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EASTERLIN PARADOX REVISITED: DO INCREASES IN INCOME BRING HIGHER LEVELS OF INCOME SATISFACTION?

Povratak Isterlinovom paradoksu: Da li povećanja prihoda donose više nivoe zadovoljstva prihodima?

ABSTRACT: *In this paper, we examine the relationship between income and income satisfaction in the pool of developed European economies, for the period between 2002 and 2018. Although the nexus between income and most subjective well-being indicators is frequently investigated in prior studies, the research investigating the relationship between income and income satisfaction over time is non-existing. We find that during the observed period real disposable household income significantly increased, while the satisfaction with household income remained constant. Furthermore, the analysis within hierarchical linear modeling shows that while between-country variations in income affect income satisfaction, this is not the case for income variations over time. Our findings support the notion of the Easterlin paradox, which indicates that in the long-run increases in income do not lead to higher levels of well-being. Explanations for such results may be found in the social comparison theory, hedonic adaptation theory and aspiration level theory: increasing income does not bring positive effects on income satisfaction due to relevance of the relative and not the absolute income, adaptation to income changes, or higher levels of aspirations resulting from income rise.*

KEYWORDS: *Income Satisfaction, Developed Economies, Easterlin Paradox, HLM*

APSTRAKT: *U ovom članku ispitujemo povezanost između prihoda i zadovoljstva prihodima u razvijenim evropskim ekonomijama, u periodu između 2002. i 2018. godine. Iako je povezanost između prihoda i većine subjektivnih indikatora blagostanja često ispitivana u prethodnim istraživanjima, do sada nije ispitana povezanost između prihoda i zadovoljstva prihodima. Otkrili smo da su tokom ispitivanog perioda realni raspoloživi prihodi domaćinstva značajno porasli, dok*

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je zadovoljstvo prihodima ostalo konstantno. Dalje, HLM analizom smo pokazali da dok varijacije u prihodima unutar zemalja utiču na zadovoljstvo prihodima, to ne važi i za varijacije tokom vremena. Ovi nalazi podržavaju ideju Isterlinovog parakdosa, prema kojem dugoročni rast prihoda ne donosi veće nivoe blagostanja. Objašnjenja ovakvih rezultata se mogu pronaći u teoriji socijalnog poređenja, teoriji hedonističke adaptacije i teoriji nivoa aspiracija: rast prihoda nema pozitivnog efekta na zadovoljstvo prihodima zbog značaja relativnog (a ne apslutnog) nivoa prihoda, adaptacije na promene prihoda, ili viših nivoa aspiracija koji rezultuju iz rasta prihoda.

KLJUČNE REČI: *zadovoljstvo prihodima, razvijene ekonomije, Isterlinov paradoks, HLM*

1. INTRODUCTION

According to Easterlin (1974), increases in countries relative income levels are not associated with rising levels of subjective well-being. This finding, later named Easterlin paradox, has found its theoretical foundations in the social comparison theory (Festinger 1954a), the hedonistic adaptation theory (Brickman and Campbell 1971), and the aspiration level theory (Lewin et al. 1944), which give different explanations to the fact that real income over time does not necessarily increase the levels of subjective well-being. As a response to Easterlins' original conclusions, a large number of researchers investigated the nexus between income and subjective well-being indicators, with findings confirming (e.g. Di Tella and Macculloch 2010; Blanchflower and Oswald 2004) and disputing (e.g. Stevenson and Wolfers 2008; Sacks et al. 2012) Easterlins' original notion.

However, the researchers in this field typically investigate the nexus between increases in income and general subjective well-being indicators (such as life satisfaction or happiness), while the relationship between income and income satisfaction over time, to the best of our knowledge, has not been studied before. Income satisfaction could be a mechanism through which the income and general subjective well-being are (not) related: higher income increases income satisfaction, which in turn, makes the overall evaluation of life more positive. This relationship seems particularly important to be examined in the high-income context, having in mind the law of diminishing marginal utility, i.e. the counterintuitive notion that income has no significant effects on other well-being indicators at higher income levels. In order to fill this gap, we investigate the link between income and income satisfaction over time. We use OECD data on average disposable household income and the European Social Survey data on average income satisfaction from fourteen European developed economies, for the period between 2002 and 2018.

Our results indicate that during the observed period, disposable household income has been increasing, while there were no significant changes in income satisfaction. Furthermore, within the hierarchical linear modeling (HLM)

framework, we show that while between-country variations in income affect income satisfaction, the link between income and income satisfaction over time is not significant. We discuss our results in terms of Easterlin paradox and present the implication of our work for future research in this field.

This paper is structured as follows. After this introduction, in the second section we present literature a short literature review and our theoretical framework based on the social comparison theory, the hedonistic adaptation theory, and the aspiration level theory. In the third section we present the data and the descriptive results, while in the fourth section we present the estimation within the HLM framework and the results from the analysis. The last section concludes.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. Material Well-Being, Income Satisfaction and Income

Material well-being, which is one of the essential components of the overall quality of life, can be defined as people's consumption possibilities and their command over resources (OECD 2013). Many studies which use cross-sectional data confirm a positive relation between different aspects of subjective and objective indicators of material well-being: between accumulated wealth and financial satisfaction (Hansen et al. 2008), financial behavior and financial satisfaction (Xiao et al. 2009), wealth, income and consumption, and standard of living satisfaction (Headey et al. 2008), material goods index and subjective economic well-being (Hayo and Seifert 2003).

