

Comparative Perspectives of Health, Income, and Well-Being: The Case of Emerging Market Economies

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Abstract: *There has been increasing interest in the direct measurement of the state of global well-being and cross-country comparison of well-being or happiness. Analyses of national well-being conventionally have focused on per capita income. Income and its growth are certainly an essential indicator of standard of living; but it is not the only thing that matters. There are noneconomic factors that contribute to well-being. Income may not be worth as much if one does not have the health and other capabilities to enjoy it. Satisfactory health together with other capabilities – freedom, the absence of conflicts, war, violence, and adequate social capital – can contribute to people’s subjective well-being or happiness. In this paper, we use the analytical framework of the economics of happiness to explore the relationship between happiness or subjective well-being and good health taking into consideration the role of social capital – trust and good governance.*

Keywords: comparative perspectives, health, income, well-being, emerging market economies
JEL: I15, I31, O10

INTRODUCTION

In his book, *Development as Freedom*, Nobel Laureate in economics Amartya Sen (1999) argued that socioeconomic development, individual well-being, and the quality of life depend on a range

of functions and capabilities that allow people to have a good life. The range of capabilities include both economic factors, such as economic growth and income; but there are also non-economic factors, such as health, reduced child mortality and infectious diseases, increased life expectancy, expanded education and literacy, and freedom. The United Nations adopted the Sen's concept of development and created what is now, widely accepted Human Development Index (HDI). It is a composite index that considers life expectancy, education, and per capita income indicators which are used to measure development in a broader context of economic as well as human development.

There has been increasing interest in the direct measurement of the state of global well-being and cross-country comparison of well-being or happiness. Analyses of national well-being conventionally have focused on per capita income. Income and its growth is certainly an essential indicator of standard of living, but it is not the only thing that matters. High income can be associated with low well-being, and conversely, people can have high well-being and low income. This paradox identified by Richard Easterlin (1964, 2016) which suggested the existence of rising per capita income and falling well-being or happiness. Similar observations were made by development anthropologists that suggested "happy poor peasants and miserable millionaires." There are noneconomic factors that contribute to well-being. Income may not be worth as much if one does not have the health and other capabilities to enjoy it. Good health is a blessing in and of itself, and together with other capabilities – freedom, the absence of conflicts, war, violence, and adequate social capital – contribute to people's subjective well-being.

In this paper, we use the analytical framework of the economics of happiness to examine the roles of health, public health expenditure, the quality of government (as social capital) in contributing to the state of well-being or happiness across a group of 37 emerging market economies. The next section provides a brief literature background. Section III describes the data and methodology. Section IV discusses the empirical findings. Section V concludes with some perspectives on the policy relevance.

LITERATURE BACKGROUND

The advent of Big Data Analytics has increasingly encouraged economists and other behavioral, social scientists to move toward the direct measurement of subjective well-being (SWB) or happiness instead of relying indirectly on per capita income. In 2006, the Gallup Organization ran a Gallup's World Poll using samples of people in each of 132 countries covered by the poll. Today Gallup together with Healthways publishes measures of well-being for most countries and most of the people of the world in its report, *State of Global Well-Being*, using direct measurement of well-being based on survey data. Along the same approach of the direct measure of well-being, the Sustainable Development Solutions Network (SDSN) published its first report in 2012 called *World Happiness Report*. Following the United Nations High-Level Meeting on happiness, the United Nations has adopted the approach which includes well-being as an essential element in

reshaping the global sustainable development agenda. In June 2016, the Organization for Economic Co-Operation and Development (OECD) committed itself to “redefine the growth narrative to put people’s well-being at the center of government efforts.”

