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Global Development and Happiness: How can Data on Subjective Wellbeing Inform Development Theory and Practice?

Christian Kroll
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Christian Kroll

Summary

How can the new science of happiness add value to development theory and practice? While the topic of subjective well-being (SWB, i.e. people's self-reported life satisfaction and happiness) has recently attracted much attention in rich nations where economic growth over the past 60 years has not led to rises in average happiness, the potential of SWB in a development context remains underexploited. To illustrate one innovative way of using SWB data in such a context and outline their possibilities to the development community, this paper considers conventional development wisdom through a life satisfaction lens. The Human Development approach with its three key elements - material conditions, health and education - is reassessed by examining to what extent these factors actually matter for people's life satisfaction in different nations. Using Ordinary Least Squares (OLS) regression and data from the World Values Survey (WVS) for about 100,000 people from 70 nations, considerable heterogeneity can be identified regarding the importance of these three factors for the citizens' SWB across countries. In addition, a ranking is devised on the basis of these results which combines subjective assessments of life satisfaction from the WVS and objective living conditions as measured by the Human Development Index (HDI). As a result, it becomes clear which countries are more successful in generating the goods that truly matter for people's well-being. The findings of this paper make a case for country specific development goals and strategies that go beyond a one-size-fits-all approach. The results can therefore inform the current debate on how to revise the Millennium Development Goals (MDGs) beyond 2015 and thereby advocate Customised Development Goals (CDGs). Future research should continue to provide more evidence on what are anthropological constants in the determinants of SWB and which variables are culturally relative.

Keywords: subjective well-being, happiness, life satisfaction, human development, Millennium Development Goals, post-2015 development framework, Sustainable Development Goals.

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Contents

Summary	3
Acknowledgements	5
1. Introduction: Development and Happiness	6
2. Theoretical Background and Literature	8
3. Methods and Data	10
4. Results	13
5. Conclusions and Discussion	19
Appendix	22
References	34
Table 1 Descriptive Statistics	14
Table 2 Correlates of Life Satisfaction in Global Sample (WVS, 70 countries)	14
Table 3 Correlation Coefficients of Income and Life Satisfaction for 70 Countries, WVS Data (T-Statistics in Appendix)	15
Table 4 Correlation Coefficients of Health and Life Satisfaction for 70 countries, WVS Data (T-Statistics in Appendix)	16
Table 5 Correlation Coefficients of Education and Life Satisfaction for 70 countries, WVS Data (T-Statistics in Appendix)	17
Table 6 Ranking of New SWB-HDI Index and Conventional HDI in Comparison	18
Table 7: Full Data Table Part 1	22
Table 8: Gross Effect of Each of the Three Human Development Dimensions on Life Satisfaction Separately, Global WVS Sample (70 Countries)	33

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1. Introduction: Development and Happiness

In the face of vast economic growth since WWII that failed to make people any happier – a phenomenon that has entered the economic literature as the Easterlin Paradox (Easterlin 1974) – industrialized nations have made considerable efforts in the last years to explore what is *the good life* and how true well-being can be measured. A new global movement tries to address the question of what is progress in the economically advanced nations today and which indicators could capture it best (Kroll 2011b). This movement is backed by an emerging science of happiness that explores the empirical correlates and determinants of people's subjective well-being (SWB, i.e. people's self-reported life satisfaction and happiness)¹ (Layard 2005). While before 2000 less than five papers per year were written on SWB, in the first decade of the new millennium on average one article per week dealt with this issue (Chapple 2009). The academic research and the policy debate have to date focused almost exclusively on wealthier nations, though, where slogans such as 'GDP and beyond' have come to summarize this search for new ways of assessing what really makes people happy once basic economic needs are met.

In the development community, by contrast, the issue of happiness has received much less (and if so then often sceptical) attention. The view that economic growth is not an end in itself but must be accompanied by improvements in other societal areas may be widespread. The MDGs, for instance, have broadened the definition of progress in development to eight dimensions, and innovative measurement approaches such as the Oxford Poverty & Human Development Initiative (OPHI) Multidimensional Poverty Index (MPI) (Alkire and Santos 2010) have more recently contributed to a better understanding of the various facets of development, alongside more established measures such as United Nations Development Programme's (UNDP) Human Development Index (HDI) (UNDP 2011). Not many approaches, however, go as far as actively demanding that happiness should be part of the strategy. The small kingdom of Bhutan places Gross National Happiness at the centre of a development philosophy. Likewise, the approach of 3D Human Wellbeing proposes a focus on subjective as well as relational and material wellbeing (McGregor 2007).

In fact, the topic of measurement will gain importance among donor nations as the Organisation for Economic Co-operation and Development (OECD) has made the search for new indicators that measure progress for development one of its four key priorities in the new strategy on development (OECD 2011), and the search for a post-2015 development framework is well under way. But what precise role can people's self-reported happiness and life satisfaction play in the future? The time seems ripe to bring the search for the right development goal indicators and a generation of research on happiness together to explore what would be the concrete lessons from research on SWB for development theory and practice. In what precise ways can such knowledge add value to development strategy? As it stands, mainstream development thinking does not yet make sufficient use of the increasingly available research on life satisfaction and happiness that has led to a 'revolution in economics' (Frey 2008) and neighbouring academic disciplines.

¹ The terms SWB, life satisfaction and happiness are used synonymously in this paper, in line with the majority of the literature on this topic. There are certain conceptual differences whose description would go beyond the scope of this paper. In short, and as a justification of the response variable selected in the empirical analysis of this paper, it can be concluded with Helliwell & Putnam (2004: 1438) that "the 'life satisfaction' measure seems marginally better than the 'happiness' measure for our purposes of estimating the effects of relatively stable features."

Subjective assessments of quality of life can be collected in surveys by asking people, for instance, how satisfied they are on a scale of 1-10. Such indicators can then provide valuable information in addition to the more conventional so-called objective measures of well-being (Stiglitz, Sen and Fitoussi 2009). Some have even argued that such subjective measures of well-being ought to become the main indicator of progress for societies (Layard, 2009). What is clear, however, is that from intensive psychometric testing (e.g. Diener, Suh, Lucas and Smith 1999; Kahneman and Krueger 2006) we can say today that 'when people evaluate their life satisfaction they mean what they say, and their answers are meaningfully comparable across communities, nations and cultures, and through time' (Helliwell 2008). On the basis of this argument, a World Happiness Report has recently summarized the state of research on well-being at a global level and its possible implications for policy (Helliwell, Layard and Sachs 2012). Among them feature new policy priorities such as a lower profile for Gross Domestic Product (GDP) versus economic stability, community cohesion and the environment. It is from here that this paper aims to continue by exploring in what way happiness research can meaningfully inform development practice and stimulate debate in development theory. It is high time that the topic of SWB and its potential to inform development strategy is comprehensively explored in this context in order to catch up with a discourse which has predominantly focused on richer nations. What new points of view can happiness research offer? What new insights can development theory and policy gain by applying indicators of SWB? In order for the data to become a meaningful tool for development strategy there is a need to develop smart ways of applying SWB indicators to relevant questions of global development.

In a way, it is easy to see why there has been scepticism of SWB in the development community. Early on, Amartya Sen (1991: 7-8) eloquently hinted at the pitfalls that a focus on happiness in development economics can entail and outlined which potentially harmful consequences it may result in.

'Consider a very deprived person who is poor, exploited, overworked and ill, but who has been made satisfied with his lot by social conditioning (through, say, religion, political propaganda, or cultural pressure). Can we possibly believe that he is doing well just because he is happy and satisfied?'

Furthermore, international analyses have argued that the marginal utility of income and GDP per capita is of a decreasing nature (e.g. Inglehart and Klingemann 2000; Layard, Nickell and Mayraz 2008). This argument has often been used in favour of a well-being focus and against GDP as the main yardstick for progress in rich nations. The flip-side of the argument, understandably, would be that for poorer countries GDP still makes a bigger difference to people's SWB as any marginal unit in national income can still go a long way here in providing basic amenities, restoring livelihoods, as well as fighting hunger and disease.

Thus, the issue is complex and it shall be stressed that using SWB in a development context is an area with many pitfalls but whose potential is still worth exploring. For as Pritchett (2010: 27) points out in a research paper for the Human Development Report 'while not equating the concepts of "human development" and "life satisfaction" or "happiness" it would be at least intriguing to know what the household and aggregate data say about people's actual correlates of their own perceived well-being.' The importance of this matter is further outlined by McGregor and Sumner (2009: 1) who note that 'it is increasingly recognised that we need more complex understandings of human development, yet policy and practice is struggling to find ways to cope with this observation.' As a result, we must work to 'find ways of integrating these [indicators of subjective, relational and material wellbeing] into development policy design' (*ibid.*).