In this paper, we focus on one particular indicator of material well-being – income satisfaction. Previous studies indicate that income satisfaction tends to be higher in countries with higher income levels (Ng and Diener 2014; Morrison et al. 2011; Christoph and Noll 2000), while the same is true for within–country estimates: individuals from the highest income groups are more satisfied with their financial situation than individuals from lower-income groups (Diener and Oishi 2000; Ferrer-i-Carbonell and Gërxhani 2010; Vera-Toscano et al. 2006). In general, a large number of studies have reported a positive relationship between income and well-being measures in the cross-section (Helliwell et al. 2013; Diener and Biswas-Diener 2002; Cummins 2000, Vladisavljević and Mentus 2019).

The conclusions are less unified, however, when the relationship between well-being indicators and income is examined through time. According to Easterlin (1974), increasing average income levels in a country will not lead to higher well-being levels. His original research and findings, later labelled as "Easterlin paradox" continue to be a subject of debate and extensive research thirty years after his work, with research getting the same conclusions as Easterlin (e.g. Di Tella and Macculloch 2010; Blanchflower and Oswald 2004), or findings contradicting his work (Stevenson and Wolfers 2008; Sacks et al. 2012). However, as mentioned in the introduction, all of these researches examine the

nexus between income and general well-being indicators, while the research investigating the relationship between income and income satisfaction over time is non-existing.

Theoretically, Easterlin paradox has been linked with the social comparison theory, the hedonistic adaptation theory, and the aspiration level theory. According to these theories, increases in real income over time do not necessarily increase subjective well-being levels. In the next part of this section, we present theories of social comparison, hedonistic adaptation and level of aspiration, which provide a theoretical background of Easterlin's hypothesis.

2.2. Social Comparison

Social comparison theory (Festinger 1954a) argues that individuals tend to evaluate themselves, their opinions, abilities and well-being through comparison with others.[3] This argument is in line with the relative income hypothesis formulated by Duesenberry (1967), according to which individual's income satisfaction is dictated more by a level relative to others than by absolute level of income, and that there is a struggle to keep income on a level with that of relevant others. The assumption also reflected in Hirsch's "positional and status" goods (Hirsch 1976), which may not be augmented because their value derives from the fact that they are not available to others. Frank (1985, 1999, in: Binswanger 2006) also emphasizes the relevance of status goods, and he understands the production of these goods as a misallocation of productive resources, as in the final analysis, they are incapable of rising overall well-being.

As Binswanger (2006) notes, it is impossible for everybody to outperform everybody else, and the search for higher status becomes on aggregate a zero-sum game. Thus, even if income grows for every individual, this does not result in increased relative income for every member of the society, and the dissatisfaction of another annuls the gains of satisfaction resulting from increased income for one member. Finally, even if an individual happens to outperform relevant others, the satisfaction with income due to the relative position is continuously eroded by overall income growth.

Many studies have indicated that satisfaction with different well-being domains is affected by relative income comparisons. For example, Clark et al. (2009) showed that conditional on their own income and neighbourhood median income, individuals are more satisfied with life as their percentile neighbourhood ranking improves. Similarly, Card et al. (2012) investigated how knowledge of one's position in the pay distribution of immediate coworkers affects job satisfaction and job search intentions. They found that when the workers are given the information that they are paid below the median for their department and occupation (particularly for those in the lowest pay quartile), this reduces their job satisfaction and increases their intention to look for a new job. On the other hand, workers paid above the median showed no significant changes in job satisfaction and job change intentions. Secondly, the effect of the

3 Also, there is a tendency to stop comparing oneself with others who are perceived as very divergent, especially in relevant dimensions (Festinger 1954b).

treatment is more closely related to the pay rank than to the actual level of pay relative to the median in the pay unit.

Following the social comparison theory, therefore, individuals are satisfied with their income if they have more than the relevant others and dissatisfied otherwise. Thus, a proportional increase in all incomes would leave average satisfaction unaffected (Angeles, 2010).

2.3. Hedonic Adaptation

Hedonic adaptation is the psychological process by which people become accustomed to a positive or negative stimulus, such that the emotional effect of that stimulus is attenuated over time. It occurs in response to both positive and negative experiences, to a single or a recurring event, and it must be constant or repeated for adaptation to occur (Lyubomirsky 2011).[4] Accordingly, the increase in individual income should not have long-term effects on income satisfaction, as a person adapts to the change after a certain period.

Hedonic adaptation theory is very similar to the set-point theory, according to which there is a level of satisfaction with different domains which remains practically constant during the life cycle, because innate characteristics such as personality and temperament have a substantial effect on well-being – in the long-run, individuals are fixed at hedonic neutrality (Bruni and Porta 2007). Therefore, life circumstances including variations in health and income typically account for a very small (and temporary) percentage of variation in satisfaction with different domains – individuals initially do react to events and their well-being varies, however soon they return to baseline levels of well-being that are determined by personality factors.

