at 0.1% in the women's sample (models 3 and 4) and not significant in the men's sample (models 5 and 6). The same test conducted for the variable 'relative income with migrants' shows that the differences between the coefficients of the first and the second generation are statistically significant at 1% for the total sample (models 7 and 8) and not significant for the two genders.

coefficient of relative income is larger for women than for men. Third, for both migrant generations, income relative to natives is more relevant than income relative to migrants. To explore potential differences in the relationship between relative income and SWB by level of education, we segmented the analysis by two groups: 'low educated' (those who have achieved EISCED 2) and 'medium-high educated' (those who have achieved at least EISCED 3)[19].

Results (Table 3) show that the magnitude of relative income comparisons with natives and migrants is generally higher for those with a higher level of education, except for men in the model that includes income relative to other migrants. In particular, income relative to migrants is statistically significant only for medium-high educated migrants[20]. In addition, for more highly educated migrants the role of relative income may be more important for women. Again, these estimates confirm that income relative to natives is more important than that relative to migrants, except for those who are less educated in the full sample and the men-only sample (where the estimates are not statistically precise).

4.3. The role of subjective measures

In a final step, we explored whether individual's perception of their situation and of the socio-economic and institutional conditions in their receiving country mediates the relationship between relative income and migrants' SWB. Results (Table 4) show that SWB increases as 'feelings about household income nowadays' improve (from 'difficult' to 'living comfortably'). Satisfaction with the current socio-economic and institutional conditions of the receiving country is also positively related to migrants' SWB.

Interestingly, the inclusion of subjective variables in our models reduced the magnitude and significance of both relative and absolute income. In particular, in the model including income relative to natives, the medium absolute income is significant at 10%, while the

[19]We used the same threshold here that was used to segment the reference groups.

[20]A Wald chi-square test confirmed that the differences between the coefficients of the variable 'relative income with natives' of the 'low educated' and 'medium-high educated' groups are significant at 1% in the total sample (models 1 and 2) and at the 5% level in the women-only (models 3 and 4) and men-only samples (models 5 and 6). The same test conducted for the variable 'relative income with migrants' indicated that the differences between the coefficients of the low and medium-high educated migrants were statistically significant at 5% for the total sample (models 7 and 8) and not significant for the two genders.

Table 2. Migrant's SWB and relative income. Separate estimations by generation.

	Total		Women		Men	
	(1) First generation	(2) Second generation	(3) First generation	(4) Second generation	(5) First generation	(6) Second generation
Relative income (reference group: natives)	0.045***	0.086***	0.047**	0.097***	0.048**	0.080***
	(0.008)	(0.016)	(0.017)	(0.017)	(0.014)	(0.022)
Full controls	YES	YES	YES	YES	YES	YES
Observations	25,280	20,534	13,294	10,803	11,986	9,731
R-squared	0.231	0.301	0.258	0.314	0.211	0.295
	Total		Women		Men	
	(7) First generation	(8) Second generation	(9) First generation	(10) Second generation	(11) First generation	(12) Second generation
Relative income (reference group: migrants)	0.022***	0.053***	0.044**	0.077***	0.008†	0.033**
	(0.005)	(0.007)	(0.014)	(0.020)	(0.018)	(0.017)
Full controls	YES	YES	YES	YES	YES	YES
Observations	25,280	20,534	13,294	10,803	11,986	9,731
R-squared	0.230	0.300	0.258	0.314	0.209	0.293

Notes: The Table reports coefficients of OLS estimates based on ESS data (2002–2018), separately for gender and generation. The dependent variable in all the models is 'Life satisfaction'. All regressions are run with the corresponding full set of controls including absolute income (see Table 1), not reported. In models on the second generation, the variables about area of origin are not included. Constant not reported. Robust standard errors (corrected for heteroskedasticity and clustered at a country level) are reported in parentheses (N. clusters = 33).

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Table 3. Migrant's SWB and relative income. Separate estimations by level of education.

	Total		Women		Men	
	(1) Low education	(2) Medium-high education	(3) Low education	(4) Medium-high education	(5) Low education	(6) Medium-high education
Relative income (reference group: natives)	0.002†	0.087***	0.035	0.094***	0.035*	0.089***
	(0.018)	(0.017)	(0.037)	(0.021)	(0.016)	(0.016)
Full controls	YES	YES	YES	YES	YES	YES
Observations	9,984	35,830	5,111	18,986	4,873	16,844
R-squared	0.226	0.275	0.250	0.292	0.217	0.262
	Total		Women		Men	
	(7) Low education	(8) Medium-high education	(9) Low education	(10) Medium-high education	(11) Low education	(12) Medium-high education
Relative income (reference group: migrants)	0.016	0.050***	0.019	0.076***	0.041	0.030**
	(0.025)	(0.006)	(0.057)	(0.014)	(0.040)	(0.014)
Full controls	YES	YES	YES	YES	YES	YES
Observations	9,984	35,830	5,111	18,986	4,873	16,844
R-squared	0.225	0.274	0.250	0.291	0.216	0.260

