

DOES HIGHER INCOME AND HIGHER EDUCATIONAL LEVEL AFFECTED HAPINESS? WORLDWIDE EVIDENCE FROM QUANTILE REGRESSION

Badariah Haji Din¹, Muzafar Shah Habibullah², Ahmad Bashawir Abdul Ghani³, Rusdi Omar⁴,
Ratneswary Rasiah⁵

¹College of Law Government and International Studies, Universiti Utara Malaysia, Malaysia

²Institute of Agriculture and Food Policy Studies, Universiti Putra Malaysia, Malaysia

³Putra Business School, Malaysia

⁴School of International Studies, Universiti Utara Malaysia, Malaysia

⁵Taylor's Business School, Taylor's University, Malaysia

E-mail: badariahdin@uum.edu.my

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Abstract

In order to sustain the current and future standard of living, maintaining long-term economic growth has been the ultimate goal of any nations. Many nations relentlessly pursue the path of economic growth to become developed and high income nations, but little do they realize that in their pursuit of material well-being, they seem to have completely missed the human emotions aspect. Recent literature on happiness has shown evidence that in several developed nations that have enjoyed rapid growth and accumulated high levels of material well-being, their citizens have not reported enjoying higher levels of happiness. Does higher income and education related to happiness? Previous studies have found mixed results. In this study we investigate the effects of income and educational attainment on the levels of happiness in a cross-section of 149 countries. Using OLS and quantile regression estimations, our results suggest that there is a nonlinear relation between income and the levels of happiness, in fact, exhibiting an inverted U-shaped Kuznets curve. On the other hand, primary education reduces the levels of happiness; while secondary and tertiary education increases the levels of happiness.

Keywords-- happiness, income, education, quantile regression, worldwide evidence

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INTRODUCTION

One of the main aims of nations and policy makers is to achieve sustainable economic growth, as it is believed to bring about material welfare gains and subsequently increase well-being. It is believed that economic growth and development provides a means to an end. The "end" here refers not just to the material gains that human beings receive, but more so for the enhancement of human well-being or happiness. Oswald (1997) encapsulates this by saying that "economic things matter only in so far as they make people happier". In studying the macro and socioeconomic variables that affect happiness, Emmons (1986) provides a guiding framework in that the variables that affect people's ability to achieve their goals would invariably affect their subjective well-being. The abundant resources that are available to individuals provide ample opportunities for them to achieve their goals and thereby enhance their happiness.

Prior to the use of happiness, income (proxy by GDP per capita) had always been the key measure of well-being or quality of life in most nations. Income as an indicator of well-being is riddled with many limitations. Income only emphasizes changes in material welfare, but it ignores changes in the quality of life, thus, it is inadequate measure of well-being. This inadequacy in the use of income as an indicator of well-being has led scholars and policy makers to search for alternative measures of quality of life, leading to the numerous studies on happiness or subjective well-being. Nevertheless, searching for important factors affecting happiness has not received much attention from the economists. Earlier works by Easterlin (1973, 1974) suggests that money can buy happiness up to a certain point in life, thereafter, as expectations exceed aspirations in life, the level of happiness level off or decrease This nonlinear relationship between income and happiness has been proposed by Frey and Stutzer (2000a,

2000b), however, study by Stevenson and Wolfers (2013) do not support this claim.

On the other hand, McBride (2010) support the aspirations-based theory of happiness which explain why the level of happiness decrease as the level of income increases. Another important determinant of happiness that has not received much attention in empirical research is education. Salinas-Jimenez et al. (2016: pp. 116) posit that "many studies analysing the relationship between income (or other economic variables) and happiness include some control variables related to education, but few place their focus on the effects of education on individuals' well-being. The reason probably lies in that the effects of education on subjective well-being generally manifest in an indirect way through variables as health, income or participation in the labor market." Nevertheless, some studies have shown that education has strong effects of happiness and their effects is unconditional on household income. Studies by Blanchflower and Oswald (2004), Oreopoulos and Salvanes (2011), Lelkes (2006), Gerdtham and Johannesson (2001), Tsui (2014), Salinas-Jimenez et al. (2016) and Nikolaev (2018) all found that the level of education has a direct effects on the level of happiness.

Another important determinant of happiness that has not received much attention in empirical research is education.

The purpose of the present study is twofold: (1) to investigate the nonlinear effects of income level on happiness, and (2) to determine whether education has a direct effects on the level of happiness. We test these two questions on a cross-section of 149 countries. In view of this, the paper is organized as follow. In the next section we discuss the literature that relates happiness to income and education level; and in section 3 is the method used

in the analysis. Section 4 presents the results, while the last section contains our conclusion