The vast literature on well-being has shown that many major life events have only a temporary effect on self-reported well-being, for example, after one or two years maximum (Williams 2011).[5] Brickman et al. (1978) found that lottery winners were no happier than non-lottery winners, while people with paraplegia were not nearly as unhappy as they expected, and these authors first suggested process of hedonic adaptation. Also, even when this process does not fully restore ones pre-injury level of well-being, it substantially weakens hedonic losses. Bottan and Perez Truglia (2011) found that well-being increases one year after negative events like becoming unemployed or widowed, and it decreases one year after positive events like getting married or having children.

Also, many research shows that there is a hedonic adaptation to income satisfaction. Di Tella et al. (2010) use the data from 1984 to 2000 on 7,812

4 It should be noted that findings also suggest that reaction patterns depend on the type of event (Uglanova and Staudinger 2012). Experiences are not homogenous in terms of anticipation length and the duration of the adaptation. This is important for how responsive a given event is in terms of the precision with which the event's timing is taken into account (ibid.). For example, people tend to adapt more quickly to positive than negative events, second, being uncertain of the outcome inhibits habituation, and finally, normativity is essential, in the sense that of the event within a life-course of a concrete individual, and in the sense of the frequency of this event in a given population (ibid.).

5 See also: Diener et al. 2006.

respondents from Germany and find strong adaptation to income changes, and complete adaptation to income increases within four years. Stutzer (2004) found the effect of income increase adaptation on overall life satisfaction. Also, he hypothesized that people who adapted to a low income in the past lower income aspirations in the present. The data confirmed this hypothesis – respondents who were in a much worse financial situation in the previous year reported lower aspirations, while a much better financial situation in the past is reflected in a higher aspiration level today. This is very relevant for the aspiration level theory, which is presented in the next part.

2.4. Aspiration Level

Aspiration level theory centers on the belief that individual well-being is determined by the gap between aspiration and achievement (Stutzer 2004). Aspirations tend to rise in line with rising income – as their incomes rise, individuals are induced to seek continuous and even higher incomes in order to maintain the same level of satisfaction. Additional income initially provides more satisfaction as it makes possible individuals to buy more goods and services. However, they tend to adapt to higher income by rising income aspirations. The rising aspirations, in turn, lower the satisfaction individuals derive from a certain level of income, as the well-being of additional consumption wears off. In the longer run, this causes satisfaction to stagnate because the gap between income and satisfaction with income remains fairly constant (Binswanger 2006).

Prior research indicates that people adapt their aspirations in response to changes in their income.[6] For example, Stutzer (2004) found that higher income aspirations reduce people's overall life satisfaction – the negative effect of an increase in the aspiration level on well-being is of a similar absolute magnitude to the positive effect of an equal increase in income. Also, the results indicate that a higher average income in the community increases people's levels of aspiration, and the estimated effects are more significant for people who interact with other community members. Clark (1999) used the panel data on 2,000 British employees to show that overall job satisfaction is strongly positively correlated with the change in the employees' pay between waves, but is unrelated to the current level of pay.

Also, many studies provide evidence that relative income affects well-being and interpret these findings by aspirations rise effect (Clark et al. 2008, in: Knight and Gunatilaka 2012). Easterlin (2005) found that in the United States, between 1978 and 1994 there was an apparent rise of the share of respondents wishing to travel abroad, to own a swimming pool, and to own a vacation home. However, the share of those who succeeded in achieving it at every moment of observations was much smaller despite rising incomes over the period. In these domains, Easterlin notes, there was a complete adaptation and aspiration rise. Easterlin also showed that income aspirations are rising in proportion to income.

6 Also, according to Sen (1990) and Elster (1982), there is a prevalent ability among poor individuals to adapt their aspirations to their material situation.

* * *

The theories presented may, to a great extent, explain not only the Easterlin paradox but, by the equivalent mechanisms, the lack of the relationship between the objective income and income satisfaction also. Having these mechanisms in mind, we hypothesize that these variables are not related in the long-run. In the following section, we present the data and provide descriptive statistics and trend analyses.

3. DATA AND DESCRIPTIVE STATISTICS

3.1. Data

We use income satisfaction data from the European Social Survey – ESS, which is conducted bi-annually since 2002. ESS uses nationally representative samples to collect data on a variety of different socio-economic indicators. For this research, we use the ESS data from developed countries of Western, Northern and Southern Europe, for which the data are available for the period from 2002 to 2018. These are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. In all the rounds of the European Social Survey, satisfaction with present household income is measured by using the question: "Which of the descriptions on this card comes closest to how you feel about your household's income nowadays?". Responses are given on a four-point scale, where 1 means "Living comfortably on present income", 2 "Coping on present income", 3 "Finding it difficult on present income", and 4 "Finding it very difficult on present income". For the analysis, we use country averages of income satisfaction for each year. Additionally, we reverse the four-point scale so that the higher levels of income satisfaction correspond to higher values of the variable. The average income satisfaction in the sample is 2.2, ranging from 1.5 to 2.6.