Consequently, one of the goals in this paper is to take up his challenge and explore 'how to link the increasingly available data on people's own perceptions of their "happiness" or "life

satisfaction” or other subjectively reported measures and the empirical measures (and weights) in an index of human development’ (Pritchett 2010: 25-26). This will be done by reassessing the Human Development approach through a SWB lens. The paper will explore in what way the three key elements of the Human Development approach – material conditions, health, education – are related to life satisfaction in countries for which we have sufficient data. In addition, these findings will be used to revise the HDI ranking in order to calculate to what extent countries are successful in generating the goods that matter for people’s life satisfaction in the respective nation. Finally, implications for development practice are discussed.

2. Theoretical Background and Literature

A key feature of SWB data is that they allow researchers and policymakers to find out what really matters for people’s life satisfaction. Rather than letting a group of experts draw up a list of the Quality of Life (QOL) dimensions which they deem important from an armchair perspective, so to speak, SWB data allows us to empirically take into account the respondents’ perspective by running regressions with SWB as the response variable and thereby extract the explanatory variables which matter most to people’s life satisfaction. This approach is even superior to directly asking people ‘what factors do you think make you happy’ due to the human tendency to ‘mispredict utility’ (Frey 2008). In the end, one can estimate a utility function containing the key drivers of SWB. Using this procedure a number of robust determinants for high SWB have been identified over the past years (for an overview see e.g. Graham 2012; Dolan, Peasgood and White 2008). Empirical quality of life data, particularly on SWB, can help policymakers to identify not only specific needs, wants and goals in a population but can also provide important information about the relative importance of those different needs (McGregor, Camfield and Woodcock 2009).

A key question in the context of development for which data on SWB can add value must then be: How do the factors advocated by conventional development approaches, such as the Human Development philosophy, contribute to human happiness across the globe? Following on from that, how much do these factors matter? Do the same outcomes matter to the same extent for people’s life satisfaction in all countries? To explore these questions, this paper turns to data on people’s life satisfaction. The results may somewhat challenge the current consensus according to which certain development goals are of equal importance across countries. Potential differences in the ‘happiness formulas’ across nations would then support the case for country specific development goals and strategies rather than a unifying approach such as the Human Development philosophy or the MDGs in their current form.

The Human Development approach (UNDP 2011), which shall provide the case study in this paper as a conventional development approach, argues that people require a set of basic capabilities in order to lead flourishing lives. While the philosophy contains a number of elements (see e.g. Nussbaum’s list of ten capabilities), the annual landmark assessment in the form of the HDI compiled by UNDP examines only three basic aspects: a long and healthy life as measured by life expectancy at birth, access to knowledge as measured by years of schooling, and a decent standard of living as measured by Gross National Income (GNI) per capita PPP. These three factors are equally weighted and integrated into the index. In 2011, the year from which the data for this analysis was drawn as an illustration, the HDI was topped by (1) Norway, (2) Australia and (3) the Netherlands, while (185) Burundi, (186) Niger and (187) Democratic Republic of Congo came last.

A small number of papers have tried to examine differences and similarities in the correlates of SWB across countries, albeit not with the particular focus and approach outlined in this paper. Focusing mainly on food inadequacy, running water, social support, age, household

income, freedom to choose, age, gender and other socio-demographics as explanatory variables, Helliwell, Huang and Harris (2009: 10) conclude that the 'application of the same well-being equation to 105 different national societies shows the same factors coming into play in much the same way and to much the same degree.' The authors performed a country-by-country analysis of SWB using Gallup World Poll and WVS data. When distinguishing geographical or cultural regions rather than countries, stronger differences became evident with, for instance, social connections, corruption and a sense of personal freedom having smaller effects on SWB in Africa and Asia. A subsequent paper by Helliwell *et al.* (2010) confirmed such findings, emphasizing the important role of income and social context variables in explaining differences in SWB.

Stanca (2010) discovered moderate heterogeneity across countries in the correlation with SWB regarding income and unemployment based on WVS data. The relationship between income and SWB was larger in countries with lower GDP per capita, while the negative effect of being unemployed was stronger in countries with higher unemployment rate or higher GDP per capita.

Comparing the determinants of SWB in 32 OECD countries, Fleche, Smith and Sorsa (2011) conclude - in a similar manner to Helliwell *et al.* (2009) - from their analysis of WVS data that 'among the variables measured here, the determinants of subjective wellbeing do not vary a lot between countries' (Fleche *et al.* 2011: 21). Examining 48 countries using WVS data, Delhey (2010) reported that post-material concerns (as measured by personal autonomy and job creativity) play a relatively larger role than materialist concerns (as measured by the income domain) for happiness in rich post-industrial societies. Finally, Kroll (2008) reported that social capital variables play a larger role in explaining national mean SWB levels for richer nations compared with poorer ones, in particular relative to macroeconomic factors such as GDP and income inequality. Finally, an illustration of how the capabilities approach and SWB relate to each other based on data for England, Scotland and Wales was given by Anand *et al.* (2009) who regress SWB on various capability dimensions which they have identified following Nussbaum's classification.

What is missing so far, though, is a systematic assessment of how the three key components of the Human Development approach, as a highly influential philosophy in development studies, are related to life satisfaction in a country-by-country regression of OECD and non-OECD countries. That is what this paper shall contribute in the first step of the empirical analysis by examining all countries for which we have sufficient data at this stage in order to enable an exploration of what the implications for development practice could be.

There are different value patterns across countries which mean that some may place more emphasis on certain development outcomes than others. Inglehart and Welzel (2005) identify two key dimensions by which countries differ: one dimension ranging from secular-rational to traditional values, and another dimension ranging from survival to self-expression values. According to their analysis which features a two-dimensional values map, Latin American nations, for instance, mainly occupy the traditional / self-expression quadrant while most African nations can be found in the traditional / survival quadrant. Such and other differences in values are likely to contribute to a diversification of needs between nations to which development goals and strategies should be responsive. The main hypothesis of this paper shall therefore be: The relationship between income, health and education, respectively, with SWB varies across countries.

As far as the subsequent ranking of countries is concerned no attempts have been made in the past to combine objective and subjective data in this way. Some examples of indices exist whose calculation takes into consideration objective and subjective data in some way or another, the most prominent ones being the Economist Intelligence Unit Quality of Life Index (Economist Intelligence Unit 2005), the Legatum Prosperity Index (Legatum Institute 2010)

and the Canadian Index of Well-Being (Michalos *et al*, 2010). However, none of them has integrated SWB-coefficients of income, education and health, respectively, with macroeconomic data on these dimensions in the way as outlined in the methods section below.

3. Methods and Data

Starting point of the analysis are the three dimensions of the HDI as a landmark approach for measuring progress for development in a more holistic way than GDP alone. These dimensions are: health, education and income. This paper examines the hypothesis that the relationship between these three respective factors and SWB varies across countries.

Data from the WVS is used to calculate the country-specific correlation of each of the three factors with life satisfaction, controlling for a number of standard variables from the SWB literature (see e.g. Dolan, *et al*. 2008 for a full list of key variables): age, gender, marital status, number of children, religiosity, trust, unemployment. The resulting correlation coefficient signals to what extent the respective HDI dimension (health, education, income) matters for higher SWB in each of the countries under study. The country coefficients will be reported to show where health, education and income matter the most for life satisfaction, and where these factors matter the least.

The variables in the regression analyses have the following properties. Life satisfaction is measured using the canonical question 'All things considered, how satisfied are you with your life as a whole these days? Please use this card to help with your answer.' Answers are recorded on a 10-point scale (1= dissatisfied, 10 = satisfied). This question is a benchmark in QOL research and is considered to capture the cognitive aspect of well-being in a robust manner (Kahneman and Krueger 2006). Also, studies have shown that SWB questions are understood in a similar way across cultures (Diener and Tov 2007) and answers can therefore be compared across nations in a meaningful way. (High) education is measured by a dummy variable which includes those who have complete technical/vocational secondary school, incomplete or complete university-preparatory secondary school, some university with or without degree/higher education. The reference category low education therefore includes inadequately completed or completed elementary education, as well as incomplete secondary school (38 per cent of the WVS wave 5 sample). Income is assessed by self-reported deciles in the national distribution of income counting all wages, salaries, pensions and other incomes. Consequently, income levels can be compared across countries and individuals as they are recorded in relative terms (the complete wording is: 'Here is a scale of incomes. We would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions.'). Health is measured by the subjective health question: 'All in all, how would you describe your state of health these days? Would you say it is...' with answers ranging from very poor to very good on a 5-point scale. Answers were recoded so that higher scores mean better health.