REVIEW OF RELATED LITERATURE

Income and Happiness

The income-happiness relationship is by far one of the most important and ambiguous relationship in the subjective well-being literature. Easterlin (1974) was one of the first modern economists to carry out a thorough research on happiness using time-series data on several advanced economies, including the USA, Japan, UK, France, Germany, Italy and Netherlands. Easterlin(1974) discovers that economic growth does not buy well-being. He argues that while income was positively related to happiness in some countries, the income-happiness nexus disappeared when considering different countries or using time series data. He concludes that the emphasis on economic growth was misguided as the fact point to that despite consistent increases in income per capita over one or more decades, the scores for subjective well-being generally remained constant, a phenomenon that has come to be known as the Easterlin Paradox. The Easterlin (1973: 4) paradox claims that, "In all societies, more money for the individual typically means more individual happiness. However, raising the incomes of all does not increase the happiness of all. Easterlin provides a plausible explanation for his findings when he matched his empirical model to that of the interdependent preferences model of Duesenberry (1949) and Pollak (1976) in which the utility or subjective well-being of each person is positively related to his or her own income but negatively related to the average income of others. Relative preference theories (Duesenburry, 1949) posit that the utility derived by an individual from his income is relative to the incomes of other people (reference groups) or relative to that individual's own previous income stream (adaptive expectations). This social comparison looks at aspects of comparing oneself relative to other individuals or relevant group, emphasizing the importance of relative income rather than absolute income. The concept of relative income is part of the aspiration level theory which provides a plausible explanation as to why higher incomes do not necessarily translate into higher happiness. Thus, Easterlin (1974, 1995) acknowledges the importance of relative income when he argues that getting a higher income did make people happier, on average, but when the incomes of everyone increased, it did not translate to an increase in everyone's happiness as the relative income effect dominated the absolute income effect causing people to perceive that their incomes had not improved relative to the others.

In fact, several studies have rejected the prosperity-happiness relationship, advocating that growth in incomes will not lead to increases in happiness but rather maintain happiness at a constant level. Di Tella et al. (2003) present evidence that, despite unprecedented growth in real incomes, happiness stagnated over time. Blanch flower and Oswald (2004) examine well-being data over a long period from early 1970s to the late 1990s involving USA and Britain and discovered a decline in reported levels of happiness in the United States while Britain's reported life satisfaction stagnated, despite a considerable improvement in the standard of living of both countries. Easterlin(2001) explains that while happiness is a positive function of absolute income, any growth in income only brought about increases in people's aspirations causing subjective well-being to decline as people found it more difficult to achieve their rising aspirations. This was further echoed in the findings of Macdonald and Douthitt (1992) who argue that people who set high aspirations and expectations, for any given level of income, felt a negative impact on their subjective well-being. Stutzer (2004) reiterates Macdonald and Douthitt's (1992) argument by providing empirical evidence of the negative impact

of higher income aspirations on individual well-being, *ceteris paribus*. While higher incomes had a positive impact on well-being, it was the higher aspirations that caused a decline in subjective well-being thus giving an almost zero net effect that culminated in happiness stagnating over time. The concepts of adaptation to repeated stimuli and social comparisons with relevant others provide the basis for which individual aspirations are formed.

In bringing forth the role of adaptation, Stutzer (2004) found that while an increase in income initially enhanced well-being, given time, people get adapted to their new income which eventually brings their well-being back to its original level. Frey and Stutzer(2002: 12) in their book "Happiness and Economics" discusses how "hedonic adaptation reduces individuals' responsiveness to repeated or continued stimulus" as people become accustomed to a higher level of income which eventually sees their subjective happiness converging to its original level. While ample empirical studies have been carried out in developed countries indicating the somewhat negligible impact income growth has on well-being, concurring with Easterlin's income-happiness paradox, there is a growing body of literature that contradicts these findings. In an attempt to reassess Easterlin's paradox, Stevenson and Wolfers (2008) analyse a broad spectrum of datasets covering many countries over many decades and found that GDP per capita is positively correlated to average levels of subjective well-being across countries and that happiness did indeed move in tandem with economic growth, contrary to the findings of Easterlin and many others.

The authors found no evidence of a threshold income beyond which no further increases in subjective well-being was possible for wealthier countries. The findings re-evaluated the role played by relative income comparisons in explaining happiness to a more limited one, compared to the clearer role played by absolute income. In a nutshell, the study establishes an income-subjective well-being link that was significant and very robust across countries, within countries, and over time. Sacks et al. (2010) reinforce the findings of Stevenson and Wolfers (2008) that absolute income plays a larger role in determining happiness, while downplaying the importance of relative income, adaptation and satiation. Several datasets were analysed to establish evidence that (i) wealthier individuals, within a given country, reported higher life satisfaction; (ii) between countries, on average, higher life satisfaction is reported in wealthier countries and (iii) over time, economic growth does enhance life satisfaction. Study by Diener et al. (1993) found that richer countries enjoyed a higher level of happiness compared to their poorer counterparts, at the national level, it was also discovered that a rapid growth in income or a high economic growth led to lower level of happiness. In a later study, Diener et al. (1995) use a more comprehensive set of national and international data covering a diverse range of nations to discover that despite controlling for basic needs, income was correlated with happiness indicating the impact economic development has on well-being that goes beyond fulfilling humans' basic biological needs.

Education and Happiness

In recent years, there are many researches linking human capital investment to happiness. Becker (1962) has posited that investment on education; training, medical care in human capital has become as critical as any other capital investments. These expenditures are called human capital investment, as it is impossible to separate people from their knowledge, value, skills, or health. Human capital theory complements the wider benefit to education in helping people's productivity, earnings and employability, as well as influence in well-being. As a matter of fact, people like to advance in their life through income

enhancements and improved working conditions. Leading a satisfying life undoubtedly involves a stable and satisfactory income. Thus, investment in education is a clear pathway most people seek. People also increase their investment in education, as they value freedom that enables them to shape their own destinies. Consequently, more satisfaction comes from sustained growth in GDP allows households to enjoy a better quality of life, consumption, good employment opportunities and better social standing. In life, nobody choose to be unemployed because being unemployed is not a good thing as it only brings misery and unhappiness (Clark and Oswald, 1994).

