

Factors Explaining Life Satisfaction Across Countries

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Abstract

The factors explaining the happiness level at large scale are still unclear and debated. In this paper, we discuss a potential causal relationship between wealth and life satisfaction at the national level. Using the Gallup Global Well-Being Poll data on self-reported life satisfaction and the World Bank database, we study the extent to which wealth, measured by GDP per capita, influences the average level of happiness in 146 countries. In our first model, the simple regression highlights a significant relationship between GDP per capita and self-reported index for happiness. Second, we try to challenge the causal relationship by assessing whether GDP per capita would not actually be a proxy for other factors. However, our results show that GDP per capita remains a significant determinant of happiness when controlling for natural risks, education (measured by the literacy rate), and access to health care (measured by life expectancy), all of which are statistically significant in explaining the level of well-being.

I. Introduction

In July 2011, the General Assembly of the United Nations adopted a resolution entitled *Happiness: towards a holistic approach to development* in which it states that “*the gross domestic product indicator by nature was not designed to and does not adequately reflect the happiness and well-being of people in a country*” (U.N., 2011). The goal of this statement is in fact to invite governments not only to rely on economic indicators to assess happiness of their population and development of their country but also include other factors which may explain happiness in its citizens. Researchers have questioned the prevalence of economic data when it comes to well-being of a nation for a long time. For example, in his famous paper of 1974, Richard Easterlin showed that an increase of Gross Domestic Product (GDP) is not necessarily correlated with a greater level of happiness (Easterlin, 1974). This questioning has led to more researchers studying the cause for well-being for the whole country, looking at both national characteristics such as human development, environmental sustainability, and more individualistic ones such as age, marital status, and employment status.

All those questioning are based on the idea that wealth is not a *sufficient* indicator to measure well-being at a national scale, but still remains a very influential determinant. This leads us to our research question: to what extent does the wealth of a country influence the self-reported level of happiness of its citizens? Our hypothesis is that wealth, measured by GDP per capita, does have a strong influence on happiness; however, we try to challenge the notion of the causal relationship, and we hypothesize that GDP per capita may not be a proxy for other factors such development or access to healthcare and education. We expect that GDP’s influence may decline when controlling for other factors such as economic inequality, political instability, education level, and access to health care, but still remains dominant.

In a world where the importance of economics never ceases to grow, it seems to be crucial to put happiness back at the center of the debate. GDP is a good indicator for economic well-being of a country, but is it as accurate in evaluating well-being of the individuals? The topic of this subject and happiness economics in general are important because they help researchers and policy makers to step back and think about the purpose of our modern societies. Are wealth and happiness united in one spirit, or do they pursue different goals to the detriment of each other? Finding answers to those questions could be beneficial on a number of fronts. From a macro point of view, policy makers could easily identify the causes of happiness for their citizens and thus act more efficiently when writing legislation. From an

individual point of view, it would be a step forward in the understanding of human reasoning: can money buy happiness?

II. Literature Review

Previously, other papers have challenged the notion that high Gross Domestic Product (GDP) cause high levels of well-being, such as Diener and Seligman (2004) who showed that GDP has a marginal positive effect on well-being after 10,000 USD. Stevenson and Wolfers (2013), on a more recent paper, reached a similar conclusion: the correlation between self-reported indices of satisfaction and GDP is clearly positive for a per capita GDP below 15,000 USD. However, for a GDP per capita between 17,000 USD and 30,000, the relationship flattens and peaks at 30,000 USD, and then surprisingly slightly declines. The authors argue that wealth is maybe not a relevant indicator alone, and for them, researchers should also take into account the influence of aspiration levels on happiness. Indeed, in a second time, they focus on the EU-15 (i.e. countries of the European Union prior the first enlargement) to study the influence of other factors, since those countries have very similar GDP. They proved that beyond some threshold of the GDP value, the gap between aspiration and realized income (which is negatively correlated with life satisfaction) has the largest impact.

Deaton (2008) focuses on looking at the relationship that may exist between a country's well-being and a country's income as well as some of its health measures. Using regression, he finds a significant positive relationship between Gallup World Poll's life satisfaction measure and a country's GDP per capita and a negative relationship between life satisfaction and the country's GDP growth. The author then pointed out that earlier analyses using the World Values Survey that casted doubt on the relationship of GDP per capita had flaws in how the life satisfaction survey's data was collected. Although Deaton did not find a very significant relationship between life satisfaction and health related measures, he did show that the life satisfaction changes based on your age group and income level.

Bonini (2008) argues that cross-country variation in life satisfaction is mostly due to difference in regions rather than HDI or GDP per capita as previously explained by other papers and government policies. This results hints at the need for different well-being scales for different region. In addition, the current model of measuring GDP per capita and well-being does not adequately provide a scale to measure the difference between countries.

Our study is different in that we use a different (and more recent) source for our metrics of happiness, namely the Global Well-being survey from Gallup which was updated in 2009. As we will see below, the datasets of this survey provide various indicators of self-reported well-being from 155 countries. We will also be factoring out environmental sustainability completely and focus on the national data. Indeed, some of the papers cited above focuses on individual data (Bonini, 2007) or on the contrary aggregated it at larger scale: for instance, Proto and Rustichini (2013) divided countries into 15 quantiles, rather than studying them individually, what may be a limitation of the results. Consequently, this paper contributes to the literature by using more recent and detailed data on the one hand, and on the other hand by using a different methodology which focuses on the national scale.

