Internship Report on

An Enquiry into Subjective Wellbeing, Happiness and Financial Markets

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Subject: Submission of Internship Report

Dear Sir,

This is to submit my internship report titled, "**An Enquiry into Subjective Wellbeing, Happiness and Financial Markets**", for the completion of the course BUS400 and as a requirement for my graduation. This report was completed after the three-month internship undertaken at the Centre for Policy Dialogue under the supervision of Dr. Debapriya Bhattacharya.

Thank you very much for giving me the opportunity of working on a topic that interests me greatly.

Sincerely,

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Acknowledgments

Executive Summary

This internship report has been submitted in partial fulfillment of the requirements for a Bachelors of Business Administration and was prepared during my internship at the Centre for Policy Dialogue.

The report is divided into two parts. The first part is the organizational section, which covers the organizational overview and my responsibilities during my internship. The second part is the independent project. For this section, I chose to study a certain aspect of the Easterlin Paradox, which suggests that there is no link between a society's economic development and its average level of wellbeing. Using a cross-country dataset covering 64 countries over a decade, I try to establish a link between average levels of subjective wellbeing and stock market performance. The results show that countries that score high on the wellbeing index tend to have high capitalization stock markets (demonstrated by higher capitalization to GDP ratio and more listings per million populations) and turnover ratios. In particular, the growth in market capitalization was related to confidence in national government, democracy index and freedom to make life choices. It was also found that countries with lower Gini coefficient (i.e. more equitable distribution of wealth) and lower levels of corruption tended to perform better in the stock market performance indicators. The results indicate a clear and positive relationship between overall stock market performance and wellbeing.

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I. Introduction

Centre for Policy Dialogue is a leading civil society think-tank established with a view to advance the cause of *participatory, inclusive and accountable development process in Bangladesh* and contribute to Bangladesh's socio-economic development and strengthen regional and global economic integration. As an intern at the Research Department of the Centre for Policy Dialogue, I was primarily responsible for assisting the research team on different projects, some of which are described in the next section.

II. Origin of the Report

The report has been prepared as a part of the internship undertaken as a partial requirement for the completion of the Bachelors of Business Administration.

III. Objective of the Report

The objective of the report can be viewed in two forms:

1. General objective: To primarily fulfill the degree requirement for the Bachelors of Business Administration under BRAC Business School
2. Specific objective: More specifically, this report intends to:
   a. Provide an overview of Centre for Policy Dialogue, its functions and activities
   b. To study, on a broader scale, the dynamic relationship between the subjective feeling of wellbeing, happiness and financial market size and activity

IV. Methodology

This report is quantitative in nature, and as such it relies extensively on secondary data collected from: (i) World Happiness Report for data on subjective wellbeing and happiness and (ii) Federal Reserve Economic Data for data on financial market size and activity proxies.

V. Scope and Limitations of Report

The scope of the report is limited to data availability. The data on subjective wellbeing and happiness is based on respondent's survey and cannot thus be objectively assessed. A particular limitation of the report is that is based on data from 2006 to 2015, which means that the effect of the financial recession from 2006-11 may distort the normal relationship between variables.

Section 1: Organizational Overview

1.1 Background

Centre for Policy Dialogue is a leading civil society think-tank established with a view to advance the cause of *participatory, inclusive and accountable development process in Bangladesh* and contribute to Bangladesh's socio-economic development and strengthen regional and global economic integration. CPD seeks to particularly give voice to the interests and concerns of marginalized stakeholders on the society. CPD does this primarily through:

1. Engaging various stakeholder groups in the policymaking process
2. Generating knowledge in critical issues of national, regional and global interest
3. Disseminating knowledge and information on key development issues
4. Influencing policymaking processes at various levels

Over the last two decades, CPD has emerged as the leading think-tank, stimulating all the state actors, particularly the civil society, to become active players in influencing policy decisions to steer the country towards socio-economic progress. With the vision of creating an inclusive society based on equity, justice, fairness and good governance, CPD was founded by eminent economist and civil society leader Professor Rehman Sobhan in 1993 and its portfolio has now evolved to include research, activism and dialogue focusing on issues critical to the country's development.