There are several ways how education can affect happiness. According to Cuñado and de Garcia (2012) happiness can be achieved when there is an increased in self-confidence and self-estimation and pleasure from attaining higher education. Furthermore, with good education an educated person will be able to secure good job with higher salary and as a result can command for better health (see also Hartog and Oosterbeek, 1998). Happiness can also be derived through good education when one is able to engage in social connections and interactions with the family members, community and society at large without the risk of shame or feeling some form of inferiority complex; the feeling that good education can uplift their social status and therefore should raise their social well-being (Checchi, 2006; Chen, 2012). A meta-analysis conducted by Witter et al. (1984) in relating educational attainment and subjective well-being in the United States; found that the impact is small, but showing a positive impact on happiness. On the other hand, using the samples from the General Social Survey of the United States, Blanch flower and Oswald (2004) posit that the years of education raises the level of happiness among all men and women, blacks and whites in the US for the period 1972-1998. The positive impact of education on happiness were also found by Gerdtham and Johannesson (2001) for Sweden; Cheung and Chan (2011) for 32 countries; and Chen (2012) for four East Asian countries – Japan, Taiwan, Korea and China. Cuñado and de Garcia (2012) investigate individual-level data for Spain, by using the European Social Survey for the year 2008 and estimate using the Ordinal Logit models. Their study suggests that individuals with higher levels of happiness were those people who attained higher education level, as a result of obtaining higher income levels. Furthermore, they also conclude that the direct impact of education on happiness does not depend on the level of education whether primary, secondary or tertiary.

Theodossiou (1998) analyses the data from the 1992 British Household Panel Study and found that the feelings of unhappiness is 1.27 times greater if the individual has a university degree. Calvo et al. (2017) also found that education is negatively associated with life satisfaction. Their study suggests that for Blacks, immigrants and native-born participants in the US, as education increased, the levels of happiness declined. Peiro (2006), on the other hand, related educational level with life satisfaction for 15 countries; and found that only Nigeria show positive impact of education on happiness, while the remaining countries either show negative relationship (Argentina and Dominican Republic) or show no significant impact on happiness (Australia, Chile, China, Finland, Japan, Peru, Russia, Spain, Sweden, Taiwan, USA and Venezuela). Stack and Eshleman (1998) also found that education has no role in effecting the level of happiness for 17 nations included in the study. Further evidence on the non-responsiveness of happiness to education attainment is also found by Ferrer-i-Carbonell (2005).

METHODOLOGY

In order to determine the effects of income and education on happiness, we specify the following simple model (see for

example, Cunado and de Gracia, 2012; Tsui, 2014; Salinas-Jimenez et al., 2016; Nikolaev, 2018 for a more general model):

$$happiness_i = \alpha_0 + \alpha_1 income_i + \alpha_2 income_i^2 + \alpha_3 education_{ij} + \alpha_4 D + \varepsilon_i \quad (1)$$

where ε_i is the error term, $happiness_i$ = life satisfaction score in country i , $income_i$ = real gross domestic product (GDP) per capita proxy for national income in country i , and $education_{ij}$ = measure of education attainment by the population (j refers to primary, secondary, and tertiary enrolment) in country i . The variable D is a dummy variable; equals 1 if developed countries (OECD) and zero otherwise. It is expected a $priori \alpha_{1,3} > 0$ and $\alpha_2 < 0$. The data for happiness were taken from The World Happiness Report 2016 edited by Helliwell et al. (2016) who report information on average happiness in terms of the Cantril ladder score. One thousand individuals of more than 150 countries were asked to evaluate their life based on the Cantril ladder question: "Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?" The score will present the average life evaluation scores for each country. This happiness score has also been used in a recent work by Ram (2017). In this study $income_i$ variable enters the Equation (1) in a quadratic form. We intend to evaluate if the happiness-income relationship exhibit an inverted U-shaped curve in the line of the Kuznets (1955) inequality-income inverted U-shaped curve. We postulate that happiness increase at the early stages of economic development, but after to a certain optimal point, further increase in the level of economic development will lower the levels of happiness. We conjecture that at low level of income, people care more of their absolute income, however, as income increases further relative income becomes their yardstick for happiness. This would explain the Easterlin's paradox. In a study by Arvin and Lew (2014) despite including quadratic income as the independent in their happiness model; they failed to find a Kuznets-type of relationship between happiness and income. Similarly the works of Dietz et al. (2012) and Sulkowski and White (2016) do not find the inverted U-shape curve for happiness. Using a panel of 58 countries for the period 1961-2003, Dietz et al. (2012) conclude that the relationship between income and ecologically efficient well-being is a U-shape, the inverse of the Kuznets curve. A similar finding was also derived by Sulkowski and White (2016). Their study suggests that happiness was markedly lower in the middle-developed and medium-income countries and highest in the least and most developed cluster of countries, thus exhibiting a U-shaped curve. On the other hand, Ram (2017) using a cross-country analysis found that the relationship between happiness inequality and mean happiness exhibit an inverted U-shaped Kuznets curve.

