

Does development lead to happiness?

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Abstract

Does development lead to happiness, is the main question which we attempted to analyze in this paper. However, researchers trying to measure the association between happiness and development widely differ in their observations depending upon the data used by them (whether cross sectional or time series; short-term or long-term). Our basic presumption is that slow economic growth is not sufficient to bring measurable changes in happiness. The reason is that people consider lower economic growth as insignificant from the perspective of making changes in their standard of living and they attach lower happiness weight. We also tested the causal relationship between happiness and development. Our argument is that development (not the growth in general) and happiness have stronger positive linkages across the nations whether developed or developing. The paper utilizes the panel data econometrics and parametric tests for the analysis. The study concludes that development does lead to happiness and nations experiencing long episodes of high economic growth exhibit high positive rise in happiness.

Keywords- Happiness, Development and Growth, HDI, Inequality.

Introduction

The common notion that happiness is monotonically an increasing function of economic progress may not be axiomatically true. Economic progress may enhance the basket of materialistic choices but may not truly increase happiness as it is more of a state of mind and subjective thing. Several economists and social scientists attempted to measure well-being and happiness in developed, developing and transition economies (Easterlin, 1974; Veenhoven 1991; Inglehart 2002; Frey and Stutzer 2002; Easterlin 2005a, 2009; Easterlin and Plagnol 2008; Deaton 2008; Easterlin et al. 2010, 2012; Easterlin and Sawangfa 2010; Diener et al. 2010). Richard Easterlin pioneered the economics of happiness in the mid-1970s. He found that across countries and cultures, the way that most people spend their time is similar: working and trying to provide for their families. Thus, the concerns that they express when asked about happiness are similar. His finding—that wealthy people tend to be happier than poorer ones within countries, but that there is no such relationship among countries or over time—has since been supported by a number of subsequent studies, and is known as the “Easterlin paradox” (Easterlin, 1974). Stefano Pettinato and Carol Graham developed data for 17 countries in Latin America. They found similar outcome that there is no obvious relationship between income and happiness in the case of developing economies. Yet for the most part of this study, average happiness levels are high in the advanced countries than they are in the developing ones (Graham, 2005).

Easterlin (2014) analysed the findings of the various studies based on the cross section and time series analysis (long and short time series). On the basis of his analysis of evidences of 17 developed countries, 9 developing countries and 11 transition countries and 17 Latin American countries, he concluded that there is no convincing substantiation that economic growth leads to increased happiness. He further remarked that studies reporting positive association between these two on the basis of time series data, were basically based on the short time series. Short time series data-based observations should not be confused with long time series observations. In-fact the whole debate about the relationship between economic growth and happiness revolves around two important aspects. One is measurement issues of economic growth and happiness, and; second is evidences of relationship between economic growth and happiness on the basis of cross-sectional data and time series data.

Development, growth and happiness

Development and growth are two distinct terms implying different meaning but they both are measuring rod of economic progress of a nation. Growth indicates pace of change in economic progress, whereas, level of development indicates current standard of economic progress or standard of living, which is the cumulative effect of previous years' growth. Growth is a flow concept whereas development is a static concept. Development is a broader term which indicates current structure of social, economic and demographic spheres of a nation. Studies exploring linkages between happiness or well-being and economic progress mainly took growth in per capita GDP as an indicator of economic progress (For instance, Hagerty and Veenhoven 2006, Deaton 2008, Easterlin et al. 2010, Easterlin 2013).

Growth as an indicator of economic progress has certain disadvantages when linking its relationship with happiness. Developed nations tend to have lower growth rates as compared to developing nations. This happens due to higher base effect (of per capita real GDP) and already reaching to maturity level of development in the developed countries. Thus, two countries, one is being developed and other developing, experiencing same of level of increase in per capita GDP will definitely have two different growth rates. Developed country will exhibit lower growth rate as compared to developing country for the same level of change in per capita GDP. For the same reason, developed countries may also have high level of happiness as compared to developing countries and, therefore, rate of change in level of happiness or well-being may not be very significant. Easterlin (1974, 2010 & 2013) and other studies also noted the fact that developed countries exhibit higher average happiness as compared to developing countries which supports our argument.