III. Data

To determine that factors that explain happiness, our model needed a measure of life satisfaction across the globe that was not an aggregate of other economic factors. For this, we used the Gallup Global Well-Being Index as an indicator of happiness. The results of this survey are based face-to-face and telephone interview with a thousand adults (fifteen years and older) from all 155 countries. The interviews were conducted over the time period between 2005 and 2009. The samples within each country were designed to be representative of the country's overall adult resident population. Each interviewee was asked to rate their current and future life outlook on a scale from 0 (worst possible life) to 10 (best possible life). The ratings were grouped into three different buckets: thriving, struggling, and suffering. Since the purpose of our regression was to examine the factors that make a population satisfied with life, we determined it was most appropriate to use the percentage of the population that were considered themselves thriving as our dependent variable.

As we aim to test the hypothesis of a causal relationship between GDP per capita and average well-being for a country, we set our main independent variable to be GDP per capita. As opposed to nominal GDP per capita, we used GDP per capita derived from purchasing power parity calculations from 2009. The other independent variables we included in some of our models are a country's GINI index, life expectancy, literacy rate, a binary variable for the occurrence of at least a coup d'état between 1980 and 2005, and a natural disaster risk index. The GINI index is used as an indicator of economic inequalities. Life expectancy is used as a measure for healthcare and environmental quality, i.e. quality of medical

services and food, water or air quality. The adult literacy rate is an indicator of the level of education of a country, which has the advantage of being collected for most of the countries (contrarily to some other such as the proportion of the population with a high school diploma which might also have been relevant). The binary variable for the occurrence of coups allows to compare levels of happiness between politically stable countries and rather unstable ones. Finally, the index of natural disasters is included in our models as a proxy for the stress of experiencing a natural disaster; hence it could influence negatively the level of well being. Finally, the index of natural disasters is included in our models as a proxy for the stress of experiencing a natural disaster this factor could influence negatively the level of well being.

The four first explanatory factors were gathered from the World Bank's databank for 2009, which collected their data through the statistical system of the member countries of the World Bank. Their databases are often used to support critical management decisions, and so they encourage and help their members to further develop effective and reliable systems to collect data. The binary variable for Coup d'état was constructed from the appendix of Powell and Thyne article of 2011 (cf. References). The index of natural disasters was gathered from the Bündnis Entwicklung Hilft, which is a federation of the eight German relief organizations. To develop the risk index, they use exposure to natural hazards as well as the likelihood of suffering harm, lack of coping capabilities, and lack of adaptive capabilities to develop an index score for all countries around the globe.

Table 1

Summary statistics of Thriving population (in percent of the population), GDP per Capita (in current USD), Life Expectancy (in year), Literacy Rate (per 100 adults) and Risk Index (from 0 to 0.37) for all countries in 2009.

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|-------------------------------------|-----|-----------|-----------|--------|------------|
| Thriving | 153 | 25.575 | 18.905 | 1 | 82 |
| GDP per Capita (current USD) | 153 | 12,654.62 | 18,104.43 | 111.80 | 101,221.80 |
| Life Expectancy | 153 | 69.822 | 9.331 | 46.935 | 82.931 |
| Literacy Rate | 126 | 83.943 | 18.446 | 30.473 | 99.995 |
| Risk Index | 147 | 0.0699 | 0.0399 | 0.0002 | 0.243 |
| GINI Index | 116 | 38.845 | 8.939 | 24.82 | 63.38 |
| Coup d'état (1980-2009) | 153 | 0.373 | 0.485 | 0 | 1 |

Table 1 (above) contains summary statistics for the five different variables across all countries. As observed by the standard deviation and the range, there is a large amount of variations between countries for each of the variables. Because of these large differences, it is interesting to see how each of these measures vary between countries of different income levels. In Table 2 (below), the means of percentage of the population that is thriving, GDP per Capita, life expectancy, literacy rate, and natural disaster risk index are taken based on four different income level classifications (high, upper middle, lower middle, and low). These income levels were designated by the World Bank based on GNI per capita distinctions. Each of the variables follow a logical trend as Thriving percentage, GDP per capita, life expectancy and literacy rate all increase as the income level increases, whereas the natural disaster risk index seems to decrease.

Table 2

Mean and number of observations of Percentage of the population thriving, GDP per Capita (in current USD), Life Expectancy, Literacy Rate, and Risk Index segmented by country income level according to World Bank's classifications.

| Type (Income Levels) | Number of Observations | Percentage Thriving | GDP per Capita (current USD) | Life Expectancy | Literacy Rate | Risk Index |
|----------------------|------------------------|---------------------|------------------------------|-----------------|---------------|------------|
| All Countries | 153 | 25.575% | \$12,654.62 | 69.823 | 83.943% | 0.0699 |
| High | 47 | 41.106% | \$34,345.42 | 78.688 | 97.401% | 0.0249 |
| Upper Middle | 42 | 28.381% | \$5,715.16 | 71.651 | 93.928% | 0.0665 |
| Lower Middle | 39 | 15.667% | \$1,767.109 | 65.612 | 81.131% | 0.0939 |
| Low | 25 | 7.120% | \$518.72 | 56.653 | 57.910% | 0.0984 |

Figure 1

Scatter plot of GDP per capita versus Thriving.

