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Subjective Well-being and Income: Analysis and Evidence on *Easterlin Paradox*

Many scholars have argued that increasing an average income did not raise an average subjective well-being, a claim that became known as *Happiness Paradox*, namely *Easterlin Paradox*. The present article has focused on the theoretical and practical aspects of the relationships of subjective well-being and income but a special focus is on the assessment the validity of this claim in comparisons of both rich and poor countries, as well as over a short, medium and long period. Analyzing multiple datasets, multiple definitions of "basic needs" and multiple questions about well-being, we have not found any support for *Easterlin Paradox* over a short-term period. The relationship between well-being and income is roughly linear-log and does not diminish as incomes rise. However, higher income is no longer associated with higher in subjective well-being over the long period.

Keywords: subjective well-being, happiness, income, *Easterlin Paradox*, *Happiness Paradox*.

Tyrimo rezultatai rodo, kad nuo tam tikro lygio išaugusios vidutinės pajamos nedidina vidutinės subjektyvios gerovės. Šis reiškinys, žinomas kaip *Laimės paradoksas*, arba *Easterlin paradoksas*, tiriamas šiame straipsnyje tarp aukšto išsivystymo lygio ir žemo išsivystymo lygio šalių trumpuoju, vidutiniu ir ilguoju laikotarpiu. Pagal pagrindines tyrimo, pristatyto šiame straipsnyje, išvadas, kad trumpuoju laikotarpiu *Easterlin paradoksas* neegzistuoja, vidutiniu laikotarpiu ryšys tarp pajamų ir laimės yra tiesinis-logaritminis, o ilguoju laikotarpiu pajamų pokyčiai laimės pokyčiams įtakos neturi, *Easterlin paradoksas* egzistuoja.

Raktažodžiai: subjektyvi gerovė, laimė, *Easterlin paradoksas*, *Laimės paradoksas*.

Introduction

The relationship between subjective well-being and income is puzzling. Within a single country, at a given moment in time, those with more income are, on average, happier than those with less. To put in a different way, people living in rich countries are happier than those who live in poor countries (Frey, Stutzer, 2000). However, the correlation between income and happiness exists and is robust. On the other hand, there is evidence that over time and across different countries, rises in

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aggregate income are not associated with rises in aggregate happiness.

The American economist and demographer Richard Easterlin managed to open up the debate around this paradox. He is one of the first economists focusing his economic research directly on happiness. R. A. Easterlin (1974) found neither clear nor evident correlation between happiness and income between different countries. The most interesting results came from the analysis of time series at the national level: in 30 surveys over 25 years (from 1946 to 1970 in the USA) real income per capita rose by more than 60 %, but the level of happiness, namely the proportion of people who rated themselves as "very happy", "fairly happy", or "not too happy", remained almost unchanged (Easterlin, 1974).

Happiness research in economics takes reported subjective well-being as a proxy measure for utility. This allows for testing the relationship between happiness and income in a new way. It should be noted, that this paper studies happiness as a reaction of an individual to environmental factors, while life satisfaction shows a long-term state of individual's happiness.

The object of this paper is the influence of income on happiness.

The aim of the research is to assess the influence of income on happiness, re-assessing the *Easterlin Paradox*, over time across different countries.

To reach the aim of the research the following **tasks** were set:

- To analyze the concept of happiness as a part of subjective well-being.
- To present the main research methods used for reassessing *Easterlin paradox*.
- To reassess an existence of *Easterlin paradox* in the world countries,

emphasizing their level of development and different periods.

Can economic theory explain these paradoxical observations? Perhaps, with some amendment for systematic change in material preferences or aspirations it can. In what follows, after a brief discussion about happiness and the nature of *Happiness paradox*, known as *Easterlin paradox*, it is reassessed and there is presented some supporting evidence on this paradox in this article.

The methods of this research are: systematic and comparative analysis of scientific literature, graphic modeling, and mathematical, statistical methods.

Concept of Subjective Well-being and Happiness: Theoretical Aspect

Treatment of the concepts of subjective well-being and happiness varies across both theoretical and empirical studies conducted by foreign researchers. R. A. Easterlin (2001, 2003) uses the terms subjective well-being, happiness, satisfaction, and welfare interchangeably. E. Diener et al. (2009) propose that "subjective well-being is a broad concept that includes experiencing pleasant emotions, low level of negative moods, and high life satisfaction". D. Kahneman and A. Deaton (2010) distinguish different aspects of subjective well-being also. They highlight two main aspects of this term, i.e. emotional well-being (sometimes called hedonic well-being or happiness) and life evaluation, namely, satisfaction of life. Emotional well-being (happiness) refers to the emotional quality of an individual's everyday experience. Life evaluation refers to a person's thoughts about his or her life.

R. H. Bremner (2011) agrees that people usually understand happiness and life satisfaction as different concepts and are not using them interchangeably. Empirical researches showed that 6–7 % of completely satisfied people feels depressed. In addition, D. Kahneman and A. Deaton (2010) maintain that happiness is spontaneous evaluation of positive and negative affects while life satisfaction shows an individual's evaluation of his life in a long-term period. Based on analysis of scientific literature and results of subjective well-being studies, the main aspects of subjective well-being have been identified, and can be united into a single scheme (Fig. 1).