Developing countries may further be divided into emerging economies – which are experiencing long episodes of substantial economic growth like India and China, and other developing countries. Our basic presumption is that slow economic growth is not sufficient to bring measurable changes in happiness. The reason is that people consider lower economic growth as insignificant from the perspective of making changes in their standard of living and they attach lower happiness weight. We feel that economic growth over and above a critical minimum level is considered significant by the public and perceived to bring large happiness

benefits. Thus, we may find that nations experiencing long episodes of high economic growth may exhibit positive association with happiness.

Our second main argument is that development and happiness may have stronger positive linkages across the nations whether developed or developing. Level of development is the reflection of past policy efforts and pace of structural changes. Developed nations exhibit better standard of living, better employment opportunities, higher life expectancy and good governance. These are prerequisites of happy and joyous life. Happiness correlated with level of development may present consistent result across the nations. Thus, we presume that level of development is more important than pace of development for the purpose of establishing relationship between happiness and economic progress, in general.

Measurement issues of happiness or well-being

Happiness, being a very subjective and individual thing, is very tough to measure. Most of studies utilized perception-based surveys to gauge happiness or well-being. Some of the famous surveys available for researchers are the World Values Survey (WVS), Annual Latinbarometer Survey, General Social Survey (GSS), PEW Survey, Eurobarometer Survey and Gallup World Poll. All these surveys ask perception-based questions on ordinal scale to measure the life satisfaction/happiness/well-being. All these surveys are not strictly comparable as their coverage of countries, time period and way of asking the question about subjective well-being differs greatly. Even, in many cases two rounds of same survey are not strictly comparable. Easterlin (2014) pointed out that in the second wave of WVS, the interviewers were instructed to change the order of response choices from one respondent to the another. So, the interviewers asked question from the first respondent with choices ranging from “very happy” down to “not at all happy”. On the other hand, the respondent 2 would be presented with “not at all happy” down to “very happy”. It has been pointed out that there is a common tendency that respondents tend to give more weightage to initial choices over later choices (Belson 1966; Chan 1991; Schuman and Presser 1981; Easternlin, 2014). Also, the coverage of the countries significantly differs. The Latinobarometer Survey covers 18 Latin American countries (as of now), the World Value Survey presently covers 90+ countries, the Eurobarometer Survey covers only European Union member countries except few small countries and the Gallup World Poll covers more than 160 countries.

Does development lead to happiness, is the main question which we attempted to analyze in this paper. However, researchers trying to measure the association between happiness and development widely differ in their observations depending upon the data used by them (whether cross sectional or time series; short-term or long-term). Indeed, based on regressions of happiness on log GDP, Deaton finds that the difference in life satisfaction associated with a doubling of GDP in cross sectional data is greater between richer countries than between poorer countries (Deaton 2008, p. 58). Given this background, in this paper we seek to explore the relationship between happiness and development by taking the evidences from the cross-sectional and panel data.

Variables, Data and Methods

Selection of Variables

Happiness

The basic aim of this paper to test the causal relationship between happiness and development. The measurement of happiness is a complex issue. The dependent variable happiness has been gauged through the happiness index from the WHR published by the Sustainable Development Solutions Network (A Global Initiative for the United Nations). The publication of the WHR is supported by many other international organizations as well. It utilizes the Gallup World Poll data (which is the base data for the WHR) for the rankings, which are based on answers to the main life evaluation question asked in the poll. It asks respondents to rate their own level of happiness on the scale of 0 to 10 (0 being the worst possible life and 10 for the best possible life). The WHR takes the two to three years duration for the assessment of happiness levels. The size of annual sample is 1000 people. For a country participating each year into the survey, then, the sample would constitute 3000 people. However, in many cases the country may not have participated in the survey each year, so, for these countries sample size would be smaller than 3000 people. The WHR and other researchers have found that the selected sample is adequate from the perspective of efficacy and representativeness of the findings. This study utilizes the happiness index data to capture the level of happiness.

Level of Development

The level of economic progress has been measured through per capita real GDP. The selection variable per capita real GDP (US\$) is the most commonly accepted parameter of level of development. The study takes natural log of per capita real GDP (US\$) for the purpose of analysis.

Other explanatory variables

The selection of explanatory variables has primarily been made on the basis of review of literature and discussion with the peers. The control variables are human development index (HDI), trade/GDP ratio, unemployment and income inequality.