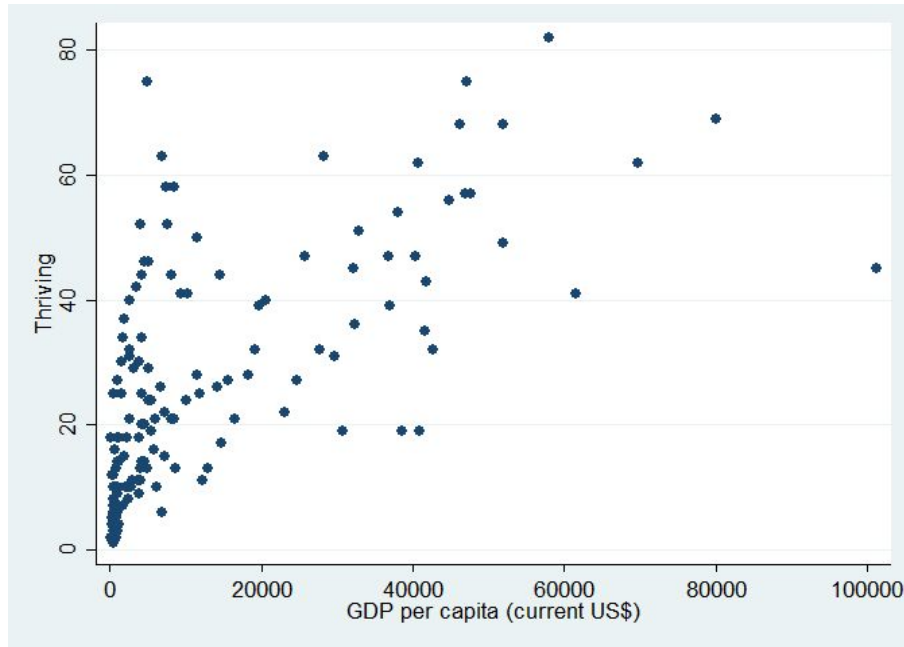


Table 3

Correlation of all variables used in our models

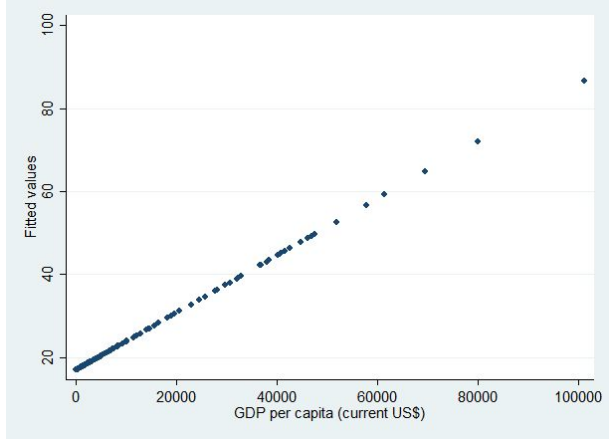
| | Thriving | GDP per capita | Life Expectancy | GINI Index | Literacy Rate | Risk Index | Coup d'état (1980-2009) |
|-------------------------|----------|----------------|-----------------|------------|---------------|------------|-------------------------|
| Thriving | 1.0000 | | | | | | |
| GDP per Capita | 0.4429 | 1.0000 | | | | | |
| Life Expectancy | 0.5721 | 0.5445 | 1.0000 | | | | |
| GINI Index | -0.1175 | -0.0334 | 0.0640 | 1.0000 | | | |
| Literacy Rate | 0.4908 | 0.4091 | 0.7652 | 0.0498 | 1.0000 | | |
| Risk Index | -0.1979 | -0.4789 | -0.3967 | -0.1139 | -0.4292 | 1.0000 | |
| Coup d'état (1980-2009) | -0.2200 | -0.2194 | -0.4384 | -0.2002 | -0.4379 | 0.2899 | 1.0000 |

All the models meet the first Gauss Markov Assumption which requires that the model is linear in parameters which is demonstrated by our setup of the models. The second assumption which requires that random samples are used is satisfied since the polling data that we used was conducted by Gallup, which conducted the survey using proper polling techniques. In addition, the 146 countries accounted for does not provide any room for bias when it comes to the region of the countries or the culture of the countries in regards to other independent variables. The third assumption which requires no perfect collinearity is satisfied and is displayed in Table 3. Our models does not meet the fourth assumption which requires zero conditional mean since the expected value of residuals is not equal to zero as shown in Figure 2. Finally, the assumption of constant variance of error terms is met as the scatter plot of the residuals generally fall in line with constant variance as shown in Figure 2.1.

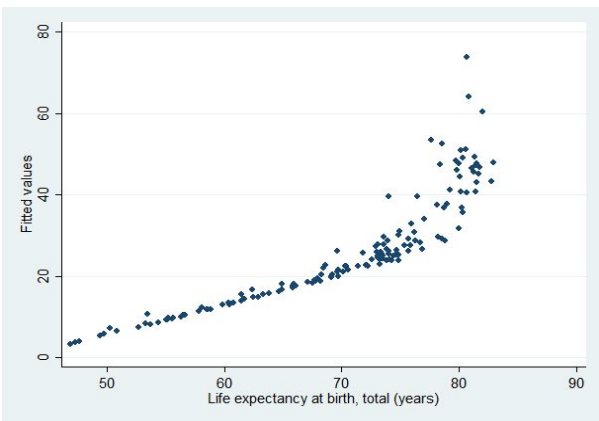
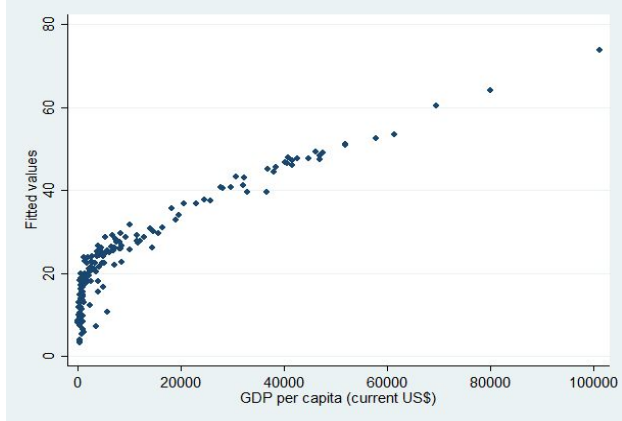
Figure 2

Scatter plot of the residuals of the linear model plotted against individual variables.