The economics of happiness has led to increased discussion of using subjective well-being (SWB) or happiness survey as a tool for public policy complementing more common data from national income accounts, such as income, employment, inflation, and growth. There are nascent attempts to develop such measures, for example, in the United Kingdom and France.¹ Governments, organizations, and communities are using the results of SWB and life satisfaction research to explore possible policy relevance.²

The *World Happiness Report* provides the rankings of global happiness analogous to the United Nations Human Development Report. In the 2017 report, it gives special attention to the social foundation of happiness or SWB for individuals and nations. Survey data were collected from respondents in more than 150 countries, to a question asking them to evaluate their life satisfaction on the Cantril ladder score. Six key variables – GDP per capita, social support, healthy life expectancy, freedom to make life choices, generosity, and freedom from corruption – were used to explain the variation of subjective well-being across countries for the period between 2005 and 2016. The report presents data for average levels of SWB among and within countries.³

According to the Report, the six variables explained about 75 percent of the variation in the national average of well-being measured by the Cantril ladder of life satisfaction. Based on the regression results, the Report suggested that the social support (having someone to count on) is responsible for 34 percent of the average difference between each country’s predicted life satisfaction score and that of the benchmark (Dystopia). Other factors are GDP per capita (28 percent), healthy life expectancy (16 percent), freedom (12 percent), generosity (7 percent), and absence of corruption (4 percent).⁴

DATA AND METHODOLOGY

A. Data and Variables.

A list of 37 countries considered to be emerging market economies or countries by several institutions were chosen as our sample set.⁵ Various sources were used to obtain needed data. Population data for 2016 was derived from *World Population Prospects, the 2017 Revision*. *United Nations Department of Economic and Social Affairs*, Population Division, Population Estimates and Projections Section. June 2017. Data on 2016 Nominal Gross Domestic Product (GDP) and Per Capita GDP was derived from the World Economic Outlook Database of the International Monetary Fund 2017. The Human Development Index (HDI) data for 2016 were obtained "Human Development Report. *HDRO (Human Development Report Office) United Nations Development Programme 2018*. (Data on Taiwan was obtained from National Statistics, Republic of China.

World Happiness Index for 2018 was obtained from the World Happiness Report published by the United Nations Sustainable Development *Solutions Network (SDSN) and edited by Helliwell, J., Layard, R., & Sachs, J. (2018)*. It utilizes data from 2015 to 2017. The Corruption Perception Index (CPI) for 2016 was obtained from the report by Transparency International. The World Governance Indicators data was obtained from WGI 2017 *developed by Daniel Kaufmann*, Natural Resource Governance Institute (NRGI) and Brookings Institution and *Aart Kraay*, World Bank Development Research Group. The World Freedom Index (WFI) data for 2016 was obtained from Freedom in The World 2017 published by Freedom House. The data on health expenditures was lagged by a year and information regarding Current Health Expenditures Per Capita in US Dollars and the ratio of Current Health Expenditures to GDP was obtained from the Global Health Expenditures Database of the World Health Organization.

The Human Development Index (HDI) measures life expectancy at birth, mean years of schooling and expected schooling and gross national income per capita measured in purchasing power parity (PPP) dollars. It measures countries on a scale of 0 (lowest) to 1(highest).

The World Happiness Index (WHI) uses data from the Gallup World Poll. The questionnaire used to rate survey the various countries measures 14 areas within its core questions: (1) business & economic, (2) citizen engagement, (3) communications & technology, (4) diversity (social issues), (5) education & families, (6) emotions (well-being), (7) environment & energy, (8) food & shelter, (9) government and politics, (10) law & order (safety), (11) health, (12) religion and ethics, (13) transportation, and (14) work. The rating is on a 0 (lowest) to 10 (highest) scale.

The Corruption Perception Index (CPI) measure rates countries based on their perceived level of corruption, on a scale from 0 (highly corrupt) to 10 (clean). The CPI is based on surveys of domestic and international business executives, financial journalists, and risk analysts. Therefore, it reflects the perceptions of experts and business elites, not of the public. The minimum number of surveys used for each country is three.

The Worldwide Governance Indicators (WGI) use 6 dimensions of governance. They include voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. Aggregate WGI measures in two ways: in the standard normal units of the governance indicator ranging from -2.5 to + 2.5 and in percentile rank ranging from 0 (lowest) to 100 (highest) among all countries world-wide.