Several control variables complete the picture: Religiosity is measured by asking respondents how important religion is in their life on a 4-point scale from not at all important to very important. Answers were recoded so that higher scores mean higher importance of religion. Social capital was measured by the 'rough-and-ready indicator' (Halpern 2005) of the concept: the canonical generalised trust question. A dummy was formed indicating that

the respondent thinks that ‘most people can be trusted’ (rather than ‘you can’t be too careful’). Finally, unemployment is included as a dummy variable.²

The data source, the WVS, is a compilation of surveys from 94 countries representing about 90 per cent of the global population. Five WVS waves are available (1980–1982, 1990–1991, 1995–1997, 1999–2001, 2004–2008), for a total of about 345,000 observations.³ Seventy countries could be identified for which there is sufficient data for all variables for the SWB regression as well as for the HDI dimensions to conduct the required analysis. These countries together comprise around 100,000 respondents. For each of those countries, the latest available WVS data was used in the regression analysis which in most cases is wave 5 (see Appendix for details on each wave for each country). The regression method used is OLS.⁴

In an additional step, a new ranking then combines objective data from the HDI on health, education and income with subjective data on people’s preferences, more precisely the correlation between certain development factors with subjective well-being in the respective countries as obtained from the regression analyses described above. Data for the HDI was taken from the 2011 Human Development Report (see Appendix full data table column 3-5 for details). The HDI score of a country is calculated in the following way (see UNDP 2011):

$$\text{Dimension index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \quad (1)$$

$$= I_{\text{health}} / I_{\text{education}} / I_{\text{income}}, \text{ respectively}$$

$$\text{HDI} = \sqrt[3]{I_{\text{health}} \times I_{\text{education}} \times I_{\text{income}}}$$

The subsequent ranking created below is not only a ranking of how healthy, educated and rich people in different countries are (such as the HDI), nor only a ranking of how satisfied with their lives people are (such as various SWB rankings based e.g. on WVS or Gallup World Poll data). This new ranking measures *to what extent countries succeed in achieving the things that matter for people’s life satisfaction* in that country. For this purpose, HDI score and WVS correlation coefficient are combined into a complex mathematical relationship which in the end will create a ranking with the following properties, as illustrated here on the basis of 4 ideal-type countries:

Country A:	<i>High</i> HDI score (e.g. income)	and	<i>large</i> coefficient e.g. income-SWB = 1 st rank
Country B:	<i>High</i> HDI score	and	<i>small</i> coefficient = 2 nd rank
Country C:	<i>Low</i> HDI score	and	<i>small</i> coefficient = 3 rd rank
Country D:	<i>Low</i> HDI score	and	<i>large</i> coefficient = 4 th rank

Therefore, the ranking captures to what extent people in the countries under study are able to satisfy their needs, which may diverge from country to country to some extent. For example, if income is important for the citizen’s SWB in a country and the GNI (per capita) is high (as in ideal-type country A) then the country gets a very high rank. If GNI is high but

² In an alternative regression, the income variable was replaced by log income, and age square was added, as this is often done in the literature. The model using those alternatives had a lower R square than the one displayed in the paper, though, and was therefore not given preference. Results are available upon request.

³ More information is available on: www.worldvaluessurvey.org

⁴ N.B. Due to data restrictions, a small number of country regression are missing certain control variables: Colombia (religiosity, number of children), USA (number of children) and New Zealand (unemployed). It was decided that the small likelihood of distorting the main coefficients of interest by omitting these control variables would not justify excluding these countries altogether.

income matters less for SWB (as in country B) then this country is ranked lower. Countries with small income coefficients as well as low GNI (country C) would be ranked yet lower, as *ceteris paribus* low GNI is worse than high GNI even if the income-SWB coefficient is small. Finally, countries with low GNI and a large income-SWB coefficient would be at the bottom of the list as these countries fail to generate the good which obviously matters a lot to people's well-being. The procedure works in an analogous way for health and education. In the end, an overall score will combine all three facets of human development in a similar manner as the HDI using equal weights.

In terms of the mathematical procedure, it would not be enough to simply multiply HDI score and correlation coefficient. The reason is that then countries with a large coefficient e.g. for income and thus a 'materialistic' culture (more precisely: where rich people are much happier than poor people) going together with low GNI would be ranked above countries with a small correlation coefficient and low GNI due to the multiplication. The former, however, ought to be 'punished' in the ranking for not providing citizens with the good that would make a large difference to people's well-being, in this example a higher income. Consequently, a more complex mathematical procedure must be applied to arrive at a ranking with the aforementioned properties.

In order to achieve a ranking that contains the properties outlined above, the country score on each of the three HDI dimensions must be *weighted* by the correlation coefficient of the respective dimension with SWB. For this to work, the correlation coefficients must all be rescaled so that they are positive. This does not compromise the quality or the characteristics of the ranking as all countries are shifted by the same amount into the same direction (see Appendix table column 9-11). More precisely:

$$r_shifted = r + \min(r) + 0.1$$

N.B. The '+0,1' is necessary so that the score is not 0; the score needs to be multiplied later on.

Afterwards, in order to allow for category D countries to end up below category C countries as outlined in the illustration above, the HDI scores must be centred around their mean so that a positive-negative threshold is created (see Appendix table column 12-14).

$$i_shifted = i - \text{mean}(i)$$

N.B. mean $i_health = 0.83$; mean $i_education = 0.69$; mean $i_income = 0.63$.

It is now that one can multiply the shifted HDI dimension score $I_shifted_health$, $I_shifted_education$ and $I_shifted_income$, respectively, with the respective shifted correlation coefficient $r_shifted_health$, $r_shifted_education$ and $r_shifted_income$. This will result in 3 new dimension scores (Appendix table column 15-17).

$$r_shifted * i_shifted = \text{new_ranking_score (for income, health and education, respectively)}$$

These three new dimension scores can then be combined into a new total score, which shall tentatively be termed SWB-HDI⁵ and which is simply the geometric mean of the three dimension scores (Appendix table column 18). This last step is analogous to the original HDI which features the cube root of the product of the three dimension scores.

⁵ It shall be emphasised here that there is no official connection, authorisation or endorsement of the official HDI as published by UNDP with regard to the calculations made here. The name 'SWB-HDI' shall simply refer to the properties of the ranking made here as combining data from the HDI and data on SWB.

new_ranking_score_total =

$$\sqrt[3]{\text{new_ranking_score_health} * \text{new_ranking_score_education} * \text{new_ranking_score_income}}$$

A table at the end of the subsequent chapter will list the 70 countries studied here according to this total score.

4. Results

Table 1 displays the descriptive statistics and Table 2 shows the regression coefficients based on the whole (pooled) dataset of 70 countries. It can be seen that health exerts a strongly positive effect on SWB while that of income is moderately positive and education shows a small positive relationship with SWB overall. Such a regression was then performed for each country subsample separately to obtain the coefficients in Tables 3 to 5. The SWB regressions therefore indicate to what extent the three key dimensions of human development and income (Table 3), health (Table 4) and education (Table 6) matter for life satisfaction, controlling for a number of standard variables, in the countries studied in this paper.⁶

The tables clearly show considerable heterogeneity in the importance of those three factors across countries. Similar to Stanca (2010) the results of this regression show that the relationship between income and life satisfaction is far from identical in the various nations. The Republic of Moldova has the strongest relationship between income and SWB. Here, life satisfaction goes up by 0.676 points on average for every (rising) income decile. The effect is similar in Morocco, Georgia and Egypt. By contrast, more income is not so much associated with higher life satisfaction in Finland, Norway, Turkey and Armenia. In the latter country, the relationship is even negative, which is a puzzling finding that potentially hints towards status anxieties among wealthier citizens. The full substantive interpretation and direct implications of such an outlier ought to be considered after further research into this phenomenon. What clearly emerges as the big picture here, though, is that the relationship between income and SWB varies considerably across countries with rich citizens in some nations being a lot more satisfied with their lives than poor citizens, while the differences are smaller in other countries.

Furthermore, there is considerable variation concerning the importance of health for SWB as illustrated in Table 4. Intuition would probably suggest that being healthy is of the same value no matter where you live but empirical data indicates that this is not the case, at least as far as the relationship between health and life satisfaction is concerned. In India, being in 'very good' rather than 'fair' health is associated with a large difference of 2.498 on the life satisfaction scale. Health is of similar importance in Rwanda and Ukraine. By contrast, in Vietnam the effect of health on SWB is only about an eighth at 0.159 for every one point increase in health status, similar to Zimbabwe and Morocco. Again, it can only be speculated about the reasons behind these differences given the data studied here. Further research will hopefully shed light on the mechanisms behind these interesting observations.