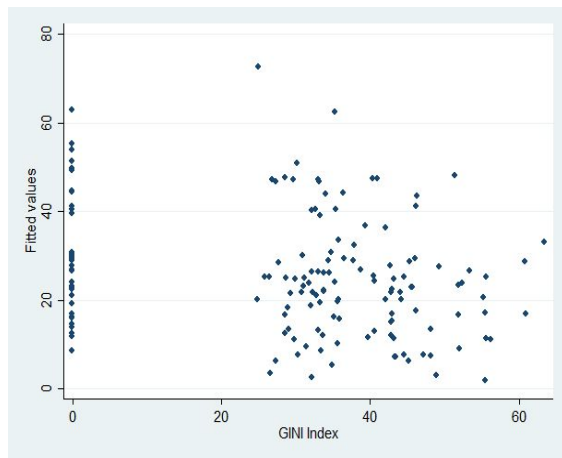
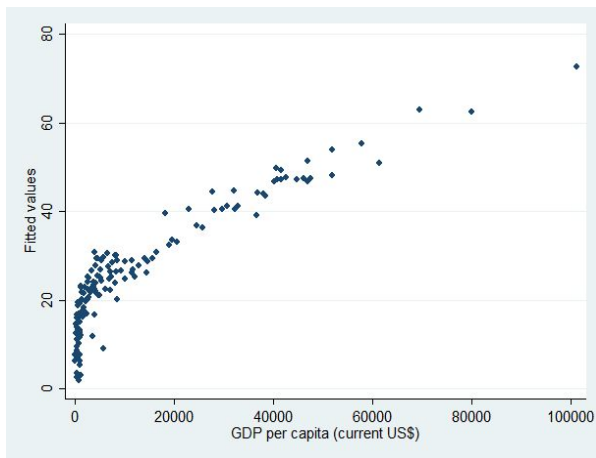
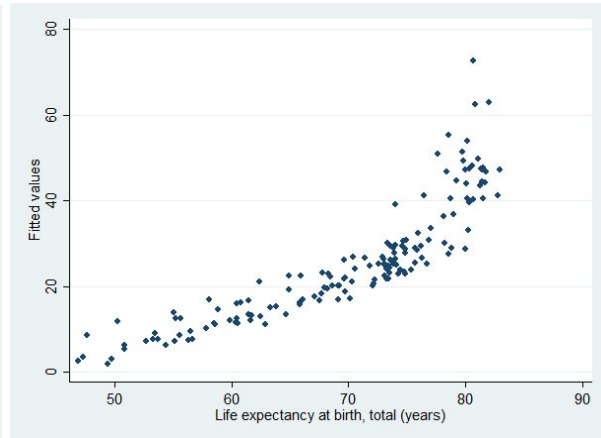
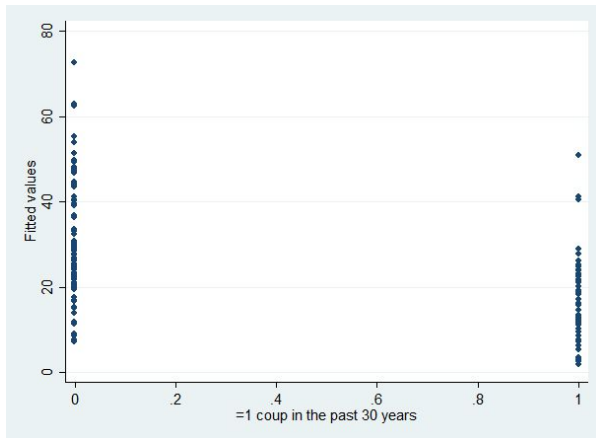
Model 1



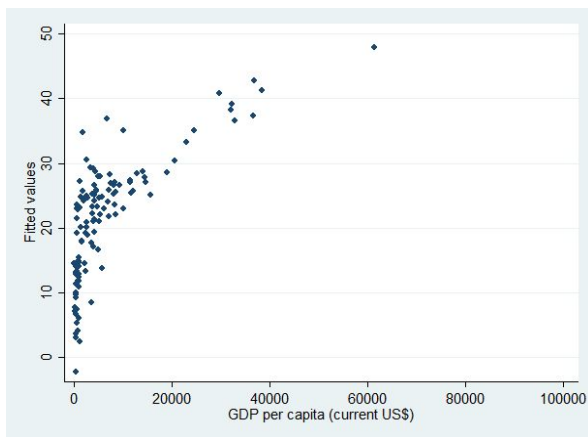
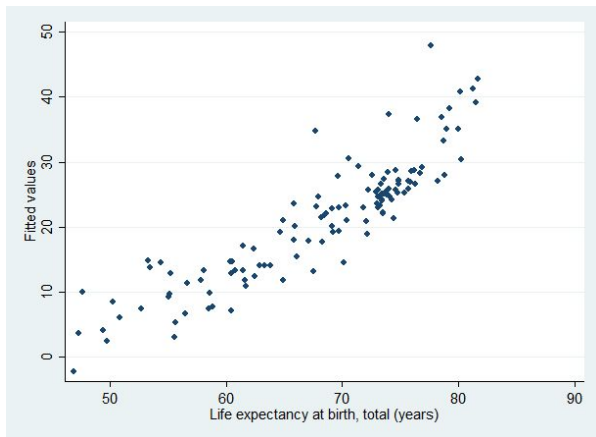
Model 2