There are two most common views of happiness: *eudaimonic* and *hedonistic*. Aristotle was the originator of the concept of eudaimonia. In Ancient Greece happiness was called eudaimonia but, however, the sense of happiness was different – "happiness is not static, it is a reward for clean living" (Dumčius et al., 1990). In a hedonistic view happiness is associated with individual's utility function (Bremner, 2011). L. Bruni and P. L. Porta (2005) introduce two types of hedonistic happiness: individual and social (Fig. 1). Individual

does not need social relationship while social can exist only in a community. D. Kahnemann et al. (2006) in their theory present two types of treadmill which correspond individual hedonistic type of L. Bruni and P. L. Porta (2005) paper: hedonistic and satisfaction. The differences are that the hedonistic type put stress on adaptation while satisfaction – on aspiration (happiness is a difference of desires and achievements).

Hedonistic treadmill is closely associated with Set-point theory, which maintains that the feel of happiness is innate inasmuch as it depends on such inherent qualities as character, capabilities or natural skill to overcome and adapt to emerging difficulties (Bruni, Porta, 2005). S. Byrnes (2005) upholds that an individual doomed to live in a hedonic treadmill forasmuch as an adaptation is unavoidable – an individual's feel of happiness adjusts to each level of consumption. As a result, an individual is consuming more and more but remains in the same level of happiness even if the purpose is to obtain long-term happiness. Moreover, as it was mentioned earlier, the social treadmill can exist only in a society because it is intrinsic to *neighborhood*
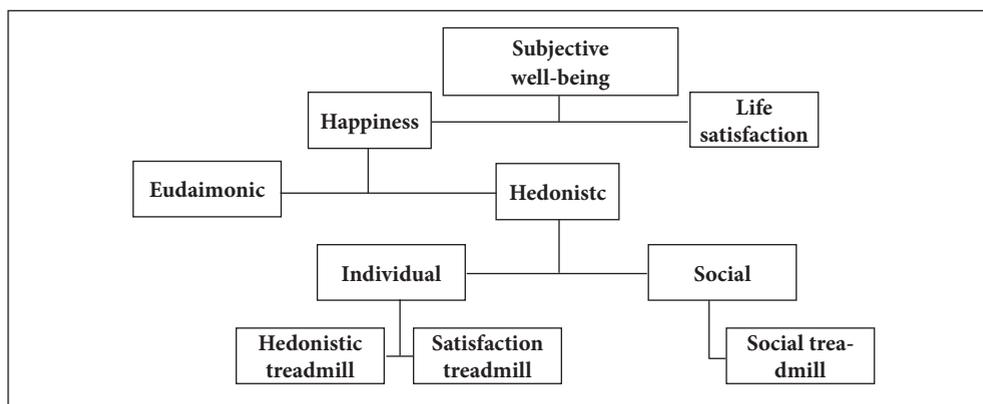

Fig. 1. **Aspects of subjective well-being**

effect. According to L. Bruni and L. P. Porta (2007), the level of human being consumption utility depends not only on absolute but also on the level of relative income, and a consumer cannot choose the best alternative of all because it is affected by its environment. Therefore, in consonance with researchers individual's irrational behavior and adjustment mechanism of happiness determine *Easterlin paradox*.

Methods of the Analysis of *Easterlin Paradox*

As the theoretical analysis has showed, the meaning of the concept of happiness depends on a period, as well as on the development level of a country. Emotional well-being or happiness shows the emotional quality of an individual's everyday experience in a short-time period, while life satisfaction refers to a person's thoughts about his life over the long period. Happiness and life evaluation is also measured in different ways. Our strategy in this paper is to use World database of happiness surveys now available to assess the relationship between happiness and life satisfaction. The principle way in which happiness is measured is a direct question: "Taking all things together, would you say you are: very happy; quite happy; not very happy; not at all happy?" To put in a different way, emotional well-being is assessed by questions about the presence of various emotions in the experience of yesterday. Life evaluation is measured asking the most commonly questions: "All things considered, how satisfied are you with your life as a whole these days?"

D. Kahneman and A. Deaton (2010) have found that happiness and life evaluation have different correlations in the circumstance of people's lives. Therefore, it is important to reassess *Easterlin paradox* over the various periods, i.e. a short-term and a long-term period. If studies of happiness and income are conducted without having first distinguished the different periods, this reduces validity and reliability of the results. Analyzing the difference between a short-term and a long-term period it is important to involve a medium-term period as it shows the cause of this imparity.

To reassess *Easterlin paradox*, a comparative, systemic analysis, correlation and regression analysis are used for different periods:

- In a short-term period 126 world countries are analyzed. They are classified into four categories reflecting their level of development (very high development, high development, medium development and low development countries). Furthermore, in the short-term period two-year panel data are used, which were differentiated and became cross sectional data. To evaluate the influence of income on happiness over a short-term period, data of the periods 2005–2007 and 2010–2012 are used.

- In a medium-term period 31 world countries are analyzed. They are classified into categories reflecting their size (small and big), and the level of development (developed and developing). As a medium-term period is intermediate, it should have the qualities of time series data and cross sectional data, i.e. the period is not long enough to make conclusion that could be made in a long-term period. In this case a panel data is analyzed, and data of the period 2001–2012 is used.