B. Cluster Analysis

Cluster analysis was performed using SAS Version 9.4. Proc Aceclus was used to preprocess the data and Proc Cluster to hierarchically cluster the observations. The Ward method algorithm was chosen for the hierarchical cluster analysis. In this method, each observation is considered a cluster, and the clusters are hierarchically joined by minimizing the ratio of the variation between

clusters to the variation within clusters. Based on statistical analysis, the number of clusters is selected which is then used for k-means cluster analysis. Variables in the analysis included Population (POP), Gross Domestic Product (GDP), Per Capita GDP (PCGDP), GDP growth rate (GDPGRO), Human Development Index (HDI), World Happiness Index (WHI), Corruption Perception Index (CPI), World Government Index (WGI), World Freedom Index (WFI), Current Health Expenditures Per Capita (CHEPC) and Current Health Expenditures as percent of GDP (CHERGDP). The results suggested that three clusters would be appropriate.

Population and GDP (in that order) are the two highest impact variables in determining the clusters in all models. A principal component analysis was done using JMP Pro 13 to determine the impact of the variables. It was determined from the analysis that the first two principal components explain all the variation. The first principal component has a communality estimate of 0.874 for POP and the second principal component has a communality estimate of 0.821 for GDP. Although other score variables were included in the analysis, the clustering is done based on these two variables in all models. The results indicated that three clusters would be appropriate (see Figure 1 below). The first cluster grouped China and India in one bucket. The second cluster had thirteen countries: Indonesia, Pakistan, Nigeria, Brazil, Thailand, Turkey, Iran, Philippines, Vietnam, Egypt, Russia, Mexico and Bangladesh. The third cluster had the remaining 22 countries: Qatar, Slovenia, Oman, Mauritius, United Arab Emirates (UAE), Israel, Hungary, Greece, Czech Republic, Bulgaria, Poland, Peru, Venezuela, Malaysia, Taiwan, Romania, Chile, South Korea, South Africa, Colombia, Ukraine and Argentina.

EMPIRICAL FINDINGS

Three measures of well-being are used as the dependent variables in the regression: log of GDP per capita (LN_GDP), Human Development Index (HDI), and the World Happiness Index (WHI). We regressed each of these measures of well-being on the quality of health using health expenditures per capita (in logarithmic form, LN_CHEPC) and health expenditure as a share of GDP (CHEPRGDP) as proxy variables. We included the quality of governance (World Governance Indicators, WGI) and social capital (trust in government, the Corruption Perception Index, CPI) as control variables.

We used ordinary least squares method (OLS), Proc Reg of JMP Pro 13. To avoid problems of outliers and heteroscedasticity in the underlying dataset, we subjected the data to the Breusch-Pagan-Godfrey test. The null hypothesis for this test is that the error variances are all equal. The null hypothesis was not rejected. This meant that even if heteroscedasticity was present in the regression model the error terms were not related to the dependent variable. The test obviated the need to use robust regression as it did not offer the advantage since there were no violations of assumptions held by OLS regressions.

For each of the dependent variables, there were three model specifications. The first model specification used CPI, WGI, CHEPRGDP, and LN_CHEPC with data from all 37 countries. The Proc Reg procedure was repeated twice more with the 2016 data. In the second iteration, observations for India and China belonging to the first cluster group were removed from the data set. In the third iteration, observations for cluster one countries India and China and cluster 2 countries, Indonesia, Pakistan, Nigeria, Brazil, Thailand, Turkey, Iran, Philippines, Vietnam, Egypt, Russia, Mexico and Bangladesh, were also removed from the dataset.

In the case of all 37 countries (Table 1), GDP per capita (LN_PCGDP), as a measure of well-being, was significantly correlated with all the independent variables (CPI, WGI, CHERGDP, and LN_CHEPC) at .01 with the adjusted R-square value of 0.947. However, the WGI and CHERGDP variables had the wrong signs, negative correlation. For HDI and WHI, they correlated significantly only with health expenditure per capita and lower adjusted R-square value.

In the second iteration (Table 2) with the first cluster of countries, India and China removed from the data. Again, GDP per capita was significantly correlated with CPI, WGI, CHERGDP, and LN_CHEPC at .01 level. Again, the WGI and CHERGDP variables showed a negative correlation. The adjusted R-square value was 0.937. Similar results as in the case of all 37 countries, for HDI and WHI with lower adjusted R-square.