HDI measures the level of human development across the countries on the basis of three parameters i.e. standard of living, access to knowledge and health. People of a country with better standard of living and good access to knowledge & health axiomatically will be happier than one with poor living, knowledge and health conditions. Therefore, the study presumes that HDI and happiness will have positive association. In this era of global integration, no country is proof to external shocks. Also, the trade openness is better no trade from the perspective of welfare of the society. The study also included trade openness as an explanatory variable. The trade openness has been proxied by trade/GDP ratio. We hypothesized positive association between trade openness and happiness.

Theoretically, unemployment and happiness should have negative association between them. Low unemployment means greater number of people are employed, and able to fulfill their basic needs. Societies or nations with low unemployment levels would have happier people as compared to nations with higher levels of unemployment. We also believed in comparison theory developed by Vaan Praag and Kapteyn (1973), Easterlin (1974) and Brickman et al. (1978). The theory emphasized that human happiness is the function of comparisons between standards of the quality of life and perceived life circumstances (Schyns 1998). The comparison theory concluded that the welfare of a person essentially depends upon income of the people. However, the satisfaction from one's income (thereby happiness) does not depend upon his/her absolute income but on relative income also. A person's income growing much slower than the other person living in the same society may seriously downgrade the happiness/satisfaction of the person concerned. Hence, high distributional inequalities

especially income inequality can negatively affect the happiness of a society. Thus, we believe that society with lesser unequal income distribution will have higher happiness standards as compared to the society with more inequalities.

Data sources

The data for 125 countries was collected for the period of 2012 to 2016. The number of countries of each selected variable was varying from 156 to 206. Out of these 125 common countries were selected. Data for economic variables i.e. per capita real GDP (US\$), income inequality (%), unemployment (% of total labour force) has been collected from the World Bank's annual publication- World Development Indicators, whereas, the happiness index score and human development index score were collected from the World Happiness Report and the UNDP Human Development Reports respectively.

Cross Sectional vs Time Series

Existing studies have either utilized cross sectional or time series data for exploring relationship between happiness and economic growth. In-fact, the Easterling Paradox is the result of the type of data used for the analysis. Cross section and short time series evidences suggest positive association whereas long time series evidences indicated no such relation. However, as far as our understanding is concerned, no serious efforts have been made to utilize the panel data to examine the said relationship. Panel data-based evidences, which are combination of time series and cross section, may provide some new findings. The World Happiness Report (WHR) provides us a unique opportunity to analyze relationship between happiness and economic progress through a panel data.

Methods

We have applied panel data regression to statistically test the relationship between happiness and development. We have short balanced panel (many entities i.e. large n but few time periods small T). Pooled OLS and random effect model of panel data have been used for the analysis. The following functional form of equation has been estimated through panel data analysis:

Pooled OLS Model: $y_{it} = \alpha + X'_{it} \beta + \varepsilon_{it} (u_i = 0)$

Random effect model: $y_{it} = \alpha + X_{it} \beta + (u_i + v_{it})$

Where y stands for dependent variable; α is the intercept term; X' is set of explanatory variables and ε is the error term. Here, i stands for the cross-sectional variable and t for time.

If the individual effect u_i does not exist ($u_i = 0$), ordinary least squares (OLS) generally produces efficient and consistent parameter estimates. A random effect model assumes that individual effect is not correlated with any explanatory variable and then estimates error variance specific to groups (or times). Hence, u_i is an individual specific random heterogeneity or a component of the composite error term. v_{it} is the error term in the random effect model.