- In a long-term period of the most developed countries – Netherlands are

chosen. It has a largest number of surveys about happiness. Data of the period 1975–2012 is used.

The database of the empirical study conducted consists of statistical data on Human Development Report, World database of Happiness, World Happiness reports, World Bank database. Moreover, the happiness is measured in absolute terms on a 1–10 scale, where 1 means unhappy and 10 – very happy.

The analysis of scientific literature has shown that the results depend on the period. According to this, the formulated hypotheses in this paper are the following:

H1: The increase of GDP leads to the increase of happiness in a short-term period, i.e. *Easterlin paradox* does not exist.

H2: The influence of GDP growth on happiness differs among different development countries in a short-term period.

H3: The increase of GDP leads to the increase of happiness in a medium-term period, i.e. *Easterlin paradox* does not exist.

H4: The influence of GDP growth on happiness differs among different development countries in a medium-term period.

H5: During the long-term period there is no link between the growth of GDP and the level of society's happiness, i.e. *Easterlin paradox* exists.

Having hypothesized, it is necessary to test them, which constitutes the purpose of the further section of this paper.

Existence of *Easterlin Paradox:* Short-term Period

It must be noted that in the previous researches the paradox of happiness has been analyzed within a single country at a given moment in time (Easterlin, 2001) and between different countries (Stevenson, Wolfers, 2008). In this paper the influence of income on happiness is analyzed among 126 world countries in a short-term period (1 observable matches up to 1 country).

In Table 1 Pearson correlation coefficient is presented as a measure of dependence between happiness and GDP rate of changes. The value of correlation coefficient (0.211) shows very low, but still statistically significant, correlation in a short-term period. It should be noted, that the result does not contradict R. A. Easterlin (2001) empirical evidence. He has pointed out, that low correlation between income and happiness is caused by many other factors, which affect happiness level between countries.

The relationship between variation of happiness and GDP is not linear. As a result, a logarithm of the factors has been calculated. Fig. 2 shows the positive income – happiness relationship in 126 world countries. Furthermore, a plot of the figure is divided into 4 areas which are the following: I – decreasing the growth of GDP, the growth of happiness increases; II – increasing the growth of GDP, the growth of

Table 1

Correlation between happiness and GDP rate of changes

		ld_happiness	ld_GDP
ld_happiness	Pearson Correlation	1	**0.211**[*]
	Sig. (2-tailed)		0.018
	N	126	126

Note: * Correlation is significant at the level of 0.05.

happiness increases; III – decreasing the growth of GDP, the growth of happiness decreases; IV – when GDP growth increases, the growth of happiness decreases. There is different number of countries in each area:

- I area – 8 countries: 6 very high economically developed countries (Cyprus, Latvia, Estonia, Norway, Kuwait) and 2 low economically developed countries (Zimbabwe and Haiti);
- II area – 66 countries: 13 very high developed countries; 22 high developed countries, 16 medium developed and 15 low economically developed countries;
- III area – 15 countries: 12 very high developed and 3 low developed countries;
- IV area – 37 countries: 9 very high developed countries, 11 high developed countries, 9 medium developed and 8 low developed countries.

It could be noticed that very high developed countries are dominated in the areas I and III were respectively decreasing the growth of GDP, the growth of happiness increases and decreasing the growth of GDP, the growth of happiness decreases. It means that countries, which are very high developed, have a feature of negative GDP. In the area III at the first place, there are very high developed countries, which are not characterized by growing GDP: Croatia, USA, Portugal, Finland, Hungary, Luxembourg, Great Britain, Denmark, Spain, Italy, Ireland and Greece. Other countries, in which GDP growth slows down, are Guinea, Madagascar and Yemen. Hence, the typical countries in which there is direct and positive relationship between GDP growth and happiness are low, medium and high developed countries. A. E. Clark et al. (2007) in their paper propose that the differences among countries exist because there is a marginal utility of happiness – when countries reach a certain point of an income and GDP still grows, happiness increases but with each
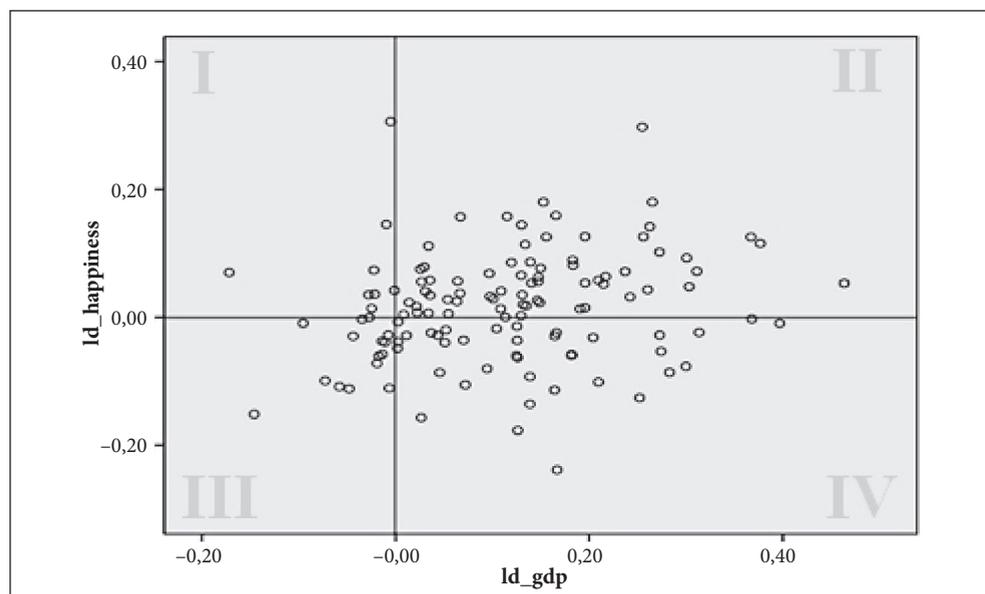