The data on the objective counterpart of income satisfaction, real household disposable income are taken from the OECD (2019). Disposable income, according to OECD (2019) is, as a concept, closer to the idea of income as generally understood in economics, than is either national income or gross domestic product. This indicator corresponds to the sum of wages and salaries, and other income, net property income, net current transfers and social benefits other than social transfers in kind, less taxes on income and wealth and social security contributions paid by employees, the self-employed and the unemployed. OECD provides data only on real net disposable income growth rate which, if used as a measure of income, would eliminate country-level differences in incomes. In order to account for the country-level differences in incomes, as a starting point of income, we use median household disposable income per capita from EU-SILC for 2017, adjusted for the comparative price levels of final consumption by private households [ratio between Purchasing power parities (PPPs) and market exchange rate for each country]. We then use the OECD real net disposable income growth rates to reconstruct the series for the entire

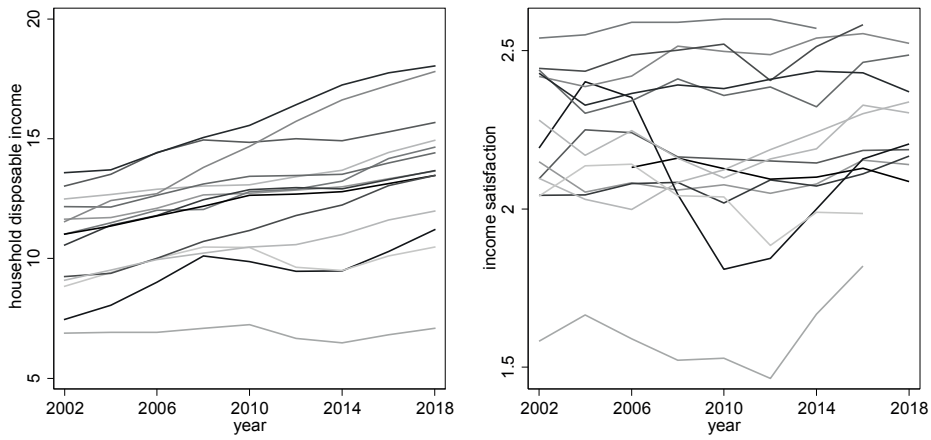
period.[7] The average value of the variable is 12,124 EUR PPP (2017=100), ranging from 6,481 to 18,041 EUR PPP.

We have applied post-stratified design weight (which is constructed using the information on age, gender, education, and region) in order to mutually adjust individual respondents' probabilities of being sampled, accounting for differences in inclusion probabilities, sampling errors and possible non-response errors (Kaminska, 2020).

3.2. Descriptive Statistics and Trends

Figure 1 (left), indicates a clear increasing trend of the real household net disposable income in the period analyzed (see Tables 2 and 3 in Appendix). The rise was most pronounced in Norway, Ireland and Sweden, where real income increased by about 50% over 16 years, and least pronounced in Portugal, Spain, Belgium, Netherlands and Germany where it remained below 20%. It is also noticeable that the 2008 economic crisis had a different effect on different countries: in some countries, there was an evident stagnation/lowering of the income during the crisis, for others the crisis had not significantly affected the increasing trends.

Fig. 1 Real disposable income (left) and income satisfaction (right) trends by country



On the other side, income satisfaction remained approximately constant over the entire observed period (Figure 1, right). The exception is the case of Ireland, with an evident substantial decline of perceived household income adequacy in the period after the economic crisis indicated.

7 Ideally, we would use the median equivalised disposable household income for all years, but it is not available for the entire period analysed. Data from other sources (e.g. EU-SILC, 2019), also clearly indicate a substantial rise of median income during the observed period.

In order to examine the statistical significance of long-term changes in objective income levels and income satisfaction at the country level, paired sample t-tests have been applied. The results indicate a statistically significant increase in mean disposable household income between 2002 and 2018 (t_{14}= 3.194, p<0.001), while the change in income satisfaction in the same period was not significant (t_{14}= 0.755, p>0.1).

4. REGRESSION ANALYSIS

4.1. Empirical Model and Estimation Method

In order to investigate the nexus between income and income satisfaction directly, we follow Diener et al. (2013) and split income variable y_{ct} (income in country c for the period t) to between– and within-country components. Between-country income $\bar{y}_c$ is calculated as the average country income, and effectively captures the differences between the countries in income levels. We then deduct the average country income $\bar{y}_c$ from the original income variable y_{ct}, to arrive to mean-centered within-country income $\tilde{y}_{ct}$. Centering of the variable removes between-country variation, so the variable $\tilde{y}_{ct}$ represents within-country, i.e. the variation of income over time. Then both $\bar{y}_c$ and $\tilde{y}_{ct}$ enter the empirical model for the estimation of the effect of income on income satisfaction IS_{ct}:

$$IS_{ct} = \beta_0 + \beta_1\bar{y}_c + \beta_2\tilde{y}_{ct} + w_{ct} \quad \textbf{(1)}$$