We plan to estimate two different functional forms. First functional form takes the happiness index score as the function of log per capita real GDP, HDI, income inequality (%) and unemployment (%). Happiness Index = f (per capita real GDP, HDI, income inequality, unemployment) which is

$$\text{Happiness Index}_{it} = \alpha + \beta_1 \text{ per capita real GDP}_{it} + \beta_2 \text{ HDI}_{it} + \beta_3 \text{ income inequality}_{it} + \beta_4 \text{ unemployment}_{it} + e_{it}$$

As we had a detailed discussion in above sections that level of development and pace of development are two different connotations. A developed country may have lower pace as compared to a developing country. We also intend to analyse the causal relationship between change in happiness index and selected explanatory variables.

$$\Delta \text{ Happiness} = f(\Delta \text{ per capita real GDP}, \Delta \text{ HDI}, \Delta \text{ income inequality}, \Delta \text{ unemployment})$$

$$\Delta \text{ Happiness Index}_{it} = \alpha + \beta_1 \Delta \text{ per capita real GDP}_{it} + \beta_2 \Delta \text{ HDI}_{it} + \beta_3 \Delta \text{ income inequality}_{it} + \beta_4 \Delta \text{ unemployment}_{it} + e_{it}$$

Here Δ indicates change in the concerned variable. STATA 13.0 has been used to perform the data analysis.

Results

Table 1 presents descriptive statistics of the selected variables. High variability has been observed in per capita real GDP growth rate (C.V. 140.39), Unemployment (C.V. 70.03) and trade/GDP ratio (C.V. 64.30). The range of average growth rate in per capita real GDP ranges from -22% to 24%. It is an indication that level of development and pace of development should not be taken same while establishing relationship between happiness and development. However, happiness, per capita real GDP and human development are found to be quite stable. It implies that happiness and human development which are welfare or life satisfaction-oriented measures tend to take longer time perspective for even small change. However, economic performance of a nation is comparatively more volatile and subject to considerable changes in the short period of time depending upon demand, supply and production conditions.

Table 2 presents coefficient of correlation (partial) among the selected variables. Happiness index score is positively associated (axiomatically expected direction of relationship) with HDI, trade/GDP ratio and log per capita real GDP. The coefficients are statistically significant at 1% level of significance. It implies that nations with high level of economic development, human development and trade/GDP ratio have higher happiness. Per capita real GDP growth rate, income inequality and unemployment are negatively associated with happiness but except income inequality (0.829, $p < 0.01$) none of them are statistically significant. However, income inequality and unemployment exhibit expected direction of relationship. Our results suggest happier countries tend to have lower levels of income inequality and unemployment. Scatter plot matrix of the selected variables is also presented to have better understanding of the trends and association between the variables (Graph 1). Scatter plots are distinctively convincing about the trend and strength of association in the case of happiness index with HDI and log per capita real GDP.

The scatter plot matrix of change in variables has been given in graph 2. It is clearly visible that in all cases the data points are concentrated at certain point, indicating very poor degree of correlation or no correlation among the happiness and other selected variables. In fact, the R^2 , in the cases of HDI and trade/GDP ratio, is zero. This finding implies that there exist poor evidences of association between pace of change in per capita real GDP, HDI, income inequality and unemployment is poorly correlated with rate of change in happiness.

Evidences from panel data – Development and Happiness

We have applied pooled OLS and random effect model for testing causal relationship between happiness and development, as our effect tests (F-test & LM Test) were in the favour of pooled OLS and random effect model respectively. Three different variants of the model have been estimated applying both pooled OLS and random effect model, which are given in table 3. Model 1 takes log per capita real GDP and HDI as the regressors. Model 2 adds unemployment as regressor, whereas, the model 3 takes all the selected explanatory variables together. Pooled OLS regression results show log per capita real GDP is an important determinant of happiness in all variants of the model. The happiness index coefficients are positive and statistically significant at 1 percent level of significance (Model 1: 0.461, $p < 0.01$; Model 2: 0.478, $p < 0.01$; Model 3: 0.486, $p < 0.01$). Other explanatory variables are also statistically significant with expected sign except trade/GDP ratio (-0.0016, $p < 0.01$) and income inequality (0.0075, $p < 0.01$). Although the quantum of their coefficients is small but they are statistically significant. The models are statistically fit as reflected by F-test (model) value and their p-values.

The impact of income inequality on happiness is complex. It depends how people percept about the inequality. If people perceive that inequality is a sign of future upward mobility and opportunity, then, people take happiness positively. On the other hand, if the people feel that inequality may result in disadvantageous position for a part of the society or deprive them from opportunity, then, inequality will definitely affect adversely peoples' well-being (Graham, 2014). There are mixed evidences regarding trade openness and happiness. Tsai (2009) found evidences that market openness boosts happiness. On the other hand, Ma and Chen (2020) reports inverted U shaped relationship between happiness and trade openness in the case of China. Excessive trade openness creates an environment of uncertainty and the economy becomes prone to external shocks. Thus, a moderate level of trade openness is desired from the perspective of happiness but not very high level.