CPD's research themes center on:

- Macroeconomic Performance Analysis
- Poverty, Inequality and Social Protection
- Agriculture and Rural Development
- Investment Promotion, Infrastructure and Enterprise Development
- Trade, Regional and Sub-regional Cooperation and Global Integration
- Climate Change and Environment
- Development Governance, Policies and Institutions
- Post-2015 International Development Agenda

CPD's activities and functions are outlined below:

Activism for Inclusive Policymaking: CPD pursues policy activism that draws on its research outputs and this has been particularly pronounced in the wake of national elections in an effort to articulate development agendas for the newly elected governments. CPD's research outputs have contributed to important policy changes and policy initiatives that were geared in support of good governance, sound economic management and interests of marginalized groups in the society.

Dialogue to Stimulate Informed Debate: CPD's dialogue platform fosters constructive engagement, enables informed exchanges of views and draws specific recommendations, which

are valuable as inputs to the policymaking process. Individuals from a broad cross-section of society including public representatives, policymakers and government officials, leading entrepreneurs, activists of grassroots organizations, academics and researchers representing wide ranging perspectives are invited to participate.

Communication and Outreach: CPD disseminates its activities and research outputs by deploying a diverse range of tools and channels such as in-house publications, op-eds and articles, commentary in the media including television talk shows, public lectures, social media, a quarterly newsletter and e-alerts.

Contributions to Policymaking: CPD contributes to the policymaking process through commentary in print and electronic media, appearance on talk shows, participation in public debates and discussions, and presentations before stakeholders and students.

Capacity Building for Improved Policy Delivery: CPD organizes research-related capacity building courses and workshops on important national and global policy issues and also issues concerning developments in various multilateral forays.

Independent Review of Bangladesh's Development: IRBD is the longest running program in the policy domain in Bangladesh that offers a platform for both the government and opposition parties and other stakeholders to come together for public dialogues. Since 1996, CPD has been implementing the IRBD, which has three priority areas: monitoring the performance of domestic economy, strategic issues of long-term importance, and contemporary issues that require immediate attention. The program undertakes annual assessment of the state of the economy presents fiscal proposals, provides analysis on budget and plays a very important role in shaping perspectives as regards Bangladesh's economic performance.

1.2 CPD Initiatives

Global Initiatives

Southern Voice on Post-MDG International Development Goals: South Voice on Post-MDG International Development Goals (Southern Voice) is a network of 48 think tanks from Africa, Asia and Latin America which serves as an open platform to make contributions to the international discourse in what should success the UN's Millennium Development Goals. CPD is the network's secretariat and plays an important role in steering evidence based knowledge generation and aiding with policy experience of the developing South to influence the emerging global development agenda.

LDC IV Monitor: LDC IV Monitor is an independent partnership of eight think tanks and academic institutions from Least Developed Countries (LDCs) and partner countries. It is monitoring and assessing the implementation of the Istanbul Programme of Action for the Least Developed Countries (IPoA) adopted by the Fourth United Nations Conference on the Least

Developed Countries (LDC IV). Founded in 2011, it aims to contribute to ensuring improved delivery on commitments that were made by development partners towards productivity growth and structural transformation of the LDCs. CPD is the secretariat of this initiative.

Post-2015 Data Test: Unpacking the Data Revolution at the Country Level: An initiative of CPD, Southern Voice and Carleton University's Norman Paterson School of International Affairs, the Post-2015 Data Test was conceived in 2013 to road-test the possible goals, targets and indicators of the post-2015 development framework and identify data challenges in measuring implementation across various country contexts.

Regional Initiatives

BCIM Forum for Regional Cooperation: CPD was one of the pioneering organizations behind the establishment in 1999 of the Kunming Initiative, which evolved into the Bangladesh-China-India-Myanmar (BCIM) Forum for Regional Cooperation that aims to improve trade and investment among the four countries.