As between-country income $\bar{y}_c$ is constant across countries, we further follow Diener et al. (2013) and use hierarchical linear modeling (HLM) to estimate the association between income satisfaction and income. Following the HLM conventional notation, within-country income $\tilde{y}_{ct}$ is a Level 1 variable, as it varies both across countries and time; while between-country income $\bar{y}_c$ is a Level 2 variable as it varies only across countries. Besides correcting the standard errors of the Level 2 variable for the lower number of degrees of freedom, HLM also allows applying random variance components to intercept and slopes of the model and to control for the potential autocorrelation in the residuals w_{ct} (Raudenbush and Bryk 2002), which are typically described in terms of the k-ordered autoregressive model. Model coefficients are then estimated via maximum likelihood (ML) procedure. Given the relatively small sample for the analysis, we test our results' robustness by applying Kenward–Roger (1997) correction of degrees of freedom. We use both level and log specifications of income as an additional robustness check.

4.2. Results

We first test if the effects of within-country income $\tilde{y}_{ct}$ on income satisfaction are different across countries, i.e. whether we should include a random intercept or random slope component as well in the HLM. The results first suggest that the random intercept component of the model is significant (LR chi2(1) = 134.86;

p<0.001), indicating that the random intercept model is a preferred specification to ordinary least square (OLS) specification. Random intercept effectively captures the differences between countries in the level of income satisfaction. Estimation results also suggest that the random slope of $\tilde{y}_{ct}$ should also be in the model, as the likelihood ratio test, which compares the random slope and random intercept model, shows the preference for a random slope model (LR chi2(1) = 4.5, p<0.05). In other words, we reject the null hypothesis that the effects of within-country income trends on income satisfaction are the same for all countries.

Unlike in previous studies, using the natural logarithm of income instead of income levels does not yield inarguably better specification in terms of the lower log-likelihood or higher Wald chi-square statistics. Therefore, we estimate the equation (1) using both linear and log specification of income, and we check the robustness of the results by applying Kenward-Roger correction for small samples. Results of the estimation are presented in Table 1.

Table 1 Effects of within– and between-country income on income satisfaction (estimates from hierarchical linear modeling)

	REML regression		Kenward-Roger correction	
	linear	log	linear	log
Within-country income	0.017	0.197	0.017	0.197
	(0.012)	(0.143)	(0.012)	(0.143)
Between-country income	0.069***	0.795***	0.069***	0.795***
	(0.023)	(0.243)	(0.023)	(0.243)
Random intercept	-3.544***	-1.023**	-3.544***	-1.023**
	(0.469)	(0.424)	(0.469)	(0.424)
Random slope	-1.640***	-1.683***	-1.640***	-1.683***
	(0.209)	(0.209)	(0.209)	(0.209)
Constant	1.374***	0.249	1.374***	0.249
	(0.284)	(0.600)	(0.284)	(0.600)
Wald chi / F	11.08***	12.65***	5.23**	6.00**
Log likelihood	145.54	139.36	145.54	139.36
Observations	117	117	117	117
Number of groups	14	14	14	14

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

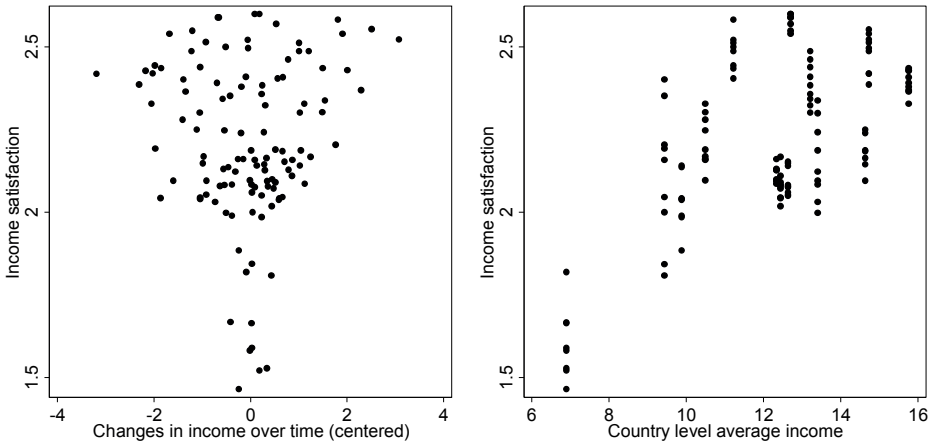
Note: Kenward-Roger correction for small samples changes the number of degrees of freedom to be used when estimating the significance of the coefficients, while the coefficients and standard errors remain the same.

As expected, between-country income effects on income satisfaction are statistically significant in all specifications, confirming that countries with higher income on average have higher income satisfaction levels. A 10,000 EUR (PPP) higher average income of a country per year increases the country's average income satisfaction by 0.69. In relative terms, log specification suggests that 1% higher country income associated with income satisfaction higher by 0.8.