Data Sources

In this study data on national income was proxy by using real gross domestic product (GDP) per capita (constant 2010 USD) and education variables were proxy using the number of school enrolment at the primary, secondary and tertiary level. All these data were compiled from the World Bank database at <https://data.worldbank.org/indicator>. The average happiness score for each country were taken from the World Happiness Report 2016. The year of reference for this study is 2013 and covers 149 countries. The list of countries included in the study is listed in Appendix A.

THE EMPIRICAL RESULTS

We have estimated Equation (1) using OLS and the results are reported in Tables 1 to 3 in Panel A.

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Table 1. OLS and Quantile Regression Estimates with Primary Education

Estimator	Constant	income	income ²	education	D
Panel A: OLS					
OLS	5.7653*** (9.3635) R ² = 0.6898	0.1307*** (7.0512)	-0.0011*** (-4.8113)	-0.0120** (-2.1482)	-0.8618*** (-2.6450)
Panel B: Quantile regression					
Q(0.10)	4.1389*** (8.4822) Pseudo R ² = 0.4115	0.1219*** (4.4742)	-0.0007*** (-3.4961)	-0.0037 (-0.8644)	-0.8934 (-1.1491)
Q(0.20)	4.5802*** (8.2020) Pseudo R ² = 0.4686	0.1490*** (2.6485)	-0.0013 (-1.3522)	-0.0067 (-1.4309)	-0.8843 (-1.6429)
Q(0.30)	4.5349*** (7.3573) Pseudo R ² = 0.4825	0.1307** (2.2043)	-0.0011 (-1.0682)	-0.0046 (-0.9364)	-0.6227 (-1.0724)
Q(0.40)	4.9052*** (7.7065) Pseudo R ² = 0.4730	0.1153*** (5.3303)	-0.0007*** (-3.5114)	-0.0067 (-1.2023)	-0.5426 (-1.1647)
Q(0.50)	5.8501*** (5.9121) Pseudo R ² = 0.4777	0.1078*** (4.8118)	-0.0007*** (-3.1605)	-0.01267 (-1.5141)	-0.5893 (-1.2965)
Q(0.60)	6.7371*** (5.3381) Pseudo R ² = 0.4871	0.0961*** (4.1872)	-0.0007*** (-2.8681)	-0.0184* (-1.7439)	-0.4749 (-0.9992)
Q(0.70)	7.3103*** (6.5492) Pseudo R ² = 0.4888	0.1076*** (4.2327)	-0.0008*** (-3.1724)	-0.0228** (-2.4262)	-0.6636 (-1.2414)
Q(0.80)	8.4680*** (8.0960) Pseudo R ² = 0.4779	0.1384*** (4.8702)	-0.0011*** (-3.9819)	-0.0313*** (-3.6016)	-1.3811*** (-2.8557)
Q(0.90)	9.6201*** (8.9387) Pseudo R ² = 0.4190	0.1276*** (4.0228)	-0.0011*** (-3.5199)	-0.0392*** (-4.6003)	-1.0985** (-2.4559)

Notes: Asterisks (*),(**),(***) denote statistically significant at 10%, 5% and 1% respectively. Figures in round brackets (...) are *t*-statistics.

Table 1 reports model with education proxy using total number of primary enrolment; Table 2 using secondary enrolment; and Table 3 with education proxy using tertiary education enrolment. In all three estimated equations, all variables are significant at least at the 10% level (see Table 2 for education).

Table 2. OLS and Quantile Regression Estimates with Secondary Education

Estimator	Constant	income	income ²	education	D
Panel A: OLS					
OLS	4.0955*** (15.851) R ² = 0.6822	0.1072*** (4.7556)	-0.0008*** (-3.2523)	0.0073* (1.9143)	-0.8206** (-2.4821)
Panel B: Quantile regression					
Q(0.10)	3.5965*** (16.403) Pseudo R ² = 0.4257	0.1059*** (3.5995)	-0.0006** (-2.4533)	0.0027 (0.7369)	-0.8037 (-1.1360)
Q(0.20)	3.7756*** (16.619) Pseudo R ² = 0.4767	0.1125*** (4.9563)	-0.0008*** (-3.3620)	0.0033 (0.8757)	-0.7294 (-1.5544)
Q(0.30)	3.6795*** (14.168) Pseudo R ² = 0.4871	0.0971*** (4.1343)	-0.0006*** (-2.6512)	0.0065 (1.5191)	-0.5212 (-1.1317)
Q(0.40)	3.9411*** (14.732) Pseudo R ² = 0.4829	0.0897*** (3.5187)	-0.0006** (-2.1677)	0.0059 (1.3228)	-0.4971 (-1.0553)
Q(0.50)	3.9536*** (13.366) Pseudo R ² = 0.4805	0.0841*** (3.1324)	-0.0005* (-1.9177)	0.0090* (1.8639)	-0.5894 (-1.2306)

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Q(0.60)	4.1640*** (12.351) <i>Pseudo R</i> ² = 0.4727	0.0692** (2.4098)	-0.0004 (-1.5683)	0.0092* (1.7658)	-0.2011 (-0.3784)
Q(0.70)	4.0188*** (11.542) <i>Pseudo R</i> ² = 0.4617	0.0876*** (2.7665)	-0.0006** (-2.0421)	0.0135** (2.4031)	-0.7497 (-1.1915)
Q(0.80)	4.1382*** (9.8949) <i>Pseudo R</i> ² = 0.4366	0.1029*** (3.1958)	-0.0008** (-2.6016)	0.0165** (2.5287)	-1.3724*** (-2.6764)
Q(0.90)	4.5973*** (5.3023) <i>Pseudo R</i> ² = 0.3711	0.0745** (2.0557)	-0.0006* (-1.8586)	0.0159 (1.3571)	-0.7288 (-1.3671)

Notes: Asterisks (*),(**),(***) denote statistically significant at 10%, 5% and 1% respectively. Figures in round brackets (...) are t-statistics.