Fig. 2. **Relationship between income (GDP) and happiness**

additional unit of an income it increases less and less. Thereby, the margin of an area IV is an area of paradox of happiness. Lithuania is one of the countries, where growing GDP decreases happiness (area IV).

Fig. 2 shows not only the correlation of happiness and GDP but also the situation of countries in the short-term period – in how many countries GDP increases or decreases. It is notable that variation of happiness is distributed similarly both in positive and negative happiness value areas (I, II and III, IV) but the increase of GDP growth is more common than the decrease (103 countries of 126). The outliers in the Fig. 2 mean that happiness correlates not only with GDP but also with unobservable factors. The biggest positive outlier (area I) is Zimbabwe – 0.005 % decrease of GDP led to 0.306 % increase of happiness. Thus, even if an income decreased a little bit, happiness increased a lot. Accordingly, Zimbabwe is one of the low development countries, so that happiness is mainly influenced by other factors. The biggest negative outliner is Egypt – when GDP increases 0.167 %, happiness decreases 0.239 %. This result could be associated with negative factors that have an impact on happiness within country.

It is important to highlight, that it is not enough to determine the one-way relationship as correlation shows interdependence not excepting which variable is a regressor and which is a regressant. Hence,

a regression analysis must be done. According to the analysis results, the regression model is statistical significant, since *P*-value is 0.018, the difference is significant at the level of 0.05. The coefficient of determination (R^2) is 0.044, i.e. the variation of GDP explains 4.4 % variation of happiness in this model. Furthermore, the significance level of GDP – Student criterion is the same as the significance level of the all model – Fisher criterion (Table 2). In consequence, a hypothesis **H1** – the increase of GDP leads to the increase of happiness in a short-term period, i.e. *Easterlin paradox* does not exist – is accepted.

After the inclusion of qualitative variables, the *P*-value of model becomes 0.038. A model remains statistical significant but the value of adjusted R^2 decreases and is 0.037. Accordingly, the quality of model decreased after involvement of qualitative variables. It is found that the growth of GDP statistically has no different influence on the variation of happiness among different development countries. The results of statistical analysis have shown, that the growth of GDP is statistical significant – the Sig. value is 0.025 and the qualitative variable with medium, high and very high development countries is statistical not significant – Sig. value is 0.326 (Table 3). In conclusion, a regression without qualitative variables is more suitable to express the happiness variation dependence on the growth of GDP. Therefore, a hypothesis

Table 2

Coefficients of variables of regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	**Std. Error**	**Beta**		
1	(Constant)	−0.002	0.011		−0.201	0.841
	ld_GDP	**0.156**	0.065	0.211	2.402	0.018

H2 – the influence of GDP growth on happiness differs among different development countries in a short-term period – is rejected.

Relationship between income (GDP) and happiness can be explained using this formula:

$$\Delta\ln(happiness) = -0,002 + 0,156(\Delta\ln(GDP)) \qquad (1)$$

Formula 1 shows that GDP growth has a positive and direct influence on the variation of happiness but still accurate inference cannot be made because 95 % confidence interval is wide (from 0.027 to 0.284).

All things considered, in a short-term period the correlation graph (Fig. 2) shows not only the two-side correlation but also the instantaneous situation of countries: if GDP and happiness variation increased or decreased, as well as the situation of a country in the context of other countries. The graph also reveals the fact that countries are divided into four groups: countries that have positive GDP variation and positive happiness variation; countries that have positive GDP variation and negative happiness variation; countries that have negative GDP variation and positive happiness variation (exceptions) and countries that have negative GDP variation and

negative happiness variation. Moreover, both marginal GDP utility to happiness and a *paradox of happiness* exist in single countries in a short-term period. Consequently, the growth of happiness in very high developed countries is the slowest. Finally yet importantly, a correlation coefficient demonstrates that the relationship between GDP and happiness variation is weak and cannot demonstrate if happiness variation significantly differs among different development countries. Concluding everything up, the results of regression analysis show that the growth of happiness does not differ significantly among very high, high, medium and low developed countries. Thus, in the short-term period the influence of income (GDP growth) on happiness is positive in all countries in spite of their economic development level.