More importantly for our analysis, the within-country income effect on income satisfaction is not statistically significant, neither in level nor in log specifications. This result indicates that although there is a link between income and income satisfaction, in line with the theories presented, this link can be entirely attributed to the cross-country variation, while the association between these two variables over time is none-existing. In other words, we find no evidence that increasing the income results in a higher level of income satisfaction. However, it should be noted that the random slope component of the model is also significant, indicating that this link could be significant for particular countries. A low number of observations per country (maximum 9) is not a sufficiently long time series to analyze these differences further.

This is also visible from Figure 2, where we plot two income components against income satisfaction. Income satisfaction increases with higher levels of between-country income, however, higher levels of within-country income are not related to increases in income satisfaction.

Fig. 2 Income satisfaction nexus with within-country (left) and between-country (right) income variations



5. CONCLUSIONS

In this paper, we examined the nexus between income satisfaction and household disposable income in fourteen developed European economies in the 2002–2018 period. While previous research has indicated that countries and individuals with higher income have higher levels of income satisfaction, little is known about whether the increases in income over time lead to increases in income satisfaction. In line with the research examining the so-called Easterlin paradox, which suggests that increases in countries' income levels are not associated with rising levels of general subjective well-being, we examine if

income increases lead to increases in income satisfaction. Such an examination is especially relevant for high-income economies, given the diminishing marginal utility of income.

Our results show that, although there was a significant rise in household disposable income between 2002 and 2018, there was no significant change in income satisfaction in the same period. The analysis of the data within the hierarchical linear modeling (HLM) confirms that changes in income over time do not lead to changes in income satisfaction. Therefore, the result presented in our research is in line with the Easterlin paradox, which suggests that, over time, there is no link between income and general subjective well-being. In line with our theoretical framework, these results can be explained in terms of the social comparison theory, hedonic adaptation theory, and aspiration level theory: increasing income does not bring positive effects on income satisfaction due to the relevance of the relative and not the absolute income, adaptation to income changes or higher levels of aspirations resulting from income rise.

Although our data do not allow distinguishing between these three potential explanations, the result we obtained is important as it offers additional insight into the nature of the Easterlin paradox. We show that the non-existing link between income and general satisfaction can be explained by the lack of association between income and income satisfaction. Since income increases do not increase income satisfaction, there is no reason to expect that income rises will positively affect general satisfaction. Our result shows that income satisfaction is an important concept and that, if available, it should be a part of the research design when investigating the Easterlin paradox.

Additionally, this research adds additional arguments confirming the Easterlin paradox and indicating that developed societies' economic policies should not focus only on income growth but also on other, non-monetary aspects of well-being, such as good working conditions, work-life balance, and stable and secure environments.

Limitations

An important limitation of the work is that our findings are limited to high-income countries. In line with the rule of diminishing marginal utility, the lack of a link between income and income satisfaction is more likely to be found in high-income countries and cannot be generalized to other countries. However, our findings confirm the importance of non-monetary aspects of well-being, which low– and middle-income countries should be aware of during their further development.

Additionally, the significant random slope in our model suggested that there could be a significant (positive or negative) link between income and income satisfaction in some countries. However, a small number of observations per country does not enable that kind of analysis.

Appendix: Numerical Data Tables

Table 2. Real disposable income by country and year (EUR)

Country	2002	2004	2006	2008	2010	2012	2014	2016	2018
Austria	13031	13517	14431	14958	14850	15007	14922	15294	15675
Belgium	11643	11715	12093	12659	12715	12863	12995	13336	13658
Denmark	11020	11490	12021	12044	12785	12888	13231	14166	14642
Finland	10570	11390	11795	12452	12867	12950	12909	13290	13672
France	11020	11353	11781	12190	12631	12684	12782	13127	13457
Germany	12486	12669	12889	13018	13085	13410	13680	14422	14940
Ireland	7456	8045	9010	10100	9868	9460	9479	10300	11196
Netherlands	12166	12152	12633	13110	13438	13457	13514	13990	14416
Norway	11536	12415	12705	13800	14676	15734	16629	17230	17807
Portugal	6881	6911	6924	7082	7232	6657	6481	6807	7080
Spain	8834	9422	10004	10479	10468	9639	9494	10109	10470
Sweden	9242	9378	10008	10711	11172	11789	12236	13036	13465
Switzerland	13576	13698	14405	15059	15563	16420	17248	17756	18041
United Kingdom	9089	9519	9947	10231	10476	10576	11001	11610	11974