It seems that income is a very important factor affecting the levels of happiness in these countries. We can observe that the income ($income_i, income_i^2$) variables are statistically significant at the 1% level in all three tables. Interestingly, the relationship between happiness and income is shown to be nonlinear, and exhibiting an inverted U-shaped Kuznets curve. At lower level of income or economic development, the levels of happiness increases; but as income increases further, the levels of happiness declined, thus exhibiting the inverted U-shaped curve.

The intuition behind this relationship is that at low income levels, what really matters in life is to increase their current (absolute) income so that individuals are able to live a comfortable life – care for their families, good education for their children, adequate clothing and housing etc. However, as their income as well as their community and society increases further, their levels of happiness decline as they feel that relative to others their income has not been better-off than their neighbors or member of their communities.

Table 3. OLS and Quantile Regression Estimates with Tertiary Education

Estimator	Constant	income	income ²	education	D
Panel A: OLS					
OLS	4.3512*** (32.141) <i>R</i> ² =0.6650	0.1019*** (5.3497)	-0.0007*** (-3.5068)	0.0069** (2.1050)	-0.7859** (-2.5406)
Panel B: Quantile regression					
Q(0.10)	3.5968*** (25.509) <i>Pseudo R</i> ² = 0.4311	0.0666*** (2.8297)	-0.0003 (-1.1991)	0.0107*** (3.2810)	-0.5015 (-1.2352)
Q(0.20)	3.6651*** (22.811) <i>Pseudo R</i> ² = 0.4595	0.0762*** (3.7085)	-0.0004** (-2.0618)	0.0124*** (3.4555)	-0.3938 (-1.1510)
Q(0.30)	3.8133*** (21.368) <i>Pseudo R</i> ² = 0.4436	0.0876*** (4.1844)	-0.0005** (-2.4790)	0.0092** (2.3823)	-0.4635 (-1.1970)
Q(0.40)	4.1373*** (22.696) <i>Pseudo R</i> ² = 0.4439	0.0915*** (4.3426)	-0.0006*** (-2.6593)	0.0072* (1.7940)	-0.6260 (-1.5956)
Q(0.50)	4.5111*** (21.477) <i>Pseudo R</i> ² = 0.4452	0.0834*** (3.9079)	-0.0005** (-2.3622)	0.0052 (1.1584)	-0.5490 (-1.3880)
Q(0.60)	4.6239*** (22.370) <i>Pseudo R</i> ² = 0.4636	0.0858*** (4.0611)	-0.0006** (-2.5772)	0.0044 (1.0068)	-0.5058 (-1.2684)
Q(0.70)	4.7855*** (23.262) <i>Pseudo R</i> ² = 0.4679	0.0799*** (3.4386)	-0.0005** (-2.4404)	0.0068 (1.3018)	-0.4397 (-0.9518)
Q(0.80)	5.1358*** (21.384) <i>Pseudo R</i> ² = 0.4416	0.0824*** (3.6859)	-0.0006*** (-2.6506)	0.0062 (1.0610)	-0.7739* (-1.7124)
Q(0.90)	5.1066*** (13.203) <i>Pseudo R</i> ² = 0.3985	0.1277*** (2.8268)	-0.0010** (-2.3406)	0.0092 (0.8781)	-1.4942* (-1.7673)

Notes: Asterisks (*),(**),(***) denote statistically significant at 10%, 5% and 1% respectively. Figures in round brackets (...) are t-statistics.

Thus, the increasing part of the inverted U-shaped curve support the view contended by Stevenson and Wolfers (2008), Hagerty

and Veenhoven (2003) and Ingelhart et al. (2008); while the decreasing section of the inverted U-shaped curve is supported

by Easterlin (1995), Blanchflower and Oswald (2004) and Macdonald and Douthitt (1992).

As for education, results in Table 1 clearly suggest that there is a negative relationship between the levels of happiness and primary education. Taking from the point of view that education facilitates better employment, income, job quality, improvement in health (Cuñaado and de Garcia, 2012), based on this premises, then higher education should facilitate higher levels of happiness. Thus, results in Table 1 that indicate a negative association between primary education and the level of happiness would suggest that “individuals overrate their socioeconomic prospects from having primary education relative to real opportunities, thus primary education impacted negatively with happiness (Ferrante, 2009). However, on the other hand, results in Tables 2 and 3 show that an increase in higher levels of education (secondary and tertiary) affects the levels of happiness positively, albeit that in our study, secondary education is statistically significant at the 10% level; while the tertiary education is statistically significant at the 5% level. Thus, higher education can command better living conditions and therefore bring more happiness.

Lastly, our dummy variable in all three estimated equations clearly suggest that irrespective of the levels of income as well as the levels of educational attainment, the levels of happiness among the developed countries is lower than the levels of happiness in the developing countries.