Existence of *Easterlin Paradox*: Medium-term and Long-term Period

The influence of income (GDP growth) on happiness is analyzed in the context of 31 countries in a medium-term period – 1 Asian, 1 North-American and 29 European countries. They were selected in accordance with their size – small or big, and

Coefficients and significance of the variables

Model		Unstandartized Coefficients		Standartized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	−0.002	0.011		−0.186	0.853
	ld_GDP	**0.236**	0.104	0.320	2.266	0.025
	GDP_all_without_low_development	−0.107	0.108	−0.139	−0.987	0.326

Big				
Bulgaria	Greece	Great Britain	Japan	
Spain	Italy	USA	Norway	
Poland	Romania	France	Finland	
		Sweden	Germany	
Czech Republic	Estonia	Ireland	Austria	
Cyprus	Croatia	Belgium	Denmark	
Latvia	Lithuania	Luxemburg	Netherlands	
Malta	Portugal	Switzerland		
Slovak Republic	Hungary			
Small				

(Developing — left side; Developed — right side)

Fig. 3. **List of countries by their size and development**

the level of development – developed or developing (Fig. 3). Countries which level of development was very high and high in this part of article are named as developed and developing countries, respectively. Countries of which GDP per capita exceeds 35000 dollars per year considered as developed countries, otherwise – developing countries. It should be noted, that Human Development Index (HDI) makes the same results, i.e. countries in which HDI exceeds 0.87 point are considered as developed countries, otherwise – developing countries. Furthermore, countries are grouped according to their size of the area. The big country is held when an area exceeds 110000 km², in other cases a country is assumed as a small country.

In a medium-term period, a *Random Effects* model is applied. It evaluates the dependence of variation of happiness on the variation of GDP among developed big and small, developing big and small countries. The main difference between A *Random Effects* model, *Ordinary Least Squares* model and *Fixed Effects* model is that in the first model factors, which do

not vary across the time, are not eliminated. As a result, qualitative variables can be used. Depending on the type of the country, four regression models were made. Countries are grouped into small developing, big developing, small developed and big developed countries. Regressions using 300 observations included 31 cross-sectional units, time series length: from 6 to 10 years. A panel data is analyzed in this case, and data of the period 2001–2012 is used.

In the first model the base country is small developing country – Czech Republic, Estonia, Cyprus, Croatia, Latvia, Lithuania, Malta, Portugal, Slovak Republic, Hungary. There is the significance of GDP variation in countries according to the difference on the base category (ld_GDP) presented in Table 4. In addition, the influence of income (GDP variation) on happiness in small developing countries (ld_GDP) is statistical significant (P = < 0.00001) and the difference of GDP variation influence on happiness between big developed and small developing countries is statistical significant.

Table 4

Coefficients and significance of the variables when the base is small developing country

	Coefficients	St. Error	T statistic	P-value
Constant	−0.00944622	0.00670901	−1.4080	0.16022
ld_GDP	**0.431596**	0.0723871	5.9623	<0.00001***
GDP_Small_developed	1.20453e−07	1.00899e−07	1.1938	0.23355
GDP_Big_developed	2.74409e−07	1.21759e−07	2.2537	0.02498**
GDP_Big_developing	−4.03006e−07	2.58856e−07	−1.5569	0.12061
ld_happiness_1	**−0.437341**	0.0573694	−7.6232	<0.00001***

Note: *** – significant at 0.01 level, ** – significant at 0.05 level.

Relationship between income (variable GDP) and happiness in a small developing country can be explained using this regression equation:

$$\Delta\ln(happiness) = -0{,}00944622 + 0{,}431596(\Delta\ln(Small\ developing\ countres)) - 0{,}437341(\Delta\ln(happiness\_1)) \tag{2}$$

In a small developing country, GDP increase by 1 % leads to happiness increase by 0.43 %. It is interesting, that after assuming another variable, finally, an amount of happiness decreases by 0.015 %.

In Table 5 the base country is big developing country – Bulgaria, Greece, Spain, Italy, Poland, and Romania. Big developed countries and at 0.1 level small developed countries significantly differ from the base country.

Relationship between income (variable GDP) and happiness in a big developing country can be explained using this regression equation:

$$\Delta\ln(happiness) = -0{,}0139418 + 0{,}460306(\Delta\ln(Big\ developing\ countres)) - 0{,}433694(\Delta\ln(happiness\_1)) \tag{3}$$

In big developing countries, when GDP increases by 1 %, happiness increases 0.46 % and when lag of happiness

Table 5

Coefficients and significance of the variables when the base is big developing country

	Coefficients	St. Error	T statistic	P-value
Constant	−0.0139418	0.00705612	−1.9758	0.04914**
ld_GDP	**0.460306**	0.070832	6.4986	<0.00001***
GDP_Big_developed	**3.78439e−07**	1.32575e−07	2.8545	0.00463***
GDP_Small_developing	2.0211e−07	3.5426e−07	0.5705	0.56878
GDP_Small_developed	2.03963e−07	1.08779e−07	1.8750	0.06181*
ld_happiness_1	**−0.433694**	0.0575317	−7.5384	<0.00001***

Note: *** – significant at 0.01 level, ** – significant at 0.05 level, * – significant at 0.1 level.

Table 6

Coefficients and significance of the variables when the base is small developed country

	Coefficients	St. Error	T statistic	P-value
Constant	−0.00405253	0.0068623	−0.5906	0.55529
ld_GDP	0.407162	0.0698497	5.8291	<0.00001***
GDP_Big_developed	1.4718e−07	1.24609e−07	1.1811	0.23853
GDP_Big_developing	**−6.32616e−07**	2.62508e−07	−2.4099	0.01659**
GDP_Small_developing	−4.20554e−07	3.33235e−07	−1.2620	0.20797
ld_happiness_1	−0.437518	0.0573517	−7.6287	<0.00001***

Note: *** – significant at 0.01 level, ** – significant at 0.05 level.