Table 3. Income satisfaction by country and year

Country	2002	2004	2006	2008	2010	2012	2014	2016	2018
Austria	2.10	2.25	2.24	2.16			2.15	2.19	2.19
Belgium	2.15	2.05	2.08	2.06	2.08	2.05	2.08	2.15	2.14
Denmark	2.54	2.55	2.59	2.59	2.60	2.60	2.57		
Finland	2.04	2.04	2.08	2.08	2.02	2.09	2.07	2.11	2.17
France			2.13	2.16	2.13	2.09	2.10	2.13	2.09
Germany	2.10	2.03	2.00	2.08	2.12	2.19	2.24	2.30	2.34
Ireland	2.19	2.40	2.35	2.05	1.81	1.84	2.00	2.16	2.21
Netherlands	2.44	2.30	2.34	2.41	2.36	2.38	2.32	2.46	2.49
Norway	2.42	2.39	2.42	2.51	2.50	2.49	2.54	2.55	2.52
Portugal	1.58	1.66	1.59	1.52	1.53	1.47	1.67	1.82	
Spain	2.04	2.14	2.14	2.04	2.04	1.88	1.99	1.99	
Sweden	2.44	2.44	2.49	2.50	2.52	2.41	2.51	2.58	
Switzerland	2.43	2.33	2.37	2.39	2.38	2.41	2.44	2.43	2.37
United Kingdom	2.28	2.17	2.25	2.16	2.10	2.16	2.19	2.33	2.30

References

Angeles, L. (2010). Adaptation or Social Comparison? The effects of income on happiness, SIRE Discussion Papers 2010–03, Scottish Institute for Research in Economics (SIRE).

Binswanger, M. (2006). Why does income growth fail to make us happier? *The Journal of Socio-Economics*, 35, pp. 366–381.

Blanchflower, D., and Oswald, A. (2004). Well-being over time in Britain and the USA. *Journal of Public Economics*, 88, pp. 1359–1386.

Bottan, N. L., Perez Truglia, R. (2011). Deconstructing the hedonic treadmill: Is happiness autoregressive? *Journal of Socio-Economics*, 40, pp. 224–236.

Brickman, P. and Campbell, D.T. (1971). Hedonic Relativism and Planning the Good Society, in: M.H. Appley (ed.). *Adaptation-Level Theory*, New York. Academic Press, pp. 287–305.

Brickman, P., Coates, D., and Janoff-Bulman, R. (1978). Lottery Winners and Accident Victims: Is Happiness Relative? *Journal of Personality and Social Psychology*, 36, pp. 917–927.

Bruni, L., and Porta, P. (2007). Introduction, in: Handbook on the Economics of Happiness, L. Bruni L. and P. Porta (eds.). *Handbook on the Economics of Happiness*, Cheltenham, Edward Elgar, pp. xi–xxxvii.

Card, D., Mas, A., Moretti, E., and Saez, E. (2012). Inequality at Work: The Effect of Peer Salaries on Job Satisfaction, *American Economic Review*, 6, pp. 2981–3003.

Christoph, B., and Noll, H.-H. (2003). Subjective well-being in the European Union during the 90's, *Social Indicators Research*, 64, pp. 521–546.

Clark, A. E. (1999). Are Wages Habit-Forming? Evidence from Micro Data, *Journal of Economic Behavior and Organization*, 39, pp. 179–200.

Clark, A. E., Kristensen, N., and Westergård-Nielsen, N. (2009). Economic Satisfaction and Income Rank in Small Neighbourhoods, *Journal of the European Economic Association*, 7, pp. 519–527.

Cummins, R. A. (2000). Personal Income and Subjective Well-Being: A Review, *Journal of Happiness Studies*, 1, pp. 133–158.

Di Tella, R., and Macculloch, R. (2010). Happiness Adaptation to Income Beyond Basic Needs, in: E. Diener, D. Kahneman, and J. Helliwell (eds.). *International Differences in Well-Being*, Oxford, Oxford University Press, pp. 139–165.

Di Tella, R., Haisken-De New, J., and MacCulloch, R. (2010). Happiness adaptation to income and to status in an individual panel, *Journal of Economic Behavior and Organization*, 76, pp. 834–852.

Diener, E, Lucas, R., and Napa Scollon, C. (2006). Beyond the Hedonic Treadmill: Revising the Adaptation Theory Of Well-Being, *American Psychologist*, 61, pp. 305–314.

Diener, E., and Biswas-Diener, R. (2002). Will Money Increase Subjective Well-Being? A Literature Review and Guide to Needed Research, *Social Indicators Research*, 57, pp. 119–169.

Diener, E., and Oishi, S. (2000). Money and Happiness: Income and Subjective Well-being across Nations, in: E. Diener and E.M. Suh (eds.). *Culture and Subjective Well-Being*, Cambridge, The MIT Press, pp. 185–218.

Diener, E., Tay, L., and Oishi, S. (2013). Rising income and the subjective well-being of nations, *Journal of Personality and Social Psychology*, 104, pp. 267–276.

Duesenberry, J. (1967). *Income, Saving and The Theory of Consumer Behavior*, New York, Oxford University Press.

Easterlin, R. (1974). Does Economic Growth Improve the Human Lot? Some Empirical Evidence, in: P. David and M. Reder (eds.). *Nation and Households*

in Economic Growth: Essay in Honour of Moses Abramovitz, New York, Academic Press, 89–125.

Easterlin, R. (2005). A Puzzle for Adaptive Theory, *Journal of Economic Behavior and Organization*, 56, pp. 513–521.

Elster, J. (1982). Sour grapes – utilitarianism and the genesis of wants, in: A. Sen and B. Williams (eds.). *Utilitarianism and Beyond*, Cambridge, Cambridge University Press, pp. 219–238.