In the third iteration (Table 3), with the first cluster of countries India and China removed as well as cluster two countries, Indonesia, Pakistan, Nigeria, Brazil, Thailand, Turkey, Iran, Philippines, Vietnam, Egypt, Russia, Mexico and Bangladesh removed from the data. Again, GDP per capita (LN_PCGDP) was significantly correlated to the independent variables, CPI, WGI, and LN_CHEPC at .01 level. The adjusted R-square value was 0.900. For HDI, and WHI, LN_CHEPC were highly significant at .01 level of significance and the adjusted R-square value was 0.661 and 0.349 respectively.

It is evident from the above analysis that health expenditure per capita (LN_CHEPC) is a significant explanatory variable for subjective well-being whether measured by per capita income (LN_PCGDP), or by Human Development Index (HDI), or by survey data by the world happiness index (WHI).^{vi}

CONCLUSION

In this study, we have attempted to explore the relationship between happiness or subjective well-being and good health by taking into consideration the role of social capital – trust and good governance. We used three different measures of well-being: two conventional but indirect (income per capita and human development index) and a direct measure of happiness based on survey data. Our sample countries are limited to emerging market economies. Our empirical

results suggest a robust correlation between investment in health (measured by per capita health expenditure) and life satisfaction. The results also indicate, though relatively less robust and sensitive to the measure of well-being, that social capital matters. How relevant is this for public policy? Can policymakers in emerging market countries develop progress indicators based on happiness or subjective well-being surveys? Should happiness be a policy objective? The emerging trends, at least for the former two questions, seem to be affirmative. The last one is not clear. The social crisis in advanced, developed countries in the context of rising income and relatively strong macroeconomic performance – such as America’s health crisis and inequality in income and wealth – lends support to making use of happiness survey data for better policy outcomes in the labor market and health arenas.

TABLE 1. All Countries included, N = 37

Depvar: LN_PCGDP					
			Adj R-Sq		0.947146
Term	Estimate	Std Error	t-Statistic	Prob> t 	VIF
Intercept	4.0864577	0.236667	17.27	<.0001*	.
CPI	0.0168104	0.004592	3.66	0.0009*	2.2237812
WGI	-0.165178	0.060986	-2.71	0.0108*	1.7548211
CHERGDP	-0.076516	0.026784	-2.86	0.0075*	1.7285812
LN_CHEPC	0.7596823	0.050371	15.08	<.0001*	2.2190753

Depvar: HDI					
			Adj R-Sq		0.835109
Term	Estimate	Std Error	t-Statistic	Prob> t 	VIF
Intercept	0.2966827	0.039127	7.58	<.0001*	.
CPI	0.0010405	0.000759	1.37	0.1801	2.2237812
WGI	-0.00315	0.010083	-0.31	0.7568	1.7548211
CHERGDP	0.0033637	0.004428	0.76	0.4530	1.7285812
LN_CHEPC	0.066454	0.008328	7.98	<.0001*	2.2190753

Depvar: WHI		Adj R-Sq		0.39112	
Term	Estimate	Std Error	t-Statistic	Prob> t	VIF
Intercept	3.2713421	0.614477	5.32	<.0001*	.
CPI	0.0104817	0.011923	0.88	0.3859	2.2237812
WGI	0.020074	0.158344	0.13	0.8999	1.7548211
CHERGDP	-0.10696	0.069541	-1.54	0.1339	1.7285812
LN_CHEPC	0.421449	0.130782	3.22	0.0029*	2.2190753

TABLE 2. Cluster 2 and Cluster 3 only (with Cluster 1 excluded) N = 35

Depvar: LN_PCGDP		Adj R-Sq		0.937069	
Term	Estimate	Std Error	t-Statistic	Prob> t	VIF
Intercept	4.0913869	0.261119	15.67	<.0001*	.
CPI	0.0175771	0.004737	3.71	0.0008*	2.2842713
WGI	-0.182933	0.067859	-2.70	0.0114*	1.8912749
CHERGDP	-0.072961	0.027796	-2.62	0.0135*	1.7642745
LN_CHEPC	0.7515018	0.05358	14.03	<.0001*	2.2292079