Model 3



Model 4



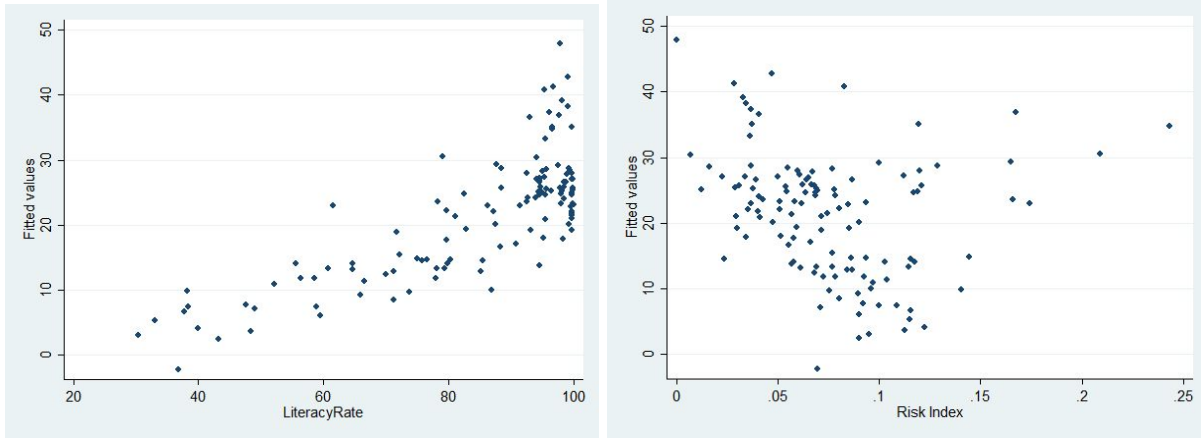
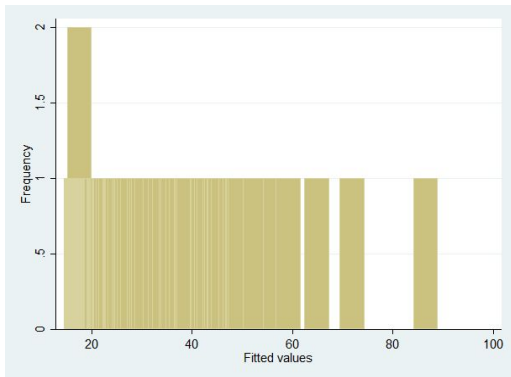
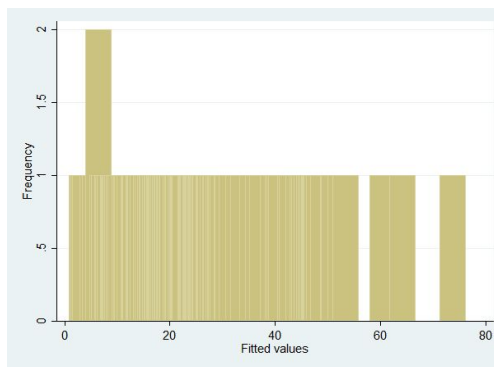


Figure 2.1
Histogram of the residuals of the linear models

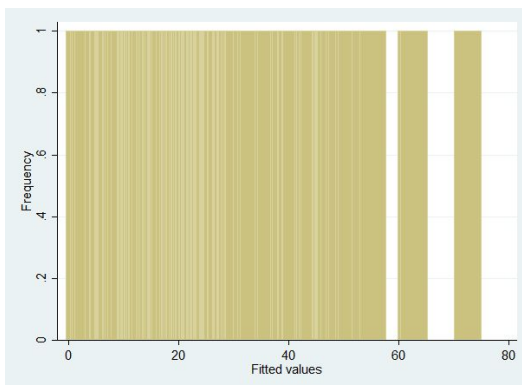
Model 1



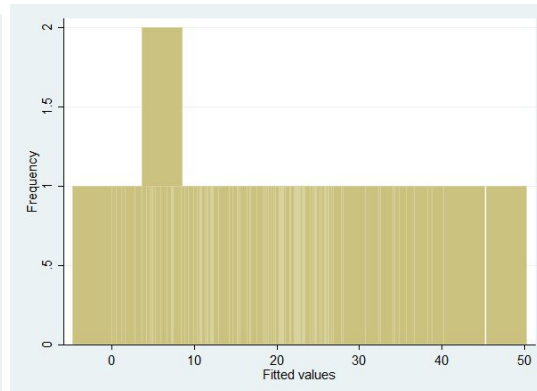
Model 2



Model 3



Model 4



III. Results

To first test our initial hypothesis, we created a simple regression model shows that looks at the effects of GDP per capita has on the percentage of thriving population. The formula for this model is $thriving = \beta_0 + \beta_1 GDPperCapita + u$ (Model 1 in Figure 3). We found that GDP per capita plays an important role in determining the percentage of the population that is thriving in a country. As seen in Figure 3, an increase of \$1,000 of the GDP per capita implies an increase of the percent thriving by 0.689 percentage points. However, this variable doesn't fully suffices to completely explain the thriving population, so we looked to find other factors that have a significant impact.