The random effect model results are different from pooled OLS. Log per capita real GDP (0.6112, $p < 0.01$), unemployment (-0.0414, $p < 0.01$) and income inequality (0.0069, $p < 0.10$) are the statistically significant variables affecting happiness. Other explanatory variables are not statistically significant determinants of happiness. The model is properly fit as reflected by

Wald Chi2. Log per capita real GDP and unemployment have expected direction of relationship with happiness, whereas, income inequality is positively associated with happiness same as pooled OLS results.

Economic growth and happiness

As discussed above scatter plot matrix showed discouraging results about association between change in happiness index and economic growth along with other explanatory variables. Poor association is evident between happiness index with other selected variables. Although, it was not recommended after seeing evidences from the scatter plot matrix but we ran pooled OLS, fixed effect and random effect models. None of them were found to be statistically appropriate. Therefore, we are not presenting the regression results of pooled OLS, fixed effect and random models. On the basis of these findings, we can say that relationship between economic growth and happiness is not conclusive.

However, as we argued that quantum of growth rate is more important. People take episodes of high rate positively which makes them happier as they feel it will lead to the country to a high level of standard of living. For this purpose, we have averaged the growth rate of per capita real GDP and happiness index of each country for the selected duration. This has been done to avoid year-on-year fluctuation. Further, the countries were arranged in the descending order on the basis of growth rate in per capita real GDP. Then, the countries have been divided into two groups on the basis of per capita real GDP growth rate. We have taken 3% annual per capita real GDP growth rate as the cut-off point for segregating countries into high and low¹ growth rate (Jones, 2016). Countries with annual growth of 3% and above have been termed as high growth rate countries. The mean growth rates of per capita real GDP and happiness index are given in the table 4.

In our sample of selected 125 countries, there are 43 countries which have registered 3% or more than 3% growth in per capita real GDP. The mean annual growth in per capita real GDP in group one is 4.33 percent and in happiness index is 5.10 percent. The mean growth rate of group two in per capita real GDP is 0.83 percent and in happiness index is -2.39 percent. The

¹ Term 'low' has just been used in our study for dividing the countries into two parts. It does not connote any other thing.

difference in mean growth rates is clearly perceptible. Countries with growth in per capita real GDP tend to have significantly positive increment in happiness levels. The difference is statistically significant as well. We have applied independent t-test as the series were normally distributed. Test of normality is given in table 5. The Kolmogorov-Smirnov and Shapiro-Wilk tests show that both the series are normally distributed as the test statistics are not significant at 5 percent level of significance ($p > 0.05$). The independent t-test results are given in table 6. The independent t-statistics shows mean scores of the high and low growth countries have statistically significant differences ($p < 0.01$).

Our hypothesis that high growth countries are also the countries which have high growth in happiness is further approved when we raised the cut-off from the 3 to 4 percent. There are 19 countries which have registered growth rate in per capita real GDP 4 or more than 4 percent. The mean growth rate of such countries is 5.43 percent and 5.73 percent for per capita real GDP and happiness respectively. Thus, we may conclude that countries experiencing high growth rate also experience high positive growth in happiness.

Discussion

The fundamental argument which we explored in the present research work is - whether development leads to happiness. Existing studies results are mainly divided into cross-sectional and time-series (short-time series and long-time series) based findings (Easterlin, 2015). However, we have utilized panel data in this paper to exploit the properties of both the cross-sectional and time series data. In this paper we argued that the development and economic growth are two different economic notions. Therefore, they may have different relationship with happiness. Our findings suggest economic development is positively associated with the happiness. Development is a strong element which determines happiness. Countries with high per capita real income tend to be happier than the countries with lower per capita real income. It is understandable as higher per capita income allows people to satisfy their wants which directly affect their level of satisfaction. Income works as means to achieve end i.e. happiness.