(ld_happiness_1) increases 1 %, happiness decreases 0.43 %. Therefore, the final effect is positive 0.0127 %.

In Table 6 the base country type is small developed country – Ireland, Belgium, Austria, Denmark, Luxembourg, Netherlands, and Switzerland.

Happiness equation for small developed countries is:

$$\Delta \ln(happiness) = -0{,}00405253 + 0{,}407162(\Delta \ln(Small\ developed\ countres)) - 0{,}437518(\Delta \ln(happiness\_1)) \quad (4)$$

Equation 4 shows that the influence of lag of happiness on happiness is stronger than GDP. As a result, when GDP increases by 1 %, happiness increases by 0.47 % and when lag of happiness increases by 1 %, happiness decreases by 0.44 %. Therefore, small developed country similar to small developing country.

In Table 7 the base country type is big developed country – Great Britain, Japan, USA, Norway, France, Finland, Sweden, and Germany. The differences can be seen in small developing (*P*-value 0.04369) and big developing countries (*P*-value 0.00249). That means that a significant factor is not only the level of development but also the size of a country.

According to the data seen in Table 7, an equation for big developed countries is:

Table 7

Coefficients and significance of the variables when the base is big developed country

	Coefficients	St. Error	T statistic	P-value
Constant	−0.000395998	0.00687791	−0.0576	0.95413
ld_GDP	**0.386531**	0.0697619	5.5407	<0.00001***
GDP_Small_developing	−6.62561e−07	3.27027e−07	−2.0260	0.04369**
GDP_Small_developed	−5.22765e−08	1.01337e−07	−0.5159	0.60635
GDP_Big_developing	**−7.93974e−07**	2.60182e−07	−3.0516	0.00249***
ld_happiness_1	**−0.434306**	0.0574035	−7.5658	<0.00001***

Note: *** – significant at 0.01 level, ** – significant at 0.05 level.

$$\Delta\ln(happiness) = -0{,}000395998 + 0{,}386531(\Delta\ln(Big\ developed\ countres)) - 0{,}434306(\Delta\ln(happiness\_1)) \quad (5)$$

A regression Equation 5 shows that when GDP grows in a big developed country, a level of happiness increases, but much more important variable is a lag of happiness. Therefore, finally, the level of happiness decreases by –0.048 %. Hence, concluding everything up, after evaluating GDP and a lag of happiness influence on happiness, final result is positive only in big developing countries. Furthermore, the variation of happiness either in big or in small developing countries is statistical significant and different from big developed countries. Consequently, evaluating the influence of income on happiness the results of Lithuania are quite different from the results of such countries as Germany, Great Britain, Japan, USA, Norway, France, Finland and Sweden. Moreover, a GDP influence on happiness is statistical significant and different between big developing countries and small developed countries. Ranging countries by descending final income impact on happiness in the first place goes big developing country; in the second place goes small developing country; small developed country goes to the third place and in the fourth place – big developed country. Therefore, the biggest differences are noticed in big countries. It should be noticed, that the same

results are evaluating only GDP influence on happiness in descending scale. Thereby, hypothesis **H3** – the increase of GDP leads to the increase of happiness in a medium-term period, i.e. *Easterlin paradox* does not exist – is accepted. Hypothesis **H4** – the influence of GDP growth on the variation of happiness differs among different development countries – is also accepted. Thus, GDP marginal utility on happiness exists.

R. A. Easterlin and L. Angelescu (2009) note that in a long-term period GDP growth has no influence on the variation of happiness. The correlation of a variation of GDP and happiness has been counted and a regression model of time series has been constructed to test this hypothesis. In a long-term period, Netherlands is chosen as one of the most developed countries. It has a largest number of surveys about happiness too. Table 8 shows that a correlation of variation of GDP and happiness is weak (0.239) and statistical insignificant, *P*-value is 0.155.

Model becomes statistical significant if lag of happiness is included (Table 9). A lag variable has an inverse influence on happiness (–0.373 %) while GDP variable is statistical insignificant. It is also insignificant in developing countries. In concluding, hypothesis **H5** is accepted because neither in developed nor developing countries in a long-term period GDP variation has no influence on happiness variation. Therefore, *Easterlin paradox* exists.

Table 8

Correlation of happiness and GDP variation in a long-term period

		ld_happiness	ld_GDP
ld_happiness	PearsonCorrelation	1	**0.239**
	Sig. (2-tailed)		0.155
	N	37	37

Summarizing the results of this research, different length of periods has consistent patterns as following: in short-term period even analyzing many different types of countries, the variation of GDP has an influence on the variation of happiness and the positive result has been observed in all types of countries. Therefore, in a short-term period *Easterlin paradox* does not exist.

Medium-term period contains features of both short-term period and long-term period. It is noticed that the variation of GDP has different influence on happiness according to the development level and the size of a country. The biggest positive GDP influence on happiness is in big developing countries and, contrarily, in big developed countries – the smallest. After estimating a lag of happiness impact on happiness, when GDP grows, the quantity of happiness increases only in big developing countries. In other types of countries, beginning from small developing countries, when GDP grows, assessing a lag of happiness, the quantity of happiness diminishes. That means that the persons' perception of happiness has a negative inertia – when happiness reduces, it reduces even more one year later. Therefore, in a medium-term period *Easterlin paradox* still does not exist even if in this period there is a GDP marginal utility on happiness. Finally, in a long-time period the results of analysis verify that there is no influence of income on happiness. This result is observed both in developing and developed countries. Thereby, *Easterlin paradox* exists only in a long-term period.