Figure 3

Regression model outputs

| Independent Variable | Dependent Variable | | | |
|------------------------------|----------------------------|----------------------------|----------------------------|---------------------------|
| | Thriving (Model 1) | Thriving (Model 2) | Thriving (Model 3) | Thriving (Model 4) |
| GDP per Capita | 0.0006886 (0.000064)*** | 0.000455 (0.0000761)*** | 0.0003468 (0.000089)*** | 0.0004594 (0.00015)*** |
| Life Expectancy | | 0.726 (0.148)*** | 0.8247 (0.1834)*** | 0.5208543 (0.207)** |
| Coup d'état (1980-2009) | | | -0.9048 (2.975965) | |
| GINI Index | | | -0.1756 (0.1429932) | |
| Literacy Rate | | | | 0.193229 (0.0921)** |
| Natural Disaster Risk Rating | | | | 81.32629 (33.978)** |
| Constant | 16.86153 (1.408)*** | -30.876 (9.798)*** | -30.3001 (14.14869)** | -39.72205 (10.937)*** |
| Number of Observations: | 153 | 153 | 116 | 123 |
| R-Squared Value: | 0.4348 | 0.5133 | 0.4955 | 0.3747 |
| Adjusted R-Squared Value: | 0.4311 | 0.5068 | 0.4773 | 0.3535 |
| F-Statistic: | 116.18 | 79.09 | 27.25 | 17.68 |

When looking for more variables that may explain the percentage of a thriving population, we searched for factors in different areas such as healthcare, education, government, and natural factors. We first to add a single variable, namely life expectancy (as a healthcare factor), which we thought could also play an important role. Hence we get Model 2: $thriving = \beta_0 + \beta_1 GDPperCapita + \beta_2 LifeExpectancy + u$, where both GDP per capita and life expectancy happened to be significant at 5%. We then tried to add some more variables to study the influence of inequalities (GINI coefficient) and political stability (coups

d'état binary variable) in Model 3: $thriving = \beta_0 + \beta_1GDPperCapita + \beta_2LifeExpectancy + \beta_3Coups + \beta_4Gini + u$. But none of those two were significant; therefore we finally dropped them and settled on literacy rate (education factor) and natural disaster risk index (nature/government factor) in addition to GDP per capita and life expectancy. The resulting model is $thriving = \beta_0 + \beta_1GDPperCapita + \beta_2LifeExpectancy + \beta_3LiteracyRate + \beta_4RiskIndex + u$ (Model 4). As seen in Figure 3, using this model, all four variables and the intercept constant are significant at 5% level of significance with an R^2 value of 0.3747. There is however a decrease from the R^2 value of the simple regression model because the number of the observations drop by 30. Despite this change, the multiple regression model remains valid because each of the variables are significant.

Based on the coefficients, all variables increase the percent thriving when they increase which was expected for all factors except for the natural disaster risk index. However, we expected that as the risk decreased, the percent thriving would increase, but this variable behaved in the opposite manner, increasing the thriving percent by 0.81 when the risk index increased by 0.01. In terms of the other variables, they behaved as expected with: an \$1,000 increase in GDP per capita adding 0.46 to the thriving percentage, a year increase in life expectancy causing a 0.52 increase, and a 1% increase in literacy rate causing a 0.19 increase in the percentage of population thriving.

For the simple regression model it was clear to see that GDP per capita is significant at all levels, confirming our belief that GDP per capita is a good indicator for well-being of a country. As we began to add more variables into our model, we could see that life expectancy is also significant at all levels. From these two models, we deduced that monetary measurement as well as quality of healthcare in the country is highly correlated to well-being of the country.

For our multiple regression model, we believed that there would be a multi-colinearity relationship between life expectancy and the risk index which was associated with the likelihood of a natural disaster. After conducting the F-test, we found that there was indeed a multi-colinearity relationship, exhibiting a F score of 6.49, whereas the critical value stood at 1.35. Thus, we were able to conclude that risk index together with life expectancy had a stronger effect on the country's well-being than on their own.

By analyzing the confidence intervals, we were able to conclude that all of the independent variables were statistically significant at 5% and we did not feel the need to conduct further testing to see if the variables became more significant when grouped together with other variables.

IV. Conclusions

The results of this paper highlight how complex the problem of understanding subjective happiness is. On the one hand, the mainstream hypothesis, which claims that wealth is a significant determinant of happiness, is verified by our study. It is also remarkable to notice that even when controlling for other factors, namely healthcare, education or natural risks, an \$1,000 increase of the GDP per capita leads to a similar 0.4 to 0.7 increase in the proportion of the population thriving. However, the small size of this coefficient highlights a major limitation of our results: even if we found that all variables we studied have a significant impact on the proportion of people thriving, they do not suffice to explain fully the national level of happiness. The low R^2 values of each of our model seems to confirm this hypothesis, showing that a large part of the variations of happiness level remain unexplained.

This paper provides however useful information for further studies. First, we identified several factors which doesn't have an impact on well-being contrarily to what could be expected, such as the average level of education or the risks of natural disasters. Combined with the low explanatory power of the quality of healthcare and even of GDP per capita, those findings seem to show that the explanations of happiness don't necessarily rely only on objective factors. Indeed, since happiness is a feeling, it is certainly rather depends on the subjective analysis that an individual has of its own position. Proto and Rustichini (2013) argue for instance that in the richest countries, the well being of individuals depends mostly on the gap between their expected wage and the one they actually earn. Similarly, it might be interesting to focus how healthy people feel rather that how they actually are; how educated they think the population is rather that how it actually is; or how secure they feel, how much they feel they can trust other people, justice, the political institutions, etc. Even if this kind of data would probably be hard to gather, comparing expectations of the population to the actual conditions they might be an innovative way to approach the question of understanding happiness at the national scale.