⁶ The t-statistics are displayed in the full data table in the Appendix columns 6-8.

Table 1 Descriptive Statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Life Satisfaction	6.49	2.44	1	10	98833
Health	3.84	0.86	1	5	99819
Education	0.63	0.48	0	1	99561
Income	4.54	2.28	1	10	92204
Married / living as married	0.63	0.48	0	1	99925
Female	0.52	0.50	0	1	100100
Religiosity	3.19	1.02	1	4	95371
Trust	0.25	0.43	0	1	96363
Unemployed	0.11	0.31	0	1	97909
Age	40.31	16.16	15	98	99921
Nr of children	1.94	1.89	0	8	94820

Table 2 Correlates of Life Satisfaction in Global Sample (WVS, 70 countries)

Constant	2.022***
Health	0.807***
Education	0.093***
Income	0.197***
Married / living as married	0.072***
Female	0.200***
Religiosity	-0.082***
Trust	0.233***
Unemployed	-0.460***
Age	0.014***
Nr of children	-0.038***
Observations	79456
R square	0.152
Adjusted R square	0.152

*** indicates significance at $p < 0.001$. ** $p < 0.01$. * $p < 0.05$

Table 3 Correlation Coefficients of Income and Life Satisfaction for 70 Countries, WVS Data (T-Statistics in Appendix)

rank	country	coefficient <i>income</i>	rank	Country	coefficient <i>income</i>
1	Moldova	0.676	36	Kyrgyzstan	0.183
2	Morocco	0.566	37	Poland	0.176
3	Georgia	0.468	38	Germany	0.17
4	Egypt	0.461	39	United States	0.163
5	Macedonia	0.439	40	Russian Federation	0.148
6	Viet Nam	0.42	41	Hong Kong, China (SAR)	0.145
7	Serbia	0.386	42	Uganda	0.145
8	Bangladesh	0.38	43	Saudi Arabia	0.144
9	Ethiopia	0.358	44	Switzerland	0.142
10	Philippines	0.347	45	Malaysia	0.139
11	Bosnia and Herzegovina	0.342	46	Peru	0.128
12	Mali	0.338	47	Japan	0.12
13	Ukraine	0.318	48	France	0.119
14	Bulgaria	0.316	49	Uruguay	0.113
15	Burkina Faso	0.285	50	Trinidad and Tobago	0.103
16	China	0.276	51	Pakistan	0.102
17	Ghana	0.271	52	Brazil	0.1
18	Korea (Republic of)	0.267	53	Guatemala	0.096
19	Albania	0.266	54	Andorra	0.092
20	Cyprus	0.261	55	Dominican Republic	0.091
21	Iran	0.259	56	India	0.087
22	Rwanda	0.253	57	Spain	0.07
23	Romania	0.245	58	New Zealand	0.061
24	El Salvador	0.23	59	Sweden	0.057
25	Chile	0.226	60	Colombia	0.053
26	South Africa	0.226	61	United Kingdom	0.053
27	Nigeria	0.224	62	Netherlands	0.047
28	Algeria	0.219	63	Canada	0.044
29	Zambia	0.219	64	Italy	0.043
30	Zimbabwe	0.218	65	Mexico	0.04
31	Thailand	0.21	66	Australia	0.028
32	Iraq	0.206	67	Finland	0.028
33	Slovenia	0.196	68	Norway	0.019
34	Indonesia	0.194	69	Turkey	-0.02
35	Tanzania	0.191	70	Armenia	-0.235

Table 4 Correlation Coefficients of Health and Life Satisfaction for 70 countries, WVS Data (T-Statistics in Appendix)

rank	country	Coefficient <i>health</i>	rank	country	coefficient <i>health</i>
1	India	1.249	36	Trinidad and Tobago	0.679
2	Rwanda	1.235	37	Japan	0.676
3	Ukraine	1.004	38	Ghana	0.669
4	Turkey	0.942	39	El Salvador	0.668
5	Russian Federation	0.895	40	Uganda	0.66
6	Mali	0.883	41	Egypt	0.639
7	Australia	0.879	42	Finland	0.628
8	Dominican Republic	0.874	43	Canada	0.613
9	Iran	0.826	44	Bosnia and Herzegovina	0.61
10	Poland	0.82	45	Andorra	0.607
11	Italy	0.818	46	Mexico	0.607
12	France	0.809	47	Bangladesh	0.595
13	Cyprus	0.803	48	United Kingdom	0.587
14	Armenia	0.802	49	Nigeria	0.581
15	Germany	0.79	50	Korea (Republic of)	0.575
16	New Zealand	0.79	51	Colombia	0.555
17	United States	0.787	52	Netherlands	0.546
18	Saudi Arabia	0.786	53	Pakistan	0.541
19	Zambia	0.775	54	Brazil	0.54
20	South Africa	0.768	55	Uruguay	0.535
21	Kyrgyzstan	0.766	56	Bulgaria	0.525
22	Serbia	0.766	57	Iraq	0.517
23	Macedonia	0.758	58	Chile	0.512
24	Hong Kong, China (SAR)	0.745	59	Norway	0.5
25	Ethiopia	0.741	60	Thailand	0.486
26	Peru	0.74	61	Slovenia	0.481
27	Burkina Faso	0.734	62	Georgia	0.453
28	Sweden	0.728	63	Tanzania	0.442
29	Switzerland	0.726	64	Indonesia	0.432
30	Algeria	0.721	65	Moldova	0.425
31	Spain	0.718	66	Philippines	0.409
32	Albania	0.703	67	Malaysia	0.322
33	Romania	0.7	68	Morocco	0.288
34	Guatemala	0.686	69	Zimbabwe	0.254
35	China	0.684	70	Viet Nam	0.159

Table 5 Correlation Coefficients of Education and Life Satisfaction for 70 countries, WVS Data (T-Statistics in Appendix)

rank	country	Coefficient <i>education</i>	rank	country	coefficient <i>education</i>
1	Hong Kong, China (SAR)	0.525	36	United States	0.023
2	Morocco	0.394	37	Norway	0.017
3	France	0.379	38	Kyrgyzstan	0.015
4	Bulgaria	0.371	39	Georgia	0.014
5	China	0.357	40	Chile	0.013
6	New Zealand	0.348	41	Saudi Arabia	-0.008
7	India	0.323	42	Turkey	-0.02
8	Pakistan	0.306	43	Trinidad and Tobago	-0.026
9	Ghana	0.3	44	Germany	-0.032
10	Slovenia	0.251	45	Netherlands	-0.032
11	Ukraine	0.251	46	Canada	-0.06
12	South Africa	0.242	47	Bosnia and Herzegovina	-0.067
13	Iraq	0.24	48	Uruguay	-0.069
14	Zambia	0.224	49	Iran	-0.074
15	Nigeria	0.212	50	Mexico	-0.076
16	Indonesia	0.207	51	Rwanda	-0.089
17	Bangladesh	0.205	52	Malaysia	-0.103
18	Switzerland	0.205	53	Egypt	-0.132
19	Mali	0.196	54	Cyprus	-0.139
20	Albania	0.194	55	Burkina Faso	-0.149
21	Algeria	0.165	56	Philippines	-0.155
22	Macedonia	0.152	57	Ethiopia	-0.162
23	Finland	0.148	58	Japan	-0.2
24	Serbia	0.145	59	Peru	-0.206
25	United Kingdom	0.139	60	Poland	-0.288
26	Spain	0.119	61	Brazil	-0.309
27	Viet Nam	0.103	62	El Salvador	-0.317
28	Australia	0.081	63	Colombia	-0.327
29	Thailand	0.075	64	Uganda	-0.35
30	Romania	0.072	65	Sweden	-0.372
31	Italy	0.07	66	Russian Federation	-0.38
32	Andorra	0.056	67	Dominican Republic	-0.413
33	Zimbabwe	0.028	68	Armenia	-0.503
34	Moldova	0.027	69	Korea (Republic of)	-0.584
35	Guatemala	0.026	70	Tanzania	-0.639