EU-SILC (2019). Mean and median income by household type. Available at appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_di04&lang=en. Accessed on 20 April 2019.

Ferrer-i-Carbonell, A., and Gërxhani, K. (2010). Financial Satisfaction And (In) Formal Sector In A Transition Country. *Social Indicators Research*, 102, pp. 315–331.

Festinger, L. (1954a). A Theory of Social Comparison Processes, *Human Relations*, 7, pp. 117–140.

Festinger, L. (1954b). Motivation leading to social behavior, in: M. Jones (ed.). *Nebraska symposium on motivation*, Lincoln, University of Nebraska Press, pp. 191–218.

Hansen, T., Slagsvold, B., and Moum, T. (2008). Financial Satisfaction in Old Age: A Satisfaction Paradox or a Result of Accumulated Wealth? *Social Indicators Research*, 89, pp. 323–347.

Hayo, B., and Seifert, W. (2003). Subjective economic well-being in Eastern Europe, *Journal of Economic Psychology*, 24, pp. 329–348.

Headey, B., Muffels, R., and Wooden, M. (2007). Money Does Not Buy Happiness: Or Does It? A Reassessment Based on The Combined Effects Of Wealth, Income And Consumption, *Social Indicators Researc*h, 87, pp. 65–82.

Helliwell, J. F., Layard, R., and Sachs, J. (2013). *World Happiness Report 2013*, New York, Sustainable Development Solutions Network.

Hirsch, F. (1976). *Social Limits to Growth*., New York, Twentieth Century Fund.

Kaminska, O. (2020). Guide to Using Weights and Sample Design Indicators with ESS Data https://www.europeansocialsurvey.org/docs/methodology/ESS_weighting_data_1_1.pdf

Kenward, M. G., and Roger, J. H. (1997). Small Sample Inference for Fixed Effects from Restricted Maximum Likelihood, Biometrics, 53, pp. 983.

Knight, J., and Gunatilaka, R. (2012). Income, aspirations and the Hedonic Treadmill in a poor society, *Journal of Economic Behavior and Organization*, 82, pp. 67–81.

Lewin, K. et al. (1944). Level of aspiration, in: J. McV. Hunt (ed.). *Personality and Behaviour Disorders*, New York, Ronald Press Company Hunt, pp. 333–378.

Lyubomirsky, S. (2011). Hedonic Adaptation to Positive and Negative Experiences, in: S. Folkman (ed.). *The Oxford Handbook of Stress, Health and Coping*, Oxford, Oxford University Press, pp. 200–224.

Morrison, M., Tay, L., and Diener, E. (2011). Subjective Well-Being and National Satisfaction, *Psychological Science*, 22, pp. 166–171.

Ng, W., and Diener, E. (2014). What matters to the rich and the poor? Subjective well-being, financial satisfaction, and postmaterialist needs across the world, *Journal of Personality and Social Psychology*, 107, pp. 326–338.

OECD (2013). OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth, OECD Publishing, Paris

OECD (2019). Household disposable income (indicator). doi: 10.1787/dd50eddd-en (Accessed on 21 April 2019)

Raudenbush, S. and Bryk, A. (2002). *Hierarchical Linear Models*, Thousand Oaks, Sage Publications.

Sacks, D. W., Stevenson, B., and Wolfers, J. (2012). Subjective Well-Being, Income, Economic Development, and Growth in: P. Booth (ed.). *...and the Pursuit of Happiness: Well-Being and the Role of Government*. London: Institute of Economic Affairs. p. 59–97.

Sen, A., (1990). Development as capability expansion, in: K. Griffin and J. Knight (eds.). *Human Development and the International Development Strategy for the 1990s*, Macmillan, London, pp. 41–58.

Stevenson, B., and J. Wolfers (2008). Economic Growth and Subjective Well-Being: Reassessing the Easterlin Paradox. *Brookings Papers on Economic Activity*, 1, pp. 1–87.

Stutzer, A. (2004). The Role of Income Aspirations in Individual Happiness, *Journal of Economic Behavior and Organization*, 54, pp. 89–109.

Uglanova, E. A., and Staudinger, U. M. (2012). Zooming in on Life Events: Is Hedonic Adaptation Sensitive to the Temporal Distance from the Event? *Social Indicators Research*, 111, pp. 265–286.

Vera-Toscano, E., Ateca-Amestoy, V., and Serrano-Del-Rosal, R. (2005). Building Financial Satisfaction, *Social Indicators Research*, 77, pp. 211–243.

Vladisavljević, M., and Mentus, V. (2019). The Structure of Subjective Well-Being and Its Relation to Objective Well-Being Indicators: Evidence from EU-SILC for Serbia, *Psychological Reports*, 122(1), pp. 36–60.

Williams, S. (2011). Self-Altering Injury: The Hidden Harms of Hedonic Adaptation. *Cornell Law Review*, 96, pp. 535–582.

Xiao, J., Tang, C., and Shim, S. (2008). Acting for Happiness: Financial Behavior and Life Satisfaction of College Students, *Social Indicators Research*, 92, pp. 53–68.