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Appendix 1: STATA outputs

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|--------------|-----|----------|-----------|----------|----------|
| Thriving | 153 | 25.57516 | 18.90478 | 1 | 82 |
| GDPpercapi~S | 153 | 12654.62 | 18104.43 | 111.8 | 101221.8 |
| Lifeexpect~l | 153 | 69.82265 | 9.33099 | 46.93498 | 82.93146 |
| LiteracyRate | 126 | 83.94364 | 18.44646 | 30.4728 | 99.9952 |
| RiskIndex | 147 | .0698925 | .0399002 | .0002 | .2432 |
| GINIIndex | 116 | 38.84517 | 8.938783 | 24.82 | 63.38 |
| cou~19802009 | 153 | .372549 | .4850713 | 0 | 1 |

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|--------------|-----|----------|-----------|----------|----------|
| Thriving | 153 | 25.57516 | 18.90478 | 1 | 82 |
| GDPpercapi~S | 153 | 12654.62 | 18104.43 | 111.8 | 101221.8 |
| Lifeexpect~l | 153 | 69.82265 | 9.33099 | 46.93498 | 82.93146 |
| LiteracyRate | 126 | 83.94364 | 18.44646 | 30.4728 | 99.9952 |
| RiskIndex | 147 | .0698925 | .0399002 | .0002 | .2432 |

| -> incomeGroup = High income | | | | | |
|--------------------------------------|-----|----------|-----------|----------|----------|
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| Thriving | 47 | 41.10638 | 17.2982 | 11 | 82 |
| GDPpercapi~S | 47 | 34345.42 | 19308.58 | 9415.154 | 101221.8 |
| Lifeexpect~1 | 47 | 78.68766 | 3.075199 | 69.61059 | 82.93146 |
| LiteracyRate | 23 | 97.40161 | 2.271318 | 92.9864 | 99.8927 |
| RiskIndex | 45 | .0381511 | .0249089 | .0002 | .1357 |
| -> incomeGroup = Low income | | | | | |
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| Thriving | 25 | 7.12 | 5.395368 | 1 | 25 |
| GDPpercapi~S | 25 | 518.7232 | 201.3071 | 111.8 | 1015.108 |
| Lifeexpect~1 | 25 | 56.65293 | 5.201236 | 46.93498 | 67.51839 |
| LiteracyRate | 24 | 57.91048 | 17.62959 | 30.4728 | 86.8735 |
| RiskIndex | 23 | .098387 | .0201738 | .0615 | .1406 |
| -> incomeGroup = Lower middle income | | | | | |
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| Thriving | 39 | 15.66667 | 10.17824 | 3 | 42 |
| GDPpercapi~S | 39 | 1767.109 | 1118.226 | 671.5454 | 6175.29 |
| Lifeexpect~1 | 39 | 65.61227 | 6.985797 | 49.74049 | 74.82261 |
| LiteracyRate | 37 | 81.13089 | 15.55428 | 43.2653 | 99.9952 |
| RiskIndex | 38 | .0939342 | .0470478 | .0238 | .2432 |
| -> incomeGroup = Upper middle income | | | | | |
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| Thriving | 42 | 28.38095 | 17.04507 | 6 | 75 |
| GDPpercapi~S | 42 | 5715.16 | 2108.363 | 2599.592 | 11534.84 |
| Lifeexpect~1 | 42 | 71.65104 | 5.914099 | 50.25102 | 78.81098 |
| LiteracyRate | 42 | 93.9278 | 6.347298 | 71.1642 | 99.8053 |
| RiskIndex | 41 | .0664634 | .0263742 | .0298 | .1674 |

| Source | SS | df | MS | Number of obs = 153 | | |
|----------|------------|-----|------------|---------------------|--------|--|
| Model | 23621.8478 | 1 | 23621.8478 | F(1, 151) = | 116.18 | |
| Residual | 30701.5378 | 151 | 203.321442 | Prob > F = | 0.0000 | |
| | | | | R-squared = | 0.4348 | |
| | | | | Adj R-squared = | 0.4311 | |
| Total | 54323.3856 | 152 | 357.390695 | Root MSE = | 14.259 | |

| Thriving | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|-----------------------|----------|-----------|-------|-------|----------------------|----------|
| GDPpercapitacurrentUS | .0006886 | .0000639 | 10.78 | 0.000 | .0005624 | .0008148 |
| _cons | 16.86153 | 1.407989 | 11.98 | 0.000 | 14.07963 | 19.64343 |

| Source | SS | df | MS | Number of obs = 123 | | |
|----------|------------|-----|------------|---------------------|--------|--|
| Model | 11067.5067 | 4 | 2766.87667 | F(4, 118) = | 17.68 | |
| Residual | 18467.1437 | 118 | 156.501218 | Prob > F = | 0.0000 | |
| | | | | R-squared = | 0.3747 | |
| | | | | Adj R-squared = | 0.3535 | |
| Total | 29534.6504 | 122 | 242.087298 | Root MSE = | 12.51 | |