Notes: The Table reports coefficients of OLS estimates based on ESS data (2002–2018), separately for gender and level of education. The dependent variable in all the models is 'Life satisfaction'. All regressions are run with the corresponding full set of controls including absolute income (see Table 1), not reported, except years of education. Constant not reported. Robust standard errors (corrected for heteroskedasticity and clustered at a country level) are reported in parentheses (N. clusters = 33).

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Table 4. Migrant's SWB and relative income. The role of subjective measures.

	(1)	(2)
Relative income (reference group: natives)	0.032**	
	(0.013)	
Relative income (reference group: migrants)		0.014**
		(0.005)
Absolute income *(ref. low)*		
Medium	0.077†	0.135**
	(0.040)	(0.029)
High	0.070	0.180*
	(0.097)	(0.072)
'Feeling about household income nowadays' (*ref. 'Very difficult on present income'*)		
'Difficult on present income'	0.549**	0.557**
	(0.157)	(0.155)
'Coping on present income'	1.161***	1.175***
	(0.186)	(0.181)
'Living comfortably on present income'	1.708***	1.731***
	(0.134)	(0.128)
'Feelings about socio-economic-institutional conditions in the country' (score)	0.710***	0.708***
	(0.051)	(0.051)
Full controls	YES	YES
Observations	41,241	41,241
R-squared	0.367	0.366

Notes: The Table reports coefficients of OLS estimates based on ESS data (2002–2018). The dependent variable in all the models is 'Life satisfaction'. All regressions are run with the corresponding full set of controls (see Table 1), not reported. Constant not reported. Robust standard errors (corrected for heteroskedasticity and clustered at a country level) are reported in parentheses (N. clusters = 33).
†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

relative income variable remains statistically significant at 1%. In addition, the coefficient of income relative to natives is greater than income relative to other migrants. Overall, these results show that the self-perception of both individual condition and societal conditions matter, mediating the role of income, especially absolute income. The implication of this finding is that accounting for these subjective variables may reduce the income effect, which may be overestimated in studies that do not include subjective measures.

5. Discussion and conclusions

Migrants' SWB is an expanding and important area of research, because a convergence of migrants' SWB to the level of natives may generate other benefits (Hendriks and Burger 2019), such as improved integration (Richardson 1967; De Neve *et al.* 2013). In this paper, we concentrated on the relationship between SWB and migrants' income relative to two reference groups – natives and other migrants – with the same characteristics. At least four findings have emerged from this paper in response to our three research questions.

First, we note that as the disadvantage between the migrant and the reference groups becomes smaller, eventually becoming an advantage, the migrant's life satisfaction increases. This result holds even after controlling for absolute income. In contrast with some authors (Hendriks and Burger 2019; Clark *et al.* 2008a, 2008b; Easterlin 2004; Clark and Etilé 2008; McBride 2001), but in line with others (Melzer and Muffels 2012; Caporale *et al.* 2009), we find that absolute income has a stronger association with migrant's SWB than the relative income level.

Second, we find that income relative to natives shows a stronger relationship with SWB than income relative to other migrants, a result that holds when looking at various subgroups. Consistent with the existing literature (Liu *et al.* 2019; Prilleltensky 2012; and Gelatt 2013; Fiske 2011; Delhey and Kohler 2006; Luttmer 2005), we assert that upward comparisons lead to more critical evaluations, while downward comparisons lead to less critical evaluations. Lahusen and Kiess (2018), referring to an extended concept of social comparison rather than simply relative income, explain that the way people form upward and downward comparisons is related to 'salience', which is what people feel to be more important. Thus, the relationship between SWB and relative income may be stronger when looking up [to natives] and weaker when looking down [on other migrants'] relative income.

Third, we detect relevant group-specific differences. Results show that, for second-generation migrants, who have lived in the receiving country and society throughout their lives, with a consequent rise in expectations and aspirations, the relationship between relative income and SWB is higher than for first-generation migrants, regardless of whether the income comparison is with natives or migrants. Migrants may initially compare their situation primarily to that of people in their home countries, then gradually shift their frame of reference toward natives and other migrants living in their host country (Hendriks and Burger 2019). This result may also be related to the fact that first and second-generation migrants report different levels of SWB (see, e.g. Arpino and de Valk 2018). Differences also emerge by level of education; the relationship between relative income and SWB is higher for those who have the highest level of education. Better-educated migrants may have higher expectations and aspirations and, therefore, may be more sensitive to their relative position in comparison with their reference groups. In addition, migrants with more education have more contacts with natives, while less-educated migrants tend to socialise inside their ethnic communities, a pattern that influences their perceptions (De Palo *et al.* 2007).