Conclusions

The analysis of scientific literature allows maintaining that happiness from its origin is a subjective concept. It reflects emotional and thinking reactions to the life circumstances, e.g. external factors and the environment. There are excluded two conceptions of happiness: eudaimonic – objective; and hedonistic – subjective.

Happiness and life satisfaction are only the parts of the subjective well-being. Notwithstanding, happiness is associated with instantaneous reactions to the external factors while life satisfaction – with lasting state. Therefore, it is important to stress that conceptual differences exist between happiness and life satisfaction, when analyzing subjective well-being in different periods. Happy people could not be satisfied with their lives and vice versa. Therefore, assessing happiness it is important to remember that exist social and individual treadmills, which influence a consumer.

The results of empirical research have confirmed that in a short-term period the increase of GDP leads to the increase of happiness, i.e. *Easterlin paradox* does not

Table 9

Coefficients and significance of GDP and a lag of happiness variables

	Coefficient	St. Error	T statistic	P-value
ld_GDP	0.201901	0.161572	1.2496	0.22023
ld_happiness_1	**–0.373347**	0.158903	–2.3495	0.02493**

Note: ** – correlation is significant at the 0.05 level (2-tailed).

exist while in a long-term period it does. To be clear, we have not found any support for the *Easterlin Paradox* over a short-term period. The relationship between well-being and income is roughly linear-log and does not diminish as incomes rise. However, higher income is no longer associated with higher subjective well-being over the long period.

The relationship between a short-term period and a long-term period is outlined by medium-term period: in the short-term period, difference of GDP influence on happiness in 126 world countries is not statistical significant.

In a medium-term period, analyzing GDP influence on happiness, in very high and high development countries, it is also observed that *Easterlin paradox* does not exist but the differences among countries can be seen – exists GDP marginal utility to happiness. In a long-term period *Easterlin paradox* does exist, e.g. GDP variation has no influence on happiness variation neither in developed nor in developing countries.

Despite of the results of this research, it has been found that GDP has a weak influence on happiness. That means, there are many other factors that have influence on happiness. One of the first is lag variable of happiness, which is negative. Moreover, it is found in a medium-term period and is explained by people tendency to react more vigorous to negative factors than positive ones.

Having reassessed *Easterlin paradox* over different time periods across various world countries, i.e. the influence of income on subjective well-being, it is necessary to identify and to assess other factors affecting subjective well-being, which constitutes the purpose of further studies by the authors of the present article.

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SUBJEKTYVI GEROVĖ IR PAJAMOS: *EASTERLIN PARADOKSO* ANALIZĖ IR VERTINIMAS

S a n t r a u k a

Tyrimai apie subjektyvios gerovės ir pajamų ryšį pastaruoju metu yra socialinių mokslų (ekonomikos) dėmesio centre, į antrą planą nustumiant ekonomikos augimo ir subjektyvios gerovės analizę. Vis dėlto pajamų ir laimės sąryšio vertinimas vis dar išlieka problema, kuri nėra galutinai išspręsta. Daugelis autorių (Easterlin, 1974, 2001, 2003; Blanchflower, Oswald, 2004; Bruni, Porta, 2007; Layard, 2005) padarė išvadą, kad pasiekus tam tikrą vidutinių pajamų lygį, jų augimas nedidina subjektyvios gerovės. Šis reiškinys žinomas kaip *Laimės paradoksas*, dar kitaip vadinamas *Easterlin paradoksu*. Pirmasis ekonomistas, kuris bandė paaiškinti šį paradoksą buvo R. A. Easterlin (1974). Pastaruoju metu surandama daug naujos ir naudingos informacijos, leidžiančios patikrinti *Laimės paradokso* egzistavimą. Šiame straipsnyje pagrindinis dėmesys skiriamas subjektyvios gerovės ir pajamų ryšio teoriniams ir praktiniams aspektams analizuoti.

Mokslinėje literatūroje laimė ir pasitenkinimas gyvenimu yra subjektyvios gerovės dedamosios, tačiau laimė tapatinama su momentine reakcija į aplinką, o pasitenkinimas gyvenimu – su ilgalaike būsena. Todėl analizuojant laimę skirtingais laikotarpiais reikia pabrėžti šių sąvokų konceptualius skirtumus, nes asmenys, kurie yra laimingi kartu gali būti ir nepatenkinti gyvenimu. Taigi matuojant laimę svarbu atsižvelgti į laimę veikiančius šalutinius veiksnius, tokius kaip aplinka („socialinis bėgimo takelis") ir paties individo mąstymo iškreipimai („individualus bėgimo takelis"). *Laimės paradoksas* yra svarbus tuo, kad jis parodo, jog šių laikų visuomenėje BVP augimas nėra pakankama sąlyga, vertinant šalies gerovę, kadangi ne visada, augant BVP, laimės lygis didėja. Tai yra paaiškinama žmonių troškimų lygio prisitaikymu prie išaugančių pajamų. Troškimų lygis gali prisitaikyti prie išaugusių pajamų vartojant prabangos prekes, veikiant individą supančiai aplinkai ir esant neracionaliam mąstymui. Be to, *Laimės paradokso* egzistavimas labiausiai priklauso nuo šalies išsivystymo lygio ir nagrinėjamo laikotarpio trukmės. Literatūroje sutinkama, kad trumpuoju laikotarpiu *Laimės paradoksas* neegzistuoja, o ilguoju egzistuoja, tačiau nesutariama, kad skirtingo išsivystymo šalyse