Table 6 Ranking of New SWB-HDI Index and Conventional HDI in Comparison

Country	new rank SWB-HDI	HDI rank ⁷	difference in rank	Country	new rank SWB-HDI	HDI rank ⁸	difference in rank
Hong Kong, China (SAR)	1	11	10	Thailand	36	46	10
Australia	2	2	0	Algeria	37	43	6
Switzerland	3	9	6	Macedonia	38	36	-2
New Zealand	4	5	1	El Salvador	39	47	8
France	5	13	8	Peru	40	37	-3
Germany	6	7	1	Dominican Republic	41	44	3
United States	7	4	-3	Colombia	42	40	-2
Norway	8	1	-7	Saudi Arabia	43	26	-17
Slovenia	9	14	5	Brazil	44	38	-6
Canada	10	6	-4	Armenia	45	39	-6
Spain	11	16	5	Bosnia and Herzegovina	46	33	-13
Japan	12	10	-2	Albania	47	32	-15
Netherlands	13	3	-10	Philippines	48	49	1
Italy	14	17	3	Iran	49	41	-8
Finland	15	15	0	Trinidad and Tobago	50	30	-20
Sweden	16	8	-8	Turkey	51	42	-9
United Kingdom	17	18	1	South Africa	52	51	-1
Cyprus	18	19	1	Russian Fed.	53	31	-22
Korea (Rep. of)	19	12	-7	Guatemala	54	56	2
Viet Nam	20	54	34	Georgia	55	34	-21
Andorra	21	20	-1	Indonesia	56	52	-4
Ukraine	22	35	13	Tanzania	57	62	5
Chile	23	22	-1	Iraq	58	57	-1
Poland	24	21	-3	Bangladesh	59	61	2
Kyrgyzstan	25	53	28	Pakistan	60	60	0
Uruguay	26	23	-3	Ghana	61	59	-2
Romania	27	24	-3	India	62	58	-4
Serbia	28	28	0	Uganda	63	64	1
Moldova	29	48	19	Zimbabwe	64	67	3
Egypt	30	50	20	Nigeria	65	63	-2
Bulgaria	31	25	-6	Ethiopia	66	68	2
Mexico	32	27	-5	Zambia	67	65	-2
Morocco	33	55	22	Rwanda	68	66	-2
Malaysia	34	29	-5	Burkina Faso	69	70	1
China	35	45	10	Mali	70	69	-1

⁷ Considering only countries for which there is WVS data⁸ Considering only countries for which there is WVS data

Table 5 demonstrates that education matters a lot more for life satisfaction in some countries than in others. In fact, education presents the most mixed picture in terms of its relationship with life satisfaction across the countries and therefore certainly deserves the most attention for future research into this large degree of heterogeneity. While more educated people in Hong Kong, Morocco and France are more satisfied with their lives than less educated fellow countrymen and -women, the reverse is true in e.g. Korea, Armenia and above all Tanzania. At this stage, it remains unclear which societal norms or institutional arrangements could potentially be behind this finding. A differing quality of the education system could exert an influence here as well as variations across countries regarding the incentives for and prestige of high education. It should be emphasized here once more, though, that the regressions control for a number of factors. That is to say, education in Tanzania and a number of other countries is negatively associated with SWB *ceteris paribus*. It is likely, however, that education leads to a number of desirable outcomes, such as better access to employment, more income and healthier behaviours, which in turn increase life satisfaction but which are captured here in the regression by other variables than education.⁹

All in all, the results in Tables 3 to 5 show large differences across the countries. Thus, the findings suggest that a one-size-fits-all approach in development goals and strategies, according to which the same things should be strived for to the same extent, must be challenged when data on life satisfaction are taken into consideration.

In an additional analytical step in this paper, countries are finally ranked in table 6 according to the procedure as outlined in the methods section. The ranking combines objective data on the countries' average life expectancy (as a measure for health), GNI (as a measure for income) and years of schooling (as a measure for education) drawn from the HDI with the correlation coefficient for SWB of health, income and education in each country, respectively (SWB-HDI). After performing the mathematical procedure as outlined in the methods section, this ranking therefore shows which countries are capable of generating the goods that matter for people's SWB. It becomes evident that (1) Hong Kong, (2) Australia and (3) Switzerland are on top of the list, while (68) Rwanda, (69) Burkina Faso and (70) Mali are at the bottom.

Comparing these new scores to the HDI value of each respective country allows us to see how the country has moved up or down in comparison (for this purpose, an HDI ranking from 1-70 was produced for only those countries which are examined here, i.e. those countries for which we have sufficient WVS data). It can be seen that the biggest upward movers are Vietnam and Kyrgyzstan, while the biggest downward movers are Georgia and Russia.

5. Conclusions and Discussion

This paper explored ways in which data on SWB can advance the debate in development theory and add value to development practice. In particular, a landmark philosophy in development economics, the Human Development approach, was reexamined through a life satisfaction lens. The analysis showed considerable heterogeneity in the correlates of the three main components of the human development approach – health, education, income – with SWB across the 70 countries studied here.

The paper therefore has potentially important research and policy implications. It illustrates that we may have to rethink our existing strategies to a certain extent if we took surveys on SWB at face value and made a high life satisfaction among people our policy priority. While it is of course too early to jump to conclusions from this one piece of research, the results do

⁹ In fact, when looking at the isolated gross effect of education by not controlling for income, for instance, the coefficient for education in the global sample becomes moderately positive (see Appendix, Table 8).

nonetheless encourage us to critically reassess conventional development wisdom. In particular, the large variation in the correlation coefficients is noteworthy. The findings therefore would urge us to move away from overarching, one-size-fits-all approaches to country-specific development goals and strategies. While all of the factors examined here are good to have, and e.g. more income is almost always better than less income, we are very often faced in development theory and practice with the problem of having to improve people's lives with only limited resources. These findings illustrate how SWB data can therefore help us to make difficult decisions when allocating scarce resources in a way that matters most for people's life satisfaction in a specific country by investing in the areas that yield the largest benefits in terms of SWB.

These results are especially relevant in light of the current process of revising the MDGs beyond 2015. The MDGs have been considered as the benchmark for global development policy since 2000. A key success of the MDGs has been the extent to which they have mobilised political support for development and provided a step towards a culture of accountability in development. As the development community is looking for a follow-up framework beyond 2015, such as potential Sustainable Development Goals, a key challenge of the MDGs is not just that they miss out on crucial dimensions of development but also that country aspirations may differ to a certain extent. Thus, this paper would suggest that the possibility of greater flexibility in the choice of indicators must be explored in this process. Also, as McGregor and Sumner (2009; 2010) pointed out, efforts to increase material wellbeing post-2015 must be complemented by proper attention to the subjective and relational domains of human wellbeing, 'and particularly to how these relate in the spheres of human values, relationships, norms and behaviours' (McGregor and Sumner 2009: 2).

This paper provided an initial but important illustration of how to achieve such aims and food for thought in this regard. Data on SWB can inform decision-makers and researchers about the priorities of people in different countries. This may have an impact not only on the dimensions of development chosen as goals, but also on a possible hierarchy of goals in a new (country specific) framework for development beyond 2015. The analysis performed here provides ideas on how data can be used to determine the respective role of certain factors, may they be part of a long-standing philosophy such as the Human Development approach or result from elsewhere, for the life satisfaction of the people.

This research would support Customised Development Goals (CDGs), i.e. country specific development goals, or at least different priorities in terms of development goals for different countries, placing more weight onto the factors that were shown to matter more for people's life satisfaction in the respective country. In a similar manner, the findings produced here may serve to inform an alternative weighting (rather than equal weights for income, health and education) of a revised HDI that takes into account differences across countries in people's values which can be devised using data on SWB, more precisely by looking at the coefficient of the HDI components income, education and health, respectively, with SWB. Coming back to Pritchett's challenge from the beginning, the coefficients and the subsequent ranking here outline ways in which the Human Development approach can be adjusted so as to take into account the varying priorities of people in different nations. Finally, this research may also be useful if certain objective development goals, such as education, are considered to be of inherent value despite a lack of (net) positive relationship with SWB in a given country. If that is the case and the objective development goal is desirable as such or because it may be instrumental for other positive outcomes (such as higher income or healthier behaviour) then a study on SWB like this one can reveal whether the incentive structures in a society are built in a way so that the objective outcome in question does indeed go together with higher SWB, or whether there is still room for improvement and therefore need for action.

A number of limitations apply to this analysis that ought to be mentioned. Of course, every study suffers from the same shortcomings as the data it is based on. More precisely, the averages obtained from the HDI as well as the WVS tell us nothing about the distribution in the respective countries. Therefore, the rankings give only a rather crude picture of the state of well-being in the nations under study. Likewise, as in all cross-national studies the comparability of various dimensions such as education can be contested to a certain extent. Furthermore, it must be acknowledged that people's values are likely to change over time, e.g. by moving from materialist to post materialist values (Inglehart 1990; Inglehart and Welzel 2005) especially following macroeconomic changes, and values might differ according to socio-economic status, age, gender etc. Therefore, continuous adaptation of any such country specific development strategies and ideally the representative inclusion of different socio-demographic groups should be assured. It is also worth remembering that income in the WVS is assessed using a self-reported decile rating which makes the findings potentially sensitive to the degree of inequalities within society as well as restricts the effect of income to that of relative income (and cannot tell us what happens if the income is doubled for everyone in the economy). Finally, the data is of a cross-sectional nature which means that the coefficients do not prove causality in the statistical relationships under study.