Depvar: HDI		Adj R-Sq		0.82496	
Term	Estimate	Std Error	t-Statistic	Prob> t	VIF
Intercept	0.2927496	0.04351	6.73	<.0001*	.
CPI	0.0011144	0.000789	1.41	0.1683	2.2842713
WGI	-0.006029	0.011307	-0.53	0.5978	1.8912749
CHERGDP	0.0039453	0.004632	0.85	0.4011	1.7642745
LN_CHEPC	0.0661484	0.008928	7.41	<.0001*	2.2292079

Depvar: WHI		Adj R-Sq		0.361157	
Term	Estimate	Std Error	t-Statistic	Prob> t	VIF
Intercept	3.5214866	0.666806	5.28	<.0001*	.

Term	Estimate	Std Error	t-Statistic	Prob> t	VIF
CPI	0.0131964	0.012097	1.09	0.2840	2.2842713
WGI	0.0188872	0.173289	0.11	0.9139	1.8912749
CHERGDP	-0.106994	0.070981	-1.51	0.1422	1.7642745
LN_CHEPC	0.3670185	0.136825	2.68	0.0118*	2.2292079

TABLE 3. Cluster 3 only with Cluster 1 and Cluster 2 excluded, N = 22

Depvar: LN_PCGDP		Adj R-Sq		0.900742	
Term	Estimate	Std Error	t-Statistic	Prob> t	VIF
Intercept	3.9159233	0.529423	7.40	<.0001*	.
CPI	0.0202737	0.005322	3.81	0.0014*	1.6831111
WGI	-0.425691	0.104166	-4.09	0.0008*	2.2903985
CHERGDP	0.0019729	0.040272	0.05	0.9615	2.1055903
LN_CHEPC	0.7038758	0.083693	8.41	<.0001*	1.5247714

Depvar: HDI		Adj R-Sq		0.661424	
Term	Estimate	Std Error	t-Statistic	Prob> t	VIF
Intercept	0.3996723	0.079917	5.00	0.0001*	.
CPI	0.0009884	0.000803	1.23	0.2353	1.6831111
WGI	0.0109839	0.015724	0.70	0.4943	2.2903985
CHERGDP	-0.000949	0.006079	-0.16	0.8778	2.1055903
LN_CHEPC	0.055265	0.012634	4.37	0.0004*	1.5247714

Depvar: WHI		Adj R-Sq		0.348786	
Term	Estimate	Std Error	t-Statistic	Prob> t	VIF
Intercept	3.2391875	1.369519	2.37	0.0302*	.
CPI	0.0225093	0.013767	1.63	0.1204	1.6831111
WGI	0.0015637	0.269458	0.01	0.9954	2.2903985
CHERGDP	-0.123698	0.104177	-1.19	0.2514	2.1055903
LN_CHEPC	0.343521	0.216499	1.59	0.1310	1.5247714