Our findings also suggested that impact of economic growth on happiness is not clearly perceptible. Descriptive statistics showed that highest variation was observed in the case of per capita income growth rate (-22% to 24%). It could be understood that as the countries

reaches to maturity, the pace of net addition to the GDP slows down. Thus, a country may have high level of development and happiness but low growth rate. Even, in some cases the growth rate may turn out be negative. However, we have conclusive evidences that countries which have experienced high growth rate in per capita real GDP are also the countries which have experienced faster rise in happiness. In fact, we have observed that higher is the rate of growth in per capita real GDP, faster is the growth in happiness levels.

We found employment and income inequality as statistically significant explanatory variables by both the models pooled OLS and random effect models. Employment not only ensures livelihood security but also gives sense of satisfaction and reputation in the society. This enhances ones' happiness and well-being. A certain flow of income allows people to make life decision which yield happiness to them. Income has been proven to be an influential determinant of happiness both at the micro level (as an individual income through employment) and at the macro level (through per capita income indicator). In the alternate explanations, the narration that income inequality still gives a positive signal about possibility of upward mobility and future growth, is still true.

Human development index and trade/GDP ratio, which are statistically significant in the pooled OLS model and not statistically significant under random effect model, are affecting happiness in positive and negative direction respectively. A nation with high human development index, a combination of income, education and health parameters, indicates better provisions of education and health facilities. Healthier society with better access to knowledge tends to be happier. On the other hand, too much exposure of economic activity to the world brings risk and uncertainty. Probably, this may be the reason people do not feel happy with excess level of trade openness.

Conclusion

The present paper attempted to analyze relationship between happiness and development. Does development lead to happiness, is the central question which the paper attempted to answer. This relationship is indicator sensitive. The clarity of relationship further depends upon the distinction between the notion of development and growth. Development essentially denotes the current level of economic prosperity as a result of previous policy efforts.

However, growth indicates the pace of development. As economies reach to full employment level, pace of change tends to diminish or stabilize. Thus, index score which is a stock measure may provide misleading results if associated with a flow measure i.e. growth rate. Our findings based on cross-sectional and panel data have shown that growth does not necessarily explain the level of happiness. It is better explained by level of development. Meaning thereby if there is increase in income of people in real terms then once can meet out their necessary needs and may be happier. Obviously, growth is important but it is significant in future and after fulfillment of current requirements. Countries with higher economic growth tend to be associated with lower levels of happiness as these are mostly emerging economies or developing countries. Notwithstanding this, happiness found to be strongly correlated with the human development. It means better education, health and lower inequalities are more important than having only rise in national income. To sum up, development does lead to happiness and nations experiencing long episodes of high economic growth exhibit high positive rise in happiness.

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Table – 1 Descriptive Statistics (N = 625)

Variable	Mean	Std. Dev.	C.V.	Min	Max
Happiness Index	5.385	1.142	21.21	2.839	7.693
Per capita real GDP growth rate (%)	2.130	2.990	140.39	-22.331	24.377
HDI	0.715	0.157	21.92	0.340	0.953
Trade/GDP Ratio	86.294	55.487	64.30	19.101	416.389
Unemployment (%)	7.527	5.272	70.03	0.179	27.694
Income Inequality (%)	22.946	9.787	51.77	4.5	57.3
Log per capita real GDP	8.585	1.509	17.57	5.363	11.595