Finally, we explore the role of subjective measures, at both individual (feelings about household income) and societal (feelings about the socio-economic-institutional conditions in the host country) levels. We have found that these variables can be considered important mediators of the relationship between relative income and SWB. The introduction of these variables into our models reduced both the absolute and relative income coefficients. In particular, absolute income was no longer significant in some models. This result is consistent with previous findings on social comparison (Hendriks and Burger 2019; Bălțătescu 2005), which state that the subjective evaluation of one's individual and societal conditions may have a relevant effect on SWB.

Some caution is necessary when interpreting our results. Although this study provides important insights into migrants' SWB within the context of their relative income, it has limited power for inferring causal relationships. Importantly, none of our analyses accounted for the fact that individuals with a predisposition toward reporting a higher level of SWB may also systematically vary in their sense of belonging to certain comparison groups. In addition, the relationship between relative income and SWB may be the same for natives who experience the same labour market conditions as migrants. Finally, the raw data may be biased by selectivity. For example, only migrants who speak the receiving country's language and, presumably, are relatively integrated are interviewed (Chiswick and Miller 2002; Strøm *et al.* 2018). Additionally, migrants at different stages of their immigration process or who differ by nationality are often segregated into areas and jobs with other migrants and, as a result, are at least as likely to compare themselves to other migrants. Although we controlled for employment variables, we cannot exclude that the association between relative income and SWB may be due to the specific situation of migrants in the labour market. A lower SWB may reflect [partial] labour market exclusion or precarity. Thus, our result may conceal differences across subgroups by country or by other characteristics.

Despite these limitations, our analysis reveals some of the axes on which relative income is related to migrants' SWB. Overall, the size of the coefficients for both type of relative income is relatively small, a result that may depend on data structure (e.g. deciles of income) or analytical strategy (e.g. distance from the median value of the reference group). Nonetheless, our analysis adds to the existing literature, in particular by exploring the differences that emerge across different groups. Moreover, our results suggest that subjective variables should be taken

into account in analyses devoted to exploring the relationship between income (both absolute and relative) and SWB.

Future efforts should be directed at verifying the associations identified in this cross-sectional study through the use of panel data and adoption of causal approaches. Further developments of this work might also consider using a measure of income level in their country of origin to assess whether this factor could affect migrants' SWB especially in the initial phase of their immigration. A clearer understanding of distance from reference groups is necessary for designing policy favourable to migrants' integration into their host country.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix

Table A1. Descriptive statistics of the sample (N. = 45,814).

Variable	Mean	Std. Dev.
Life satisfaction	6.714	2.370
Relative Income (reference group: natives)	−0.058	2.654
Relative Income (reference group: migrants)	0.210	2.292
Absolute Income (low)	0.407	
Absolute Income (medium)	0.323	
Absolute Income (high)	0.270	
Very difficult on present income	0.075	
Difficult on present income	0.219	
Coping on present income	0.434	
Living comfortably on present income	0.270	
Feelings about socio-economic-institutional conditions in the country (score)	−0.077	0.981
Female	0.526	
Age of respondent	45.98	15.993
Age of respondent squared	2,370.113	1,577.915
Health: very bad	0.013	
Health: bad	0.069	
Health: fair	0.282	
Health: good	0.427	
Health: very good	0.209	
Years of full time education (log)	2.548	0.338
Work	0.597	
Unemployed (actively searching for a job)	0.053	
Total hours normally worked	39.22	
Having a partner	0.586	
Number of family members	2.936	1.453
Children in the household	0.502	
Living area: big city	0.266	
Living area: Suburbs or outskirts of big city	0.141	
Living area: Town or small city	0.357	
Living area: Country village /Farm or home in countryside	0.236	
Level of religiosity: not at all religious	0.142	
Level of religiosity: low	0.412	
Level of religiosity: high	0.446	
Religious affiliation	0.604	
Second generation	0.458	
Area of origin: Europe 27	0.138	
Area of origin: Other European countries	0.094	
Area of origin: North America and Oceania	0.011	
Area of origin: South and central America	0.034	
Area of origin: Asia	0.091	
Area of origin: North Africa	0.035	
Area of origin: Other African countries	0.047	
Austria	0.012	
Belgium	0.031	
Bulgaria	0.001	
Croatia	0.002	
Cyprus	0.0003	
Czech Republic	0.009	
Denmark	0.006	

(*Continued*)

Table A1. Continued.