FURTHER ANALYSIS USING QUANTILE REGRESSION

It is well known that OLS estimates the effect of the explanatory variables on the mean of the conditional distribution of the dependent variable. To allow the effect of the explanatory variables on the entire conditional distribution of the dependent variable, we also employ the quantile regression (Koenker and Basset, 1978). Quantile regression allows the estimated parameters to differ at different points of the conditional distribution of the dependent variable. Therefore, a number of different quantile regressions give us a more complete description of the underlying conditional distribution.

The quantile regression is defined as follows

$$happiness_i = x_i' \beta_\tau + \mu_{\tau i} \quad (2)$$

$$Quantile_\tau(happiness_i | x_i) = x_i' \beta_\tau \quad (3)$$

where x_i' equals a vector of explanatory variables as defined above, β_τ equals the vector of parameters associated with the τ -th percentile, and $\mu_{\tau i}$ equals an unknown error term. The $Quantile_\tau(happiness_i | x_i) = x_i' \beta_\tau$ equals the τ -th conditional quantile of $happiness$ given x with $\tau \in (0,1)$. By estimating β_τ , using different values of τ , quantile regression permits different parameters across different quantiles of the levels of happiness.

In other words, repeating the estimation for different values of τ between 0 and 1, we trace the distribution of $happiness$ conditional on x and generate a much more complete picture of how explanatory variables affect the dependent variable. The τ -th quantile regression estimates β_τ , by solving the following minimization problem and the median regression occurs when $\tau = 0.5$ and the coefficients of the absolute values both equal one.

$$\min_{\beta} [\sum_{i \in \{i: happiness_i \geq x_i' \beta\}} \tau |happiness_i - x_i' \beta| + \sum_{i \in \{i: happiness_i < x_i' \beta\}} (1 - \tau) |happiness_i - x_i' \beta|]$$

In Panel B of Tables 1 to 3 we present the estimated results of the quantile regressions for Equation (1). We report the $pseudoR^2$, a quantile measure of goodness of fit. Generally the $pseudoR^2$ increases from the 10th quantile to the 40th quantile or the 70th quartile and then starts to decrease until the 90th quantile. This indicates that the model explains the levels of happiness between 40th and 70th quartile better than the levels of happiness in the lower and higher quantiles. Nevertheless, our results suggest that all variables are significant and show correct sign in the higher quartile for primary and secondary education, and lower quartile for the tertiary education.

In Table 1, the income variable show nonlinear relationship with the levels of happiness in the 10th and 40th to 90th quantiles; while income is linearly related to the levels of happiness only in the 20th and 30th quantiles. Primary education on the other hand, only shows importance in affecting the levels of happiness in the higher quantiles, that is, 60th to 90th quantiles. If education can command good life, thus, primary education can cause regret and therefore show a negative impact on the levels of happiness (Ferrante, 2009). Nevertheless, the levels of primary education do not have any impact on the levels of happiness in the 10th to 50th quantiles.

Results in Panel B in Tables 2 and 3 suggest that an inverted U-shaped curve exist between the levels of happiness and income for all quantiles except for the 60th quantile in model with secondary education, and for the 10th quantile in model with tertiary education. As for the secondary education variable, in our OLS equation secondary education is only significant at the 10% level, however, in our quantile regression we can observe that secondary education variable is statistically significant at the 5% level in the 70th and 80th quantiles, and significant at 10% for the 50th and 60th quantiles.

These results clearly suggest that secondary education impacted positively for people with higher levels of happiness but not people with lower levels of happiness. On the other hand, results in Table 3 suggest that tertiary education does matter for people with lower levels of happiness, particularly the levels of happiness at the 10th to 40th quantiles; and it seems that tertiary education is not important for people with higher levels of happiness at the 50th to 90th quantiles.

CONCLUSIONS

Many nations relentlessly pursue the path of economic growth to become developed and high income nations, but little do they realize that in their pursuit of material well-being, they seem to have completely missed the human emotions aspect. Recent literature on happiness has shown evidence that in several developed nations that have enjoyed rapid growth and accumulated high levels of material well-being, their citizens have not reported enjoying higher levels of happiness.

In this study we investigate whether higher income and education can bring more happiness using cross-sectional evidence from 149 countries for the year 2013. This worldwide evidence on the relationship between the levels of happiness and income and education were estimated using OLS and supplemented with quantile regressions. Our OLS regression results overwhelmingly suggest that on average, the relationship between the levels of happiness and income worldwide is nonlinear in nature.

The levels of happiness increases at the early stages of economic development, but after to a certain optimal turning point, the levels of happiness declines as economic development progresses further. We put forward this argument to that at lower level of income, current income does matter to the people,

but as income increases further, relative income dominates peoples' behavior and happiness. If their income increases but not in relative to their neighbors, their level of happiness decline. Generally, the OLS results concur with our results from the quantile regressions.

For the education variable, increase in primary education attainment is associated with declining levels of happiness; but primary education only matters for peoples at the higher quantiles not at the lower quantiles. This finding is similar for secondary education attainment where secondary education does matter for people at the higher quantiles. Nevertheless, the impact of secondary education on the levels of happiness is positive, contrary to the effects of primary education. Thus, attaining secondary education facilitates higher levels of happiness. On the other hand, tertiary education also brings more happiness. However, unlike secondary education, tertiary education is important for people at the lower quantile. Thus, people that are less happy in life can uplift their levels of happiness to higher level by engaging in tertiary education. Lastly our results clearly suggest that for all levels of happiness, there is no difference between the developed and the developing countries except for people's at the most higher levels of happiness.