| Thriving | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|----------------------------|-----------|-----------|-------|-------|----------------------|-----------|
| GDPpercapitacurrentUS | .0004594 | .0001492 | 3.08 | 0.003 | .0001639 | .0007548 |
| Lifeexpectancyatbirthtotal | .5208543 | .206946 | 2.52 | 0.013 | .1110449 | .9306637 |
| LiteracyRate | .193229 | .0920923 | 2.10 | 0.038 | .0108611 | .3755968 |
| RiskIndex | 81.32629 | 33.97783 | 2.39 | 0.018 | 14.04093 | 148.6116 |
| _cons | -39.72205 | 10.93677 | -3.63 | 0.000 | -61.37983 | -18.06427 |

| Source | SS | df | MS | Number of obs = 116 | | |
|----------|------------|-----|------------|---------------------|--------|--|
| Model | 19154.3572 | 4 | 4788.58931 | F(4, 111) = | 27.25 | |
| Residual | 19504.4704 | 111 | 175.715949 | Prob > F = | 0.0000 | |
| | | | | R-squared = | 0.4955 | |
| | | | | Adj R-squared = | 0.4773 | |
| Total | 38658.8276 | 115 | 336.163718 | Root MSE = | 13.256 | |

| Thriving | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|----------------------------|-----------|-----------|-------|-------|----------------------|----------|
| GDPpercapitacurrentUS | .0003468 | .0000893 | 3.88 | 0.000 | .0001698 | .0005239 |
| GINIIndex | -.1756185 | .1429932 | -1.23 | 0.222 | -.4589692 | .1077322 |
| coupdetat19802009 | -.9047674 | 2.975965 | -0.30 | 0.762 | -6.801841 | 4.992306 |
| Lifeexpectancyatbirthtotal | .8246888 | .1833836 | 4.50 | 0.000 | .4613019 | 1.188076 |
| _cons | -30.30009 | 14.14869 | -2.14 | 0.034 | -58.33666 | -2.26351 |

| Source | SS | df | MS | Number of obs = 153 | | | |
|----------|------------|-----|------------|---------------------|--------|--|--|
| Model | 27882.3587 | 2 | 13941.1793 | F(2, 150) = | 79.09 | | |
| Residual | 26441.0269 | 150 | 176.273513 | Prob > F = | 0.0000 | | |
| | | | | R-squared = | 0.5133 | | |
| | | | | Adj R-squared = | 0.5068 | | |
| Total | 54323.3856 | 152 | 357.390695 | Root MSE = | 13.277 | | |

| | Thriving | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|---------------------------|----------|-----------|-----------|-------|-------|----------------------|-----------|
| GDPpercapitacurrentUS | | .0004551 | .0000761 | 5.98 | 0.000 | .0003047 | .0006055 |
| Lifexpectancyatbirthtotal | | .726005 | .1476734 | 4.92 | 0.000 | .4342163 | 1.017794 |
| _cons | | -30.87593 | 9.798164 | -3.15 | 0.002 | -50.23617 | -11.51569 |

Appendix 2: List of the countries

| | | | | |
|------------------------|--------------------|--------------------|--------------------|----------------------|
| Afghanistan | Congo, Dem. Rep. | Indonesia | Mongolia | Slovenia |
| Albania | Congo, Rep. | Iran, Islamic Rep. | Montenegro | Somalia |
| Algeria | Costa Rica | Iraq | Morocco | South Africa |
| Angola | Côte d'Ivoire | Ireland | Mozambique | Spain |
| Argentina | Croatia | Israel | Myanmar | Sri Lanka |
| Armenia | Cuba | Italy | Namibia | Sudan |
| Australia | Cyprus | Jamaica | Nepal | Sweden |
| Austria | Czech Republic | Japan | Netherlands | Switzerland |
| Azerbaijan | Denmark | Jordan | New Zealand | Syrian Arab Republic |
| Bahrain | Djibouti | Kazakhstan | Nicaragua | Tajikistan |
| Bangladesh | Dominican Republic | Kenya | Niger | Tanzania |
| Belarus | Ecuador | Korea, Rep. | Nigeria | Thailand |
| Belgium | Egypt | Kosovo | Norway | Togo |
| Belize | El Salvador | Kuwait | Pakistan | Trinidad and Tobago |
| Benin | Estonia | Kyrgyzstan | Panama | Tunisia |
| Bolivia | Ethiopia | Laos | Paraguay | Turkey |
| Bosnia and Herzegovina | Finland | Latvia | Peru | Turkmenistan |
| Botswana | France | Lebanon | Philippines | Uganda |
| Brazil | Georgia | Liberia | Poland | Ukraine |
| Bulgaria | Germany | Libya | Portugal | United Arab Emirates |
| Burkina Faso | Ghana | Lithuania | Puerto Rico | United Kingdom |
| Burundi | Greece | Luxembourg | Qatar | United States |
| Cambodia | Guatemala | Macedonia, FYR | Romania | Uruguay |
| Cameroon | Guinea | Madagascar | Russian Federation | Uzbekistan |
| Canada | Guyana | Malawi | Rwanda | Venezuela |

| | | | | |
|--------------------------|---------------|------------|--------------|-------------|
| Central African Republic | Haiti | Malaysia | Saudi Arabia | Vietnam |
| Chad | Honduras | Mali | Senegal | Yemen, Rep. |
| Chile | Hong Kong SAR | Malta | Serbia | Zambia |
| China | Hungary | Mauritania | Sierra Leone | Zimbabwe |
| Colombia | Iceland | Mexico | Singapore | |
| Comoros | India | Moldova | Slovakia | |