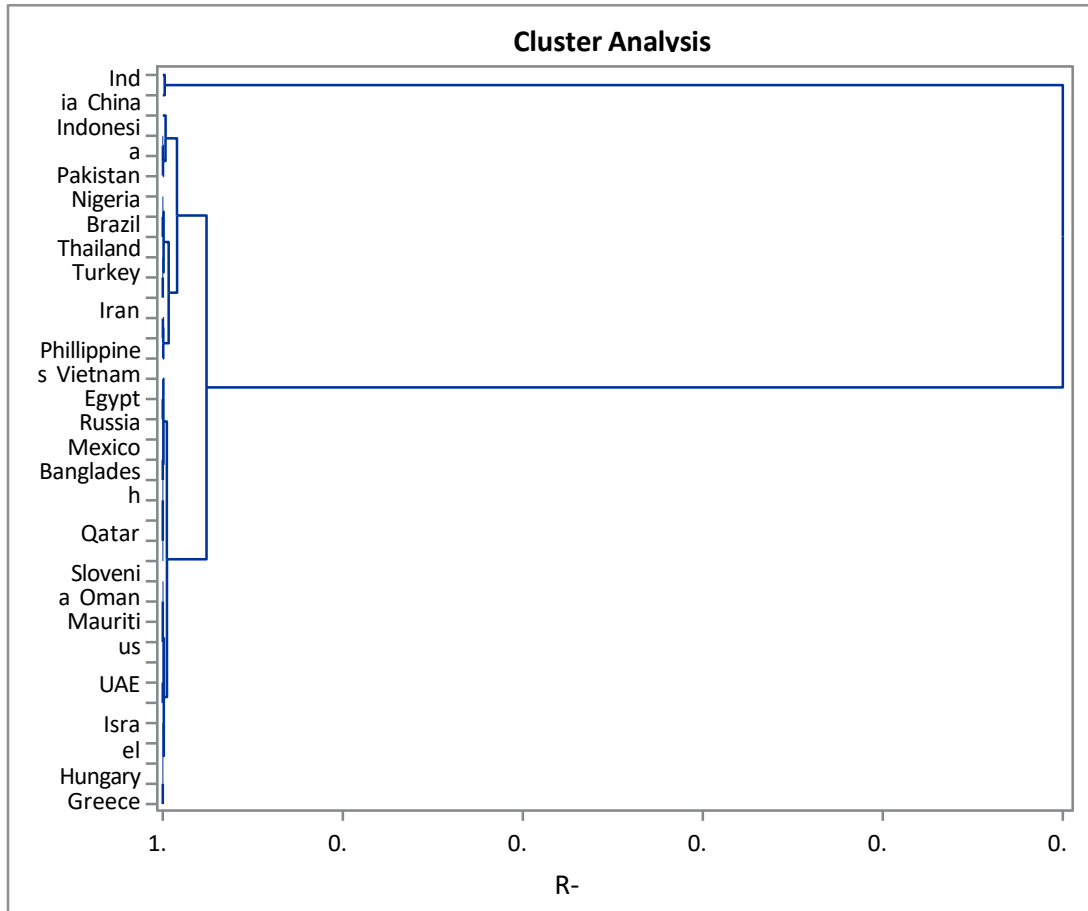


Figure 1: Results of Cluster Analysis

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¹In France, there is an advisory group of academics that include Joseph Stiglitz, Amartya Sen, Daniel Kahneman, and Alan Kruger, among others. See, for example, <http://ec.europa.eu/eurostat/documents/118025/118123/Fitoussi+Commission+report> . In the United Kingdom, the effort with a specific focus on health has been led by Richard Layard and Paul Dolan.

²For example, Jeffrey Sachs, applying the empirical findings based framework of happiness economics, argued in the 2018 *World Happiness Report* that America's health crisis is a social despite economic growth and rising income in the United States.

³For details, see Chapter 2 of the 2017 World Happiness Report. In 2013, the Organization for Economic Co-operation and Development had also provided Guidelines on Measuring Subjective Well-being.

⁴The Report recognized its limitation of the analysis because of limited choices of available variables, measurement problems, an unclear direction of causality, and the two-way linkages among variables.

⁵There is no standard list of Emerging Market Economies/Countries. For this research, a list was developed which included countries that appear on at least any one of the lists developed by the International Monetary Fund (IMF), Financial Times Stock Exchange (FTSE), Morgan Stanley Capital International (MSCI), Standard and Poor (S&P), Emerging Markets Bond Index (EMBI), Dow Jones, Russell, and the Columbia University Emerging Market Global Players (EMGP).

^{vi}One of the most fundamental questions in the study of subjective well-being and one that is still much discussed in the literature is about the effects of macroeconomic trends – ranging from economic growth, income, to financial crises and economic insecurity to inequality – one happiness. In our study, we looked at the relationship between income inequality as measured by the gini coefficient and happiness index in our sample countries. We did not find the expected negative correlation. However, countries such as South Africa and Venezuela which have a high degree of inequality did show below the sample average happiness index. On the other hand, countries such as Brazil, Chile, and Columbia which have a high degree of inequality, have a higher degree of happiness index than the sample average.