REFERENCES

- Arwin, M., and Lew, B. 2014. Does income matter in the happiness-corruption relationship? *Journal of Economic Studies*, 41(3): 469-490.
- Becker, G.S. 1962. Investment in human capital: A theoretical analysis. *Journal of political Economy*, 70(5, Part 2): 9-49.
- Blanchflower, D.G., and Oswald, A.J. 2004. Well-being over time in Britain and the USA. *Journal of Public Economics*, 88(7): 1359-1386.
- Calvo, R., Carr, D.C., and Matz-Costa, C. 2017. Expanding the happiness paradox: Ethnoracial disparities in life satisfaction among older immigrants in the United States. *Journal of Aging and Health*, 1-25. DOI: 10.1177/0898264317726608
- Checchi, D. 2006. *The Economics of Education: Human Capital, Family Background and Inequality*. Cambridge: Cambridge University Press.
- Chen, W.C. 2012. How education enhances happiness: Comparison of mediating factors in four East Asian countries. *Social Indicators Research*, 106: 117-131.
- Cheung, H.Y., and Chan, A.W.H. 2011. The relationship of competitiveness motive on people's happiness through education. *International Journal of Intercultural Relations*, 35: 179-185.
- Clark, A.E., and Oswald, A.J. 1994. Unhappiness and unemployment. *The Economic Journal*, 104: 648-659.
- Cuñado, J., and de Gracia, F.P. 2012. Does education affect happiness? Evidence for Spain. *Social Indicators Research*, 108(1): 185-196.
- Diener, E., Sandvik, E., Seidlitz, L., and Diener, M. 1993. The relationship between income and subjective well-being: Relative or absolute? *Social Indicators Research*, 28(3): 195-223.
- Diener, E., Diener, M., and Diener, C. 1995. Factors predicting the subjective well-being of nations. *Journal of Personality and Social Psychology*, 69: 851-864.
- Dietz, T., Rosa, E.A., and York, R. 2012. Environmentally efficient well-being: Is there a Kuznets curve? *Applied Geography*, 32: 21-28.
- Di Tella, R. MacCulloch, R.J., and Oswald, A.J. (2003). The macroeconomics of happiness. *Review of Economics and Statistics*, 85: 809-827.
- Duesenberry, J.S. 1949. *Income, Savings, and the Theory of Consumer Behaviour*. Cambridge, Mass: Harvard University Press.
- Easterlin, R.A. 1973. Does money buy happiness? *The Public Interest*, 30: 3-10.
- Easterlin, R.A. 1974. Does economic growth improve the human lot? Some empirical evidence. In P.A. David and M.W. Reder (Eds.). *Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz*. The Netherlands: Elsevier. (pp.89-125).
- Easterlin, R. 1995. Will raising the incomes of all increase the happiness of all? *Journal of Economic Behaviour and Organization*, 27: 35-47.
- Easterlin, R.A. 2001. Income and happiness: Towards a unified theory. *The Economic Journal*, 111(473): 465-484.
- Emmons, R.A. 1986. Personal strivings: An approach to personality and subjective well-being. *Journal of Personality and Social Psychology*, 51, 1058-1068.
- Ferrante, F. 2009. Education, aspirations and life satisfaction. *Kyklos*, 62(4): 542-562.
- Ferrer-i-Carbonell, A. 2005. Income and well-being: An empirical analysis of the comparison income effect. *Journal of Public Economics*, 89(5): 997-1019.
- Frey, B.S., and Stutzer, A. 2000a. Happiness, economy and institutions. *The Economic Journal*, 110(466): 918-938.
- Frey, B.S., and Stutzer, A. 2000b. What can economists learn from happiness research? *Journal of Economic Literature*, 40: 402-435.
- Frey, B.S., and Stutzer, A. 2002. *Happiness and Economics: How the Economy and Institutions Affect Human Well-Being*. Princeton: Princeton University Press.
- Gerdtham, U.G., and Johannesson, M., 2001. The relationship between happiness, health, and socio-economic factors: Results based on Swedish microdata. *The Journal of Socio-Economics*, 30(6): 553-557.
- Hagerty, M.R., and Veenhoven, R. 2003. Wealth and happiness revisited - growing national income does go with greater happiness. *Social Indicators Research*, 64(1): 1-27.
- Hartog, J., and Oosterbeek, H. 1998. Health, wealth and happiness: Why pursue a higher education? *Economics of Education Review*, 17(3): 245-256.
- Helliwell, J.F., Layard, R., and Sachs, J. (Eds.). 2016. *World Happiness Report 2016*. New York: Sustainable Development Solutions Network.
- Inglehart, R., Foa, R., Peterson, C., and Welzel, C. 2008. Development, freedom, and rising happiness: A global perspective (1981-2007). *Perspectives on Psychological Science*, 3(4): 264-285.
- Koenker, R., and Basset, G. 1978. Regression quantiles. *Econometrica*, 46: 33-50.
- Kuznets, S. 1955. Economic growth and income inequality. *American Economic Review*, 45: 1-28.
- Lelkes, O. 2006. Tasting freedom: Happiness, religion and economic transition. *Journal of Economic Behavior & Organization*, 59: 173-194.
- Macdonald, M., and Douthitt, R.A. 1992. Consumption theories and consumers' assessments of subjective well-being. *The Journal of Consumer Affairs*, 26(2), 243-261.
- McBride, M. 2010. Money, happiness and aspirations: An experimental study. *Journal of Economic Behavior & Organization*, 74: 262-276.
- Nikolaev, B. 2018. Does higher education increase hedonic and eudaimonic happiness? *Journal of Happiness Studies*, 19: 483-504.
- Oreopoulos, P., and Salvanes, K.G. 2011. Priceless: The nonpecuniary benefits of schooling. *Journal of Economic Perspectives*, 25(1): 159-184.
- Oswald, A.J. 1997. Happiness and economic performance. *The Economic Journal*, 107(445): 1815-1831.
- Peiro, A. 2006. Happiness, satisfaction and socio-economic