BVP daro skirtingą poveikį laimei. Trumpojo ir ilgojo laikotarpių rezultatų neatitikimai yra paaiškinami ekonomikos cikliškumu – trumpojo laikotarpio laimę individai sieja su pajamomis. Todėl trumpuoju laikotarpiu gauti rezultatai nėra labai tikslūs. Kai kurie tyrimai parodė, kad pasiekus „bazinių poreikių" ribą, aukštesnės pajamos jau nebėra siejamos su didesne subjektyvia gerove. Ypatingas dėmesys šiame straipsnyje skiriamas „bazinių poreikių" ribos poveikio pajamų ir subjektyvios gerovės ryšio pagrįstumo analizei, ištiriant aukšto ir žemo išsivystymo šalis trumpuoju, vidutiniu ir ilguoju laikotarpiais.

Po samprotavimų apie gerovės, laimės sąvokas ir paradoksalų ryšį tarp pajamų ir laimės kilmės pristatyti empiriniai šio darbo rezultatai. Trumpuoju laikotarpiu šalys, turinčios didžiausius BVP ir laimės pokyčius, beveik nesutampa. Be to, trumpuoju laikotarpiu yra parodomas momentinis pajamų ir laimės ryšys. Todėl gauti rezultatai gali neatspindėti visų šalims būdingų bruožų, kadangi egzistuoja ekonomikos cikliškumas. Taip pat BVP ir laimės augimo ryšys yra silpnas. Remiantis žmogaus socialinės raidos pranešimais, pasaulio šalys yra suskirstytos į labai aukšto, aukšto, vidutinio ir žemo išsivystymo šalis, tačiau prieinama prie išvados, kad šalių grupių laimės augimas tarpusavyje statistiškai reikšmingai nesiskiria. Taigi trumpuoju laikotarpiu BVP augimas turi teigiamą poveikį laimės augimui visų išsivystymo lygių šalyse, t. y. *Laimės paradoksas* neegzistuoja. Galiausiai, remiantis koreliacijos grafikų rezultatais, egzistuoja šalių pasiskirstymas į augančias tiek BVP, tiek laime šalis, turinčias neigiamus BVP ir laimės pokyčius, šalis, turinčias teigiamus BVP ir neigiamus laimės pokyčius ir išimtis. To neparodo regresinės analizės rezultatai. Vidutiniu laikotarpiu egzistuoja

ribinis pajamų naudingumas laimei. Nors ribinis pajamų naudingumas laimei labai varijuoja, tačiau matyti tokie dėsningumai: didelėms besivystančioms šalims ribinis naudingumas auga, taip pat yra šalių, kurių ribinis naudingumas svyruoja apie nulį. Dauguma išsivysčiusių ir besivystančių šalių yra pasiekusios ribinį naudingumą. Kadangi sudarant modelius su paneliniais duomenimis ir laiko eilutėmis negalima pašalinti pavienių išskirčių, gauti rezultatai gali kisti priklausomai nuo išskirčių pobūdžio. Vidutiniu laikotarpiu tiek didelių, tiek mažų besivystančių šalių laimės pokytis statistiškai reikšmingai skiriasi nuo didelių išsivysčiusių šalių. Didelių besivystančių šalių laimės pokytis statistiškai reikšmingai skiriasi ir nuo išsivysčiusių mažų šalių. Tai reiškia, kad besivystančiose didelėse šalyse skirtumai nuo kitų šalių yra didžiausi. Rikiuojant šalis pagal galutinį teigiamą efektą laimei mažėjimo tvarka antroje vietoje yra mažos besivystančios šalys, trečioje – mažos išsivysčiusios šalys, o ketvirtoje – didelės išsivysčiusios šalys. Taigi didžiausi laimės pokyčio skirtumai yra didelėse šalyse. Ilguoju laikotarpiu BVP pokyčiai laimės pokyčiams įtakos nedaro, tačiau, kaip ir vidutiniu laikotarpiu, yra vėluojantis laimės veiksnys, kuris turi didelį poveikį vėlesnių metų laimės pokyčiams. Tai reiškia, kad egzistuoja laimės pokyčių inercija – pasitenkinimas arba nepasitenkinimas trunka ilgiau, nei kinta BVP. Be to, vėluojantis laimės veiksnys yra neigiamas laimės atžvilgiu. Vis dėlto laimės pokyčius BVP pokyčiais galima pagrįsti tik iš dalies, kadangi tiek trumpuoju, tiek ilguoju laikotarpiu determinacijos koeficientas R^2 yra gana mažas. Tai reiškia, kad yra daug kitų veiksnių, kurie modeliuose buvo nestebimi kintamieji, tačiau kuriuos reikėtų įtraukti į tyrimus.