The resulting task for academic research on SWB in the future will be to map out what are anthropological constants in the happiness formula (in other words which factors are related to SWB in a similar way across countries and cultures), and which variables are culturally relative (in other words which factors matter significantly more to SWB in some countries than in others). A huge but worthwhile undertaking. Moreover, related studies have called for a new wave of research that goes beyond a unitary happiness formula by examining heterogeneity in the correlates of SWB across subgroups of society within any one country based on sociological theory (Kroll 2011a). Extending the country-level analysis of this paper to societal subgroups within the countries studied here therefore would certainly be another valuable next step.

In any event, this paper also underlines the demands by Helliwell (2008: 15), who argued that SWB surveys must play a larger role in devising development goals and monitoring progress towards better societies:

‘As national and international policy-makers move toward more evidence-based choices among alternative institutional arrangements and policy-delivery mechanisms, there is a natural role for assessments of life satisfaction to become a standard part of the information collected as part of assessment exercises.’

When faced with scarce resources development practitioners and policymakers could in the future turn to SWB data to see whether, *ceteris paribus*, investments in education or health or economic productivity will be likely to generate more well-being for citizens. The results presented here can hopefully serve as a starting point for such evidence-based approaches. It would be beneficial if this paper can spark further and more fine-grained research on the determinants of life satisfaction in countries around the globe so that people's well-being may be placed at the heart of the policymaking process.

Appendix

Table 7: Full Data Table Part 1

1) Country	2) WVS wave (or year if not wave 5)	3) I_{health}	4) $I_{education}$	5) I_{income}	6) Coeff. health – SWB (t-statistic)	7) Coeff. education – SWB (t-statistic)	8) Coeff. income – SWB (t-statistic)
Albania	2002	0.898	0.721	0.624	0.703 (6.871)	0.194 (1.272)	0.266 (7.591)
Algeria	2002	0.838	0.652	0.621	0.721 (6.036)	0.165 (0.599)	0.219 (4.211)
Andorra	5	0.961	0.727	0.843	0.607 (8.532)	0.056 (0.459)	0.092 (2.939)
Armenia	1997	0.856	0.760	0.566	0.802 (11.968)	-0.503 (-2.547)	-0.235 (-8.248)
Australia	5	0.976	0.981	0.837	0.879 (14.903)	0.081 (0.602)	0.028 (1.542)
Bangladesh	2002	0.772	0.415	0.391	0.595 (8.006)	0.205 (1.612)	0.380 (12.282)
Bosnia and Herzegovina	2001	0.878	0.723	0.621	0.610 (7.362)	-0.067 (-0.349)	0.342 (7.897)
Brazil	5	0.844	0.663	0.662	0.540 (7.054)	-0.309 (-2.572)	0.100 (3.702)
Bulgaria	5	0.842	0.802	0.678	0.525 (5.150)	0.371 (1.813)	0.316 (5.305)
Burkina Faso	5	0.559	0.187	0.349	0.734 (9.772)	-0.149 (-0.961)	0.285 (8.762)
Canada	5	0.962	0.927	0.840	0.613 (12.600)	-0.060 (-0.595)	0.044 (2.707)
Chile	5	0.932	0.797	0.701	0.512 (5.903)	0.013 (0.018)	0.226 (6.212)
China	5	0.843	0.623	0.618	0.684 (10.146)	0.357 (2.435)	0.276 (7.669)
Colombia	5	0.847	0.667	0.633	0.555 (10.461)	-0.327 (-3.724)	0.053 (3.152)
Cyprus	5	0.940	0.798	0.790	0.803 (11.530)	-0.139 (-0.867)	0.261 (7.106)
Dominican Republic	1996	0.842	0.616	0.629	0.874 (4.894)	-0.413 (-0.733)	0.091 (1.833)
Egypt	5	0.840	0.560	0.568	0.639 (10.774)	-0.132 (-1.273)	0.461 (18.561)
El Salvador	1999	0.823	0.637	0.585	0.668 (7.328)	-0.317 (-1.651)	0.230 (3.846)
Ethiopia	5	0.619	0.237	0.326	0.741 (13.421)	-0.162 (-1.571)	0.358 (14.011)
Finland	5	0.946	0.877	0.828	0.628 (8.566)	0.148 (1.134)	0.028 (1.085)
France	5	0.971	0.870	0.819	0.809 (11.263)	0.379 (2.836)	0.119 (3.653)
Georgia	5	0.848	0.839	0.554	0.453 (6.919)	0.014 (0.057)	0.468 (14.995)
Germany	5	0.953	0.928	0.838	0.790 (13.255)	-0.032 (-0.336)	0.170 (6.435)
Ghana	5	0.698	0.574	0.396	0.669 (8.369)	0.300 (1.948)	0.271 (8.863)
Guatemala	5	0.807	0.438	0.534	0.686 (7.910)	0.026 (0.175)	0.096 (1.774)
Hong Kong, China (SAR)	5	0.990	0.837	0.874	0.745 (8.062)	0.525 (3.264)	0.145 (4.902)
India	5	0.717	0.450	0.508	1.249 (18.287)	0.323 (2.668)	0.087 (3.376)
Indonesia	5	0.779	0.584	0.518	0.432 (5.698)	0.207 (1.393)	0.194 (7.247)

Iran	5	0.836	0.640	0.662	0.826 (14.658)	-0.074 (-0.700)	0.259 (10.888)
Iraq	5	0.774	0.491	0.495	0.517 (9.062)	0.240 (2.407)	0.206 (7.300)
Italy	5	0.976	0.856	0.799	0.818 (9.095)	0.070 (0.414)	0.043 (1.661)
Japan	5	1.000	0.883	0.827	0.676 (9.225)	-0.200 (-0.947)	0.120 (5.684)
Korea (Republic of)	5	0.956	0.934	0.808	0.575 (6.179)	-0.584 (-2.847)	0.267 (8.642)
Kyrgyzstan	2003	0.753	0.716	0.432	0.766 (7.157)	0.015 (0.068)	0.183 (3.182)
Malaysia	5	0.855	0.730	0.704	0.322 (3.743)	-0.103 (-0.750)	0.139 (4.668)
Mali	5	0.496	0.270	0.346	0.883 (9.215)	0.196 (1.000)	0.338 (9.265)
Mexico	5	0.898	0.726	0.700	0.607 (8.413)	-0.076 (-0.571)	0.040 (1.949)
Moldova	5	0.778	0.716	0.490	0.425 (5.964)	0.027 (0.133)	0.676 (25.037)
Morocco	5	0.823	0.447	0.535	0.288 (4.616)	0.394 (3.139)	0.566 (17.776)
Netherlands	5	0.958	0.931	0.845	0.546 (8.632)	-0.032 (-0.299)	0.047 (1.740)
New Zealand	5	0.957	1.000	0.783	0.790 (9.120)	0.348 (1.103)	0.061 (2.401)
Nigeria	2000	0.503	0.442	0.434	0.581 (8.023)	0.212 (1.838)	0.224 (9.170)
Norway	5	0.964	0.985	0.883	0.500 (8.792)	0.017 (0.131)	0.019 (0.927)
Pakistan	2001	0.717	0.386	0.464	0.541 (8.572)	0.306 (3.523)	0.102 (3.758)
Peru	5	0.852	0.704	0.634	0.740 (8.113)	-0.206 (-1.354)	0.128 (3.165)
Philippines	2001	0.769	0.684	0.508	0.409 (4.925)	-0.155 (-0.938)	0.347 (9.793)
Poland	5	0.885	0.822	0.739	0.820 (9.213)	-0.288 (-2.077)	0.176 (4.548)
Romania	5	0.851	0.831	0.674	0.700 (8.737)	0.072 (0.493)	0.245 (10.161)
Russian Federation	5	0.770	0.784	0.713	0.895 (10.135)	-0.380 (-1.873)	0.148 (5.301)
Rwanda	5	0.559	0.407	0.348	1.235 (15.747)	-0.089 (-0.665)	0.253 (8.626)
Saudi Arabia	2003	0.850	0.689	0.781	0.786 (9.178)	-0.008 (-0.035)	0.144 (6.255)
Serbia	5	0.860	0.790	0.663	0.766 (10.617)	0.145 (1.010)	0.386 (11.600)
Slovenia	5	0.936	0.933	0.790	0.481 (7.066)	0.251 (1.647)	0.196 (5.642)
South Africa	5	0.517	0.705	0.652	0.768 (16.684)	0.242 (2.232)	0.226 (12.501)
Spain	5	0.969	0.874	0.799	0.718 (10.478)	0.119 (1.162)	0.070 (2.506)
Sweden	5	0.969	0.904	0.842	0.728 (12.113)	-0.372 (-2.596)	0.057 (2.742)
Switzerland	5	0.983	0.872	0.858	0.726 (11.202)	0.205 (1.379)	0.142 (5.198)
Tanzania	2001	0.603	0.454	0.370	0.442 (3.374)	-0.639 (-2.500)	0.191 (2.970)
Thailand	5	0.854	0.597	0.622	0.486 (7.774)	0.075 (0.671)	0.210 (8.749)
(The former Yugoslav Republic of) Macedonia	2001	0.865	0.696	0.641	0.758 (7.870)	0.152 (0.789)	0.439 (10.035)
Trinidad and Tobago	5	0.791	0.712	0.782	0.679 (8.399)	-0.026 (-0.171)	0.103 (3.014)
Turkey	5	0.851	0.583	0.689	0.942 (13.565)	-0.020 (-0.138)	-0.020 (-0.750)
Uganda	2001	0.538	0.475	0.347	0.660 (4.902)	-0.350 (-1.408)	0.145 (2.015)
Ukraine	5	0.765	0.858	0.591	1.004 (10.106)	0.251 (1.085)	0.318 (7.907)