- conditions: Some international evidence. *The Journal of Socio-Economics*, 35(2): 348-365.
39. Pollak, R.A. 1976. Interdependent preferences. *American Economic Review*, 66(3): 309-320.
 40. Ram, R. 2017. Kuznets curve in happiness: A cross-country exploration. *Economic Modelling*, 66: 272-278.
 41. Sacks, D.W., Stevenson, B., and Wolfers, J. 2010. Subjective well-being, income, economic development and growth. NBER Working Paper No. 16441.
 42. Salinas-Jimenez, M.M., Artes, J., and Salinas-Jimenez, J. 2016. Educational mismatch and job aspirations: A subjective wellbeing analysis using quantile regression. *International Journal of Manpower*, 37(1): 115-134.
 43. Stack, S., and Eshleman, J.R. 1998. Marital status and happiness: A 17-nation study. *Journal of Marriage and Family*, 60(2): 527-536.
 44. Stevenson, B., and Wolfers, J. 2008. Economic growth and subjective well-being: Reassessing the Easterlinparadox. *Brookings Papers on Economic Activity*, Spring: 1-87.
 45. Stevenson, B., and Wolfers, J. 2013. Subjective well-being and income: Is there any evidence of stiation? *American Economic Review*, 103(3): 598-604.
 46. Stutzer, A. 2004. The role of income aspirations in individual happiness. *Journal of Economic Behavior & Organization*, 54(1): 89-109.
 47. Sulkowski, A., and White, D.S. 2016. A happiness Kuznets curve? Using model-based cluster analysis to group countries based on happiness, development, income, and carbon emissions. *Environment, Development and Sustainability*, 18(4): 1095-1111.
 48. Theodossiou, I. 1998. The effects of low-pay and unemployment on psychological well-being: A logistic regression approach. *Journal of Health Economics*, 17: 85-104.
 49. Tsui, H.C. 2014. What affects happiness: Absolute income, relative income or expected income? *Journal of Policy Modeling*, 36: 994-1007.
 50. Witter, R.A., Okun, M.A., Stock, W.A., and Harring, M.J. 1984. Education and subjective well-being: A meta-analysis. *Educational Evaluation and Policy Analysis*, 6(2): 165-173.

Appendix A: List of countries included in the study

Afghanistan	Costa Rica	Ireland	Morocco	Spain
Albania	Croatia	Israel	Myanmar	Sri Lanka
Algeria	Cyprus	Italy	Nepal	Sudan
Angola	Czech Rep	Jamaica	Netherlands	Suriname
Argentina	Denmark	Japan	New Zealand	Swaziland
Armenia	Djibouti	Jordan	Nicaragua	Sweden
Australia	Dominican Rep	Kazakhstan	Niger	Switzerland
Austria	Ecuador	Kenya	Nigeria	Syria
Azerbaijan	Egypt	Kuwait	Norway	Taiwan
Bahrain	El Salvador	Kyrgyzstan	Oman	Tajikistan
Bangladesh	Estonia	Laos	Pakistan	Tanzania
Belarus	Ethiopia	Latvia	Panama	Thailand
Belgium	Finland	Lebanon	Paraguay	Togo
Benin	France	Lesotho	Peru	Trinidad and Tobago
Bolivia	Gabon	Liberia	Philippines	Tunisia
Bosnia	Georgia	Libya	Poland	Turkey
Botswana	Germany	Lithuania	Portugal	Turkmenistan
Brazil	Ghana	Luxembourg	Qatar	Uganda
Bulgaria	Greece	Macedonia	Romania	Ukraine
Burkina Faso	Guatemala	Madagascar	Russia	United Arab Emirates
Burundi	Guinea	Malawi	Rwanda	United Kingdom
Cambodia	Haiti	Malaysia	Saudi Arabia	Uruguay
Cameroon	Honduras	Mali	Senegal	USA
Canada	Hong Kong	Malta	Serbia	Uzbekistan
Central African Rep	Hungary	Mauritania	Sierra Leone	Venezuela
Chad	Iceland	Mauritius	Singapore	Vietnam
Chile	India	Mexico	Slovakia	Yemen
China	Indonesia	Moldova	Slovenia	Zambia
Colombia	Iran	Mongolia	South Africa	Zimbabwe
Comoros	Iraq	Montenegro	South Korea	

Source: World Happiness Report 2016.