Variable	Mean	Std. Dev.
Estonia	0.004	
Finland	0.004	
France	0.154	
Germany	0.220	
Greece	0.007	
Hungary	0.004	
Iceland	0.0001	
Ireland	0.008	
Israel	0.033	
Italia	0.016	
Lithuania	0.002	
Luxemburg	0.0004	
Netherland	0.035	
Norway	0.010	
Poland	0.024	
Portugal	0.006	
Russia	0.096	
Serbia	0.002	
Slovakia	0.002	
Slovenia	0.005	
Spain	0.047	
Sweden	0.025	
Switzerland	0.036	
Turkey	0.004	
Ukraine	0.042	
United Kingdom	0.154	
Year 2018	0.108	
Year 2016	0.142	
Year 2014	0.120	
Year 2012	0.150	
Year 2010	0.133	
Year 2008	0.133	
Year 2006	0.095	
Year 2004	0.059	
Year 2002	0.061	

Notes: weighted descriptive statistics.

Table A2. Migrant's SWB and relative income. Separate estimations by gender.

	(1) Females	(2) Males	(3) Females	(4) Males
Relative income (reference group: natives)	0.070***	0.062***		
	(0.015)	(0.014)		
Relative income (reference group: migrants)			0.063***	0.018*
			(0.012)	(0.012)
Full controls	YES	YES	YES	YES
Observations	24,097	21,717	24,097	21,717
R-squared	0.276	0.244	0.276	0.243

Notes: The Table reports coefficients of OLS estimates based on ESS data (2002–2018), separately for gender. The dependent variable in all the models is 'Life satisfaction'. All regressions are run with the corresponding full set of controls including absolute income (see Table 1), not reported. Constant not reported. Robust standard errors (corrected for heteroskedasticity and clustered at a country level) are reported in parentheses (N. clusters = 33).

$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Robustness checks

A set of sensitivity checks supported the robustness of our results. Complete results are not shown for space constraints but are available from the authors upon request.

First, we fit the complete model including both measures of relative income (with natives and with migrants). We found that, while the coefficient of 'relative income with natives' maintains magnitude and significance, the coefficient of the 'relative income with migrants' loses both magnitude and significance.

Second, we considered that those who are in the very low or very high deciles of the distribution may perceive less their income relative to peers. Thus, we ran two additional sets of models, excluding from the analysis, first individuals in the lowest and the highest decile of income, then individuals in the two lowest and two highest deciles of income. In both tests the coefficients of the relative income variables remained significant, except for 'relative income with migrants', when the two lowest and two highest deciles of income were excluded.

We conducted additional checks to test whether our decisions about variable construction influenced the results. To verify our strategy of harmonisation of income variables between ESS rounds 1–3 and ESS rounds 4–9 (see Note 6), we ran all models presented in the paper, while excluding the first three rounds of the survey. No major changes occurred in the results; signs, magnitude and significance were stable. This outcome reassured us that our choice to include rounds 1–3 was valid.

In addition, we changed the composition of the reference groups, using two different thresholds for education: EISCED 3 in a first test and EISCED 4 in a second one. The variables describing relative income remained significant in all models. We also ran models splitted by educational level using the new thresholds. Results confirm that, for more highly educated migrants, relative income is more relevant in determining SWB.

Although our grouping choices for migrants' area of origin is based on both geographical and political criteria, these groups may not be realistic. For example, among EU27 immigrants, that an immigrant from Norway would compare themselves to an immigrant from Bulgaria seems unlikely, and vice versa. The same would apply to Asia; immigrants from Japan have different experiences and concerns than immigrants from Syria. For this reason, we conducted a robustness check by creating alternative groupings of countries within areas. We grouped European countries by gross domestic product into in 'medium' and 'rich' countries (per capita annual GDP >=€30.000) and 'poor' countries (per capita annual GDP <€30.000). We used the same classification, expressed in US dollars ($33.000), for Asian countries. We maintained African, Central-South America (all countries in these groups were below the individualised threshold) and North America plus Oceania (all the countries were above the individualised threshold) in their original groups. Results with this new classification did not show differences from the estimates reported in the main text; North America plus Oceania was positively and significantly related to SWB, while North African and other African countries were negatively related.

More importantly, the coefficient of our main independent variable did not change in magnitude and significance.

Finally, to test our use of first and second-generation groups, we ran alternative regressions using a different specification (as proposed in Arpino and de Valk 2018): G1, first-generation migrants (born outside the country); G2, 'strict' second-generation migrants (born in country to two migrant parents); G2.5, mixed second-generation (born in country to one migrant parent). The results still show generational differences, with both measures of relative income being more related to SWB for the second generation than the first, with no substantial differences between G2 and G2.5.