United Kingdom	5	0.949	0.815	0.832	0.587 (9.348)	0.139 (0.768)	0.053 (2.076)
United States	5	0.923	0.939	0.869	0.787 (12.271)	0.023 (0.171)	0.163 (6.184)
Uruguay	5	0.899	0.763	0.700	0.535 (5.916)	-0.069 (-0.471)	0.113 (2.849)
Viet Nam	5	0.870	0.503	0.478	0.159 (2.522)	0.103 (1.062)	0.420 (13.622)
Zambia	5	0.458	0.480	0.362	0.775 (9.657)	0.224 (1.453)	0.219 (7.229)
Zimbabwe	2001	0.495	0.566	0.190	0.254 (2.329)	0.028 (0.114)	0.218 (4.043)

Full Data Table Part 2

Country	9) $r_{health_shifted}$	10) $r_{education_shifted}$	11) $r_{income_shifted}$	12) $l_{health_shifted}$	13) $l_{education_shifted}$	14) $l_{income_shifted}$
Albania	0.962	0.933	0.601	0.078	0.031	-0.006
Algeria	0.98	0.904	0.554	0.018	-0.038	-0.009
Andorra	0.866	0.795	0.427	0.141	0.037	0.213
Armenia	1.061	0.236	0.1	0.036	0.07	-0.064
Australia	1.138	0.82	0.363	0.156	0.291	0.207
Bangladesh	0.854	0.944	0.715	-0.048	-0.275	-0.239
Bosnia and Herzegovina	0.869	0.672	0.677	0.058	0.033	-0.009
Brazil	0.799	0.43	0.435	0.024	-0.027	0.032
Bulgaria	0.784	1.11	0.651	0.022	0.112	0.048
Burkina Faso	0.993	0.59	0.62	-0.261	-0.503	-0.281
Canada	0.872	0.679	0.379	0.142	0.237	0.21
Chile	0.771	0.752	0.561	0.112	0.107	0.071
China	0.943	1.096	0.611	0.023	-0.067	-0.012
Colombia	0.814	0.412	0.388	0.027	-0.023	0.003
Cyprus	1.062	0.6	0.596	0.12	0.108	0.16
Dominican Republic	1.133	0.326	0.426	0.022	-0.074	-0.001
Egypt	0.898	0.607	0.796	0.02	-0.13	-0.062
El Salvador	0.927	0.422	0.565	0.003	-0.053	-0.045
Ethiopia	1	0.577	0.693	-0.201	-0.453	-0.304

Finland	0.887	0.887	0.363	0.126	0.187	0.198
France	1.068	1.118	0.454	0.151	0.18	0.189
Georgia	0.712	0.753	0.803	0.028	0.149	-0.076
Germany	1.049	0.707	0.505	0.133	0.238	0.208
Ghana	0.928	1.039	0.606	-0.122	-0.116	-0.234
Guatemala	0.945	0.765	0.431	-0.013	-0.252	-0.096
Hong Kong, China (SAR)	1.004	1.264	0.48	0.17	0.147	0.244
India	1.508	1.062	0.422	-0.103	-0.24	-0.122
Indonesia	0.691	0.946	0.529	-0.041	-0.106	-0.112
Iran	1.085	0.665	0.594	0.016	-0.05	0.032
Iraq	0.776	0.979	0.541	-0.046	-0.199	-0.135
Italy	1.077	0.809	0.378	0.156	0.166	0.169
Japan	0.935	0.539	0.455	0.18	0.193	0.197
Korea (Republic of)	0.834	0.155	0.602	0.136	0.244	0.178
Kyrgyzstan	1.025	0.754	0.518	-0.067	0.026	-0.198
Malaysia	0.581	0.636	0.474	0.035	0.04	0.074
Mali	1.142	0.935	0.673	-0.324	-0.42	-0.284
Mexico	0.866	0.663	0.375	0.078	0.036	0.07
Moldova	0.684	0.766	1.011	-0.042	0.026	-0.14
Morocco	0.547	1.133	0.901	0.003	-0.243	-0.095
Netherlands	0.805	0.707	0.382	0.138	0.241	0.215
New Zealand	1.049	1.087	0.396	0.137	0.31	0.153
Nigeria	0.84	0.951	0.559	-0.317	-0.248	-0.196
Norway	0.759	0.756	0.354	0.144	0.295	0.253
Pakistan	0.8	1.045	0.437	-0.103	-0.304	-0.166
Peru	0.999	0.533	0.463	0.032	0.014	0.004

Philippines	0.668	0.584	0.682	-0.051	-0.006	-0.122
Poland	1.079	0.451	0.511	0.065	0.132	0.109
Romania	0.959	0.811	0.58	0.031	0.141	0.044
Russian Federation	1.154	0.359	0.483	-0.05	0.094	0.083
Rwanda	1.494	0.65	0.588	-0.261	-0.283	-0.282
Saudi Arabia	1.045	0.731	0.479	0.03	-0.001	0.151
Serbia	1.025	0.884	0.721	0.04	0.1	0.033
Slovenia	0.74	0.99	0.531	0.116	0.243	0.16
South Africa	1.027	0.981	0.561	-0.303	0.015	0.022
Spain	0.977	0.858	0.405	0.149	0.184	0.169
Sweden	0.987	0.367	0.392	0.149	0.214	0.212
Switzerland	0.985	0.944	0.477	0.163	0.182	0.228
Tanzania	0.701	0.1	0.526	-0.217	-0.236	-0.26
Thailand	0.745	0.814	0.545	0.034	-0.093	-0.008
(The former Yugoslav Republic of) Macedonia	1.017	0.891	0.774	0.045	0.006	0.011
Trinidad and Tobago	0.938	0.713	0.438	-0.029	0.022	0.152
Turkey	1.201	0.719	0.315	0.031	-0.107	0.059
Uganda	0.919	0.389	0.48	-0.282	-0.215	-0.283
Ukraine	1.263	0.99	0.653	-0.055	0.168	-0.039
United Kingdom	0.846	0.878	0.388	0.129	0.125	0.202
United States	1.046	0.762	0.498	0.103	0.249	0.239
Uruguay	0.794	0.67	0.448	0.079	0.073	0.07
Viet Nam	0.418	0.842	0.755	0.05	-0.187	-0.152
Zambia	1.034	0.963	0.554	-0.362	-0.21	-0.268
Zimbabwe	0.513	0.767	0.553	-0.325	-0.124	-0.44

Full Data Table Part 3

Country	15) new ranking score health	16) new ranking score education	17) new ranking score income	18) new SWB-HDI total score	19) HDI total score	20) Rank HDI
Albania	0.075036	0.03	-0.003606	-0,019854	0.739	70
Algeria	0.01764	-0.03	-0.004986	0,014457	0.698	96
Andorra	0.122106	0.03	0.090951	0,068871	0.838	32
Armenia	0.038196	0.02	-0.0064	-0,015925	0.716	86
Australia	0.177528	0.24	0.075141	0,147101	0.929	2
Bangladesh	-0.040992	-0.26	-0.170885	-0,122059	0.500	146
Bosnia and Herzegovina	0.050402	0.02	-0.006093	-0,018955	0.733	74
Brazil	0.019176	-0.01	0.01392	-0,014580	0.718	84
Bulgaria	0.017248	0.12	0.031248	0,040616	0.771	55
Burkina Faso	-0.259173	-0.30	-0.17422	-0,237521	0.331	181
Canada	0.123824	0.16	0.07959	0,116617	0.908	6
Chile	0.086352	0.08	0.039831	0,065168	0.805	44
China	0.021689	-0.07	-0.007332	0,022687	0.687	101
Colombia	0.021978	-0.01	0.001164	-0,006235	0.710	87
Cyprus	0.12744	0.06	0.09536	0,092345	0.840	31
Dominican Republic	0.024926	-0.02	-0.000426	0,006351	0.689	98
Egypt	0.01796	-0.08	-0.049352	0,041202	0.644	113
El Salvador	0.002781	-0.02	-0.025425	0,011651	0.674	105
Ethiopia	-0.201	-0.26	-0.210672	-0,222857	0.363	174
Finland	0.111762	0.17	0.071874	0,110038	0.882	22
France	0.161268	0.20	0.085806	0,140689	0.884	20
Georgia	0.019936	0.11	-0.061028	-0,051489	0.733	75
Germany	0.139517	0.17	0.10504	0,135101	0.905	9
Ghana	-0.113216	-0.12	-0.141804	-0,124611	0.541	135