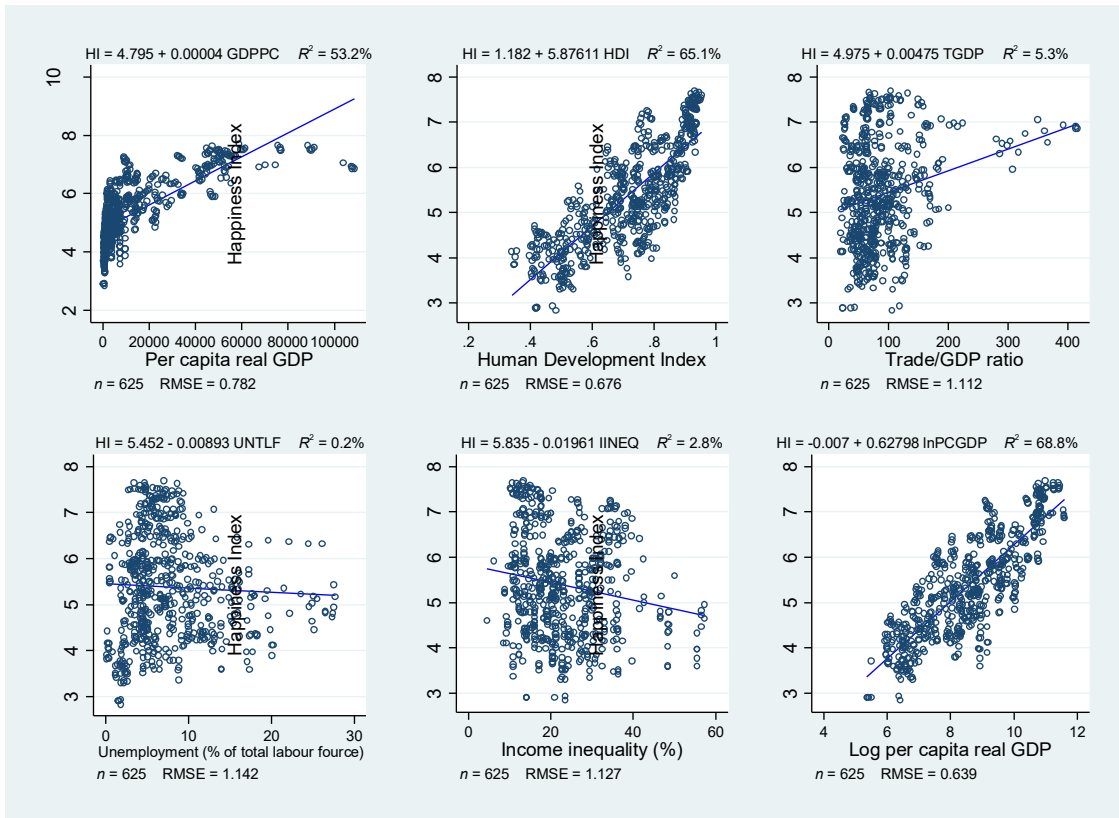
Source: Authors’ calculations.

Table 2: Correlation Matrix

	Happine ss Index	Per Capita GDP Growth Rate (%)	HDI	Trade/G DP Ratio	Unempl oyment (%)	Income Inequalit y (%)	Log Per Capita Real GDP
Happiness Index	1.000						
Per capita GDP Growth Rate (%)	-0.017	1.000					
HDI	0.807**	0.021	1.000				
Trade/GDP Ratio	0.231**	0.095*	0.319**	1.000			
Unemployment (%)	-0.041	-0.110**	0.225**	-0.013	1.000		
Income Inequality (%)	-0.168**	-0.042	-0.272**	-0.227**	0.116**	1.000	
Log per capita real GDP	0.829**	-0.049	0.939**	0.348**	0.222**	-0.214**	1.000

Note: *p<0.05; **p<0.01. Source: Authors’ calculations.

Graph 1: Scatter Plot Matrix with trend line of Selected Variables



Graph 2: Scatter Plot Matrix of change in selected variables

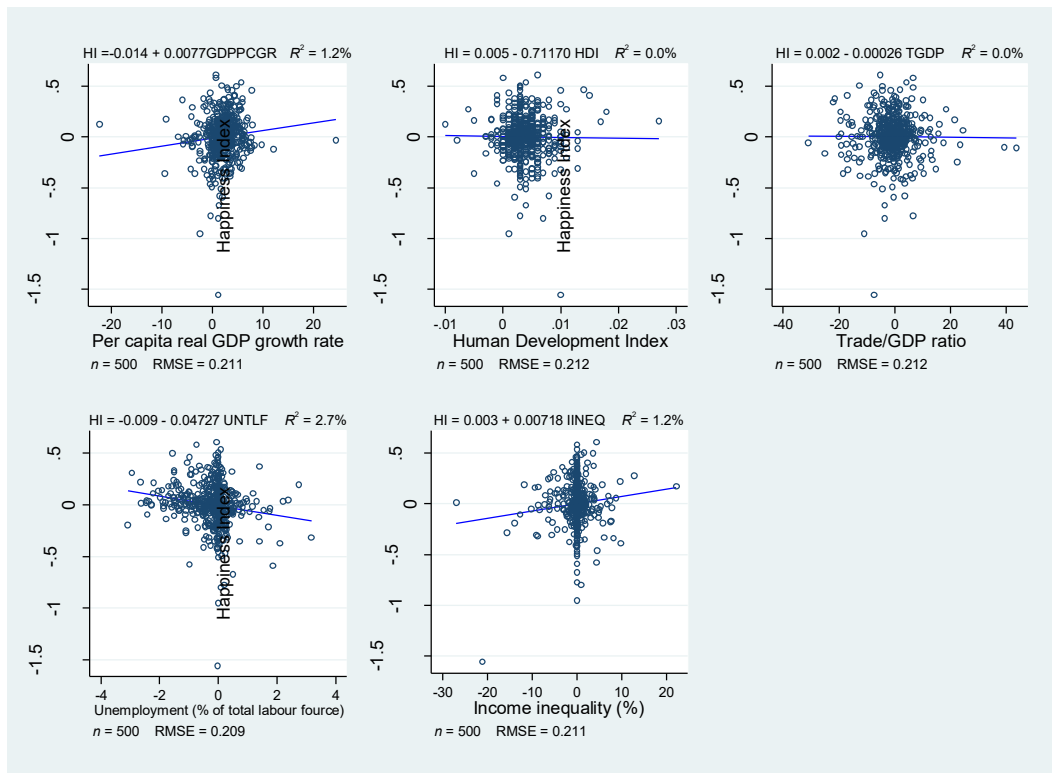


Table 3: Pooled Regression Results (Dependent Variable = Happiness Index)

Variable	Pooled OLS			Random Effect Model		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Log per capita real GDP	0.4617** (0.0490)	0.4780** (0.0444)	0.4868** (0.0445)	0.6422** (0.0963)	0.6136** (0.0880)	0.6112** (0.0887)
HDI	1.7031** (0.4710)	1.9506** (0.4272)	2.2111** (0.4305)	-0.0710 (0.9150)	0.4274 (0.8386)	0.6678 (0.8391)
Unemployment (%)		-0.0523** (0.0045)	-0.0564** (0.0045)		-0.0418** (0.0067)	-0.0414** (0.0067)
Trade/GDP Ratio			-0.0016**			-0.0010

			(0.0004)			(0.0008)
Income Inequality (%)			0.0075**			0.0069*
			(0.0020)			(0.0028)
Constant	0.2029	0.2794	0.1316	-0.0781	0.1260	-0.1026
	(0.1573)	(0.1427)	(0.0158)	(0.3323)	(0.3012)	(0.3086)
F Test(Model)/Wald chi2	706.68**	619.71**	392.08**	314.26**	424.03**	444.13**
Adjusted R ² / R ²	0.6944	0.7496	0.7585	0.6874	0.7429	0.7509
Effect Test (LM Test)				957.03**	902.25**	887.82**
N	625	625	625	625	625	625

Note: **p<0.01; *p<0.10. Standard errors are given in the parenthesis. Source: Authors' computation.

Table 4: Mean per capita real growth rate and happiness among high growth rate countries

Variable	group	Mean	Std. Deviation
Per capita real growth rate (%)	Growth rate >=3% (N=43)	4.33	1.398
	Growth rate <3% (N=78)	0.83	1.516
Change in happiness (%)	Growth rate >=3% (N=43)	5.10	10.729
	Growth rate <3% (N=78)	-2.39	11.002
Per capita real growth rate (%)	Growth rate >=4% (N=19)	5.43	1.467
Change in happiness (%)	Growth rate >=4% (N=19)	5.73	11.840

Source: Authors' calculations.

Table 5: Tests of Normality

Variable	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Per capita real growth rate (%)	0.062	125	0.200	0.983	125	0.116
Change in happiness (%)	0.062	125	0.200	0.979	125	0.050

Source: Authors' calculations.

Table 6: Comparison between high growth and low growth nations

Variable	Equality of variances	Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
Per capita real growth rate (%)	Equal variances assumed	8.507	0.004	13.109	119	.000
	Equal variances not assumed	-	-	15.261	118.917	.000
Change in happiness (%)	Equal variances assumed	0.555	0.458	3.468	119	.001
	Equal variances not assumed	-	-	3.435	84.277	.001

Source: Authors' calculations.