Guatemala	-0.012285	-0.19	-0.041376	-0,046103	0.574	131
Hong Kong, China (SAR)	0.17068	0.19	0.11712	0,154867	0.898	13
India	-0.155324	-0.25	-0.051484	-0,126789	0.547	134
Indonesia	-0.028331	-0.10	-0.059248	-0,055213	0.617	124
Iran	0.01736	-0.03	0.019008	-0,022221	0.707	88
Iraq	-0.035696	-0.19	-0.073035	-0,079786	0.573	132
Italy	0.168012	0.13	0.063882	0,112960	0.874	24
Japan	0.1683	0.10	0.089635	0,116208	0.901	12
Korea (Republic of)	0.113424	0.04	0.107156	0,077176	0.897	15
Kyrgyzstan	-0.068675	0.02	-0.102564	0,051687	0.615	126
Malaysia	0.020335	0.03	0.035076	0,026278	0.761	61
Mali	-0.370008	-0.39	-0.191132	-0,302832	0.359	175
Mexico	0.067548	0.02	0.02625	0,034849	0.770	57
Moldova	-0.028728	0.02	-0.14154	0,043264	0.649	111
Morocco	0.001641	-0.28	-0.085595	0,033817	0.582	130
Netherlands	0.11109	0.17	0.08213	0,115843	0.910	3
New Zealand	0.143713	0.34	0.060588	0,143161	0.908	5
Nigeria	-0.26628	-0.24	-0.109564	-0,190201	0.459	156
Norway	0.109296	0.22	0.089562	0,129725	0.943	1
Pakistan	-0.0824	-0.32	-0.072542	-0,123833	0.504	145
Peru	0.031968	0.01	0.001852	0,007616	0.725	80
Philippines	-0.034068	0.00	-0.083204	-0,021496	0.644	112
Poland	0.070135	0.06	0.055699	0,061496	0.813	39
Romania	0.029729	0.11	0.02552	0,044269	0.781	50
Russian Federation	-0.0577	0.03	0.040089	-0,042737	0.755	66
Rwanda	-0.389934	-0.18	-0.165816	-0,228265	0.429	166

Saudi Arabia	0.03135	0.00	0.072329	-0,011835	0.770	56
Serbia	0.041	0.09	0.023793	0,044180	0.766	59
Slovenia	0.08584	0.24	0.08496	0,120610	0.884	21
South Africa	-0.311181	0.01	0.012342	-0,038375	0.619	123
Spain	0.145573	0.16	0.068445	0,116299	0.878	23
Sweden	0.147063	0.08	0.083104	0,098643	0.904	10
Switzerland	0.160555	0.17	0.108756	0,144225	0.903	11
Tanzania	-0.152117	-0.02	-0.13676	-0,078889	0.466	152
Thailand	0.02533	-0.08	-0.00436	0,020296	0.682	103
(The former Yugoslav Republic of) Macedonia	0.045765	0.01	0.008514	0,012771	0.728	78
Trinidad and Tobago	-0.027202	0.02	0.066576	-0,030512	0.760	62
Turkey	0.037231	-0.08	0.018585	-0,037618	0.699	92
Uganda	-0.259158	-0.08	-0.13584	-0,143327	0.446	161
Ukraine	-0.069465	0.17	-0.025467	0,066511	0.729	76
United Kingdom	0.109134	0.11	0.078376	0,097915	0.863	28
United States	0.107738	0.19	0.119022	0,134498	0.910	4
Uruguay	0.062726	0.05	0.03136	0,045822	0.783	48
Viet Nam	0.0209	-0.16	-0.11476	0,072282	0.593	128
Zambia	-0.374308	-0.20	-0.148472	-0,223996	0.430	164
Zimbabwe	-0.166725	-0.10	-0.24332	-0,156843	0.376	173

Full Data Table Part 4

Country	21) adjusted rank HDI (counting only countries for which there is WVS data)	22) Rank new SWB-HDI	23) <i>difference in rank SWB-HDI vs. HDI</i>	24) GNI per capita in PPP
Albania	32	47	-15	7.803
Algeria	43	37	6	7.658
Andorra	20	21	-1	36.095

Armenia	39	45	-6	5.188
Australia	2	2	0	34.431
Bangladesh	61	59	2	1.529
Bosnia and Herzegovina	33	46	-13	7.664
Brazil	38	44	-6	10.162
Bulgaria	25	31	-6	11.412
Burkina Faso	70	69	1	1.141
Canada	6	10	-4	35.166
Chile	22	23	-1	13.329
China	45	35	10	7.476
Colombia	40	42	-2	8.315
Cyprus	19	18	1	24.841
Dominican Republic	44	41	3	8.087
Egypt	50	30	20	5.269
El Salvador	47	39	8	5.925
Ethiopia	68	66	2	971
Finland	15	15	0	32.438
France	13	5	8	30.462
Georgia	34	55	-21	4.78
Germany	7	6	1	34.854
Ghana	59	61	-2	1.584
Guatemala	56	54	2	4.167
Hong Kong, China (SAR)	11	1	10	44.805
India	58	62	-4	3.468
Indonesia	52	56	-4	3.716
Iran	41	49	-8	10.164

Iraq	57	58	-1	3.177
Italy	17	14	3	26.484
Japan	10	12	-2	32.295
Korea (Republic of)	12	19	-7	28.23
Kyrgyzstan	53	25	28	2.036
Malaysia	29	34	-5	13.685
Mali	69	70	-1	1.123
Mexico	27	32	-5	13.245
Moldova	48	29	19	3.058
Morocco	55	33	22	4.196
Netherlands	3	13	-10	36.402
New Zealand	5	4	1	23.737
Nigeria	63	65	-2	2.069
Norway	1	8	-7	47.557
Pakistan	60	60	0	2.55
Peru	37	40	-3	8.389
Philippines	49	48	1	3.478
Poland	21	24	-3	17.451
Romania	24	27	-3	11.046
Russian Federation	31	53	-22	14.561
Rwanda	66	68	-2	1.133
Saudi Arabia	26	43	-17	23.274
Serbia	28	28	0	10.236
Slovenia	14	9	5	24.914
South Africa	51	52	-1	9.469
Spain	16	11	5	26.508

Sweden	8	16	-8	35.837
Switzerland	9	3	6	39.924
Tanzania	62	57	5	1.328
Thailand	46	36	10	7.694
(The former Yugoslav Republic of) Macedonia	36	38	-2	8.804
Trinidad and Tobago	30	50	-20	23.439
Turkey	42	51	-9	12.246
Uganda	64	63	1	1.124
Ukraine	35	22	13	6.175
United Kingdom	18	17	1	33.296
United States	4	7	-3	43.017
Uruguay	23	26	-3	13.242
Viet Nam	54	20	34	2.805
Zambia	65	67	-2	1.254
Zimbabwe	67	64	3	376

Data source: World Values Survey, UNDP Human Development Report 2011

Table 8: Gross Effect of Each of the Three Human Development Dimensions on Life Satisfaction Separately, Global WVS Sample (70 Countries)

Constant	2.724***	6.283***	5.390***
Married / living as married	0.165***	0.212***	0.096***
Female	0.179***	0.110***	0.128***
Religiosity	-0.107***	-0.086***	-0.081***
Trust	0.311***	0.476***	0.387***
Unemployed	-0.610***	-0.690***	-0.515***
Age	0.014***	0.002**	0.002**
Nr of children	-0.75***	-0.068***	-0.054***
Health	0.902***		
Education		0.438***	
Income			0.256***
Observations	85922	85739	80035
R square	0.119	0.033	0.079
Adjusted R square	0.119	0.033	0.079

*** indicates significance at $p < 0.001$. ** $p < 0.01$. * $p < 0.05$

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