South Asia Economic Summit: Since 2008, leading South Asian think tanks, including CPD, have come together at the South Asia Economic Summit (SAES) to advance the cause of regional integration in view of emerging regional and global dynamics.

Indo-Bangladesh dialogues: From 1995 onward, CPD has been regularly organizing dialogues between India and Bangladesh in which high-level policymakers and representatives of key stakeholder groups from the two countries discuss issues of bilateral interest.

1.3 Key Responsibilities

I was assigned to the Research Department at CPD where my main responsibilities included:

1. Assisting the team with research on existing and potential new intermediate projects;
2. Assisting with contact and information management;
3. Assisting with policy analysis, writing, and editing reports and other projects, as relevant;
4. Managing and analyzing large regional and county-level data sets;
5. Providing general logistical/organizational support to the team as required.

Some of the tasks that I undertook include:

1. Expert Mapping: This included making a comprehensive list of all experts within the Southern Voice Network in Asia, Africa and Latin America who had prior research experience in areas related to financing for SDGs. This list was later used to invite the experts for submitting publishable content for the UN Meeting on Financing for Development (FfD).

2. Policy Mapping: This involved collecting and surveying government policy documents (i.e. policies, strategies, action plans, plans, etc.), analyzing them through literature/lexical scrutiny and aligning them with the 17 SDGs. Responsibilities also included making a database of all the 123 policies and coordinating with CPD library to ensure all documents are available for review.
3. Updated all tables and figures from chapters 9, 10, 11, 12 from the book Istanbul Programme of Action for the LDCs (2011-2020)
4. Updated all tables and figures from the book Tracking Progress, Accelerating Transformations: Achieving the IPoA by 2020
   a. The final output for both the above tasks included two 20 page reference document outlining key issues relating to remittance in LDCs (stock of migrant workers, informal remittance etc.), domestic resource mobilization (gross domestic/national savings, tax revenue, tax composition, illicit financial flow etc.) and foreign direct investment (FDI stock/flow by host region etc.) and official development aid.
5. Collection of raw data and calculating progress made for all 11 SDG-4 target indicators for Bangladesh from different sources and reconciliation.
6. Performed role of program support during the program "Role of NGOs in Implementation of SDGs in Bangladesh", co-hosted by NGO Affairs Bureau, The Prime Minister's Office and the Citizen's Platform for SDGs. Responsibilities included facilitating group discussions and translating speeches for foreign invitees.
7. Preparation of talking points for discussion/brainstorming session on the theme and chapters of the forthcoming UNCTAD LDC *Report On Widening Access To Modern Energy For Structural Transformation.* The final output was a 23 page reference document outlining the key issues relating to the state of energy sector in Least Developed Countries (LDCs) including the evolution of the energy mix, import dependence, energy price, energy accessibility, renewable energy capacity, private and public investment in LDCs, FDI and subsidies to the industry.
8. Budget 2017-18: Analyzed supplementary budget and prepared presentation slides outlining key reasons for the increase/decrease in allocation for every ministry in the revised budget of 2016-17.
9. Prepared a Master Table analyzing government policy documents and outlining the number of times and degree to which the policies propose measures to address the needs of the vulnerable communities in Bangladesh
10. Developed a scoring methodology to analyze the coverage of the vulnerable communities by policy documents and the degree of specificity of the propose policy measures. The scorecard was employed in the fourth chapter of the forthcoming Citizen's Report on State of SDGs in Bangladesh.
11. Drafted chapter four (Policy Intervention for Vulnerable Communities) of the forthcoming Citizen's Report on State of SDGs in Bangladesh.

12. Analyzed 21 Qualitative Data Analysis Software (QDA) and recommended 1 (one) for purchase to be used for lexical scrutiny in future CPD publications
13. Compiled, formatted and translated interview and focus group discussion (FGD) transcripts for the forthcoming CPD-ODI Study on Multilevel Governance, Decentralization and Corruption
14. Review and update Bangladesh-related data on the SDG index

Key Learnings and Takeaways

Perhaps the most important takeaway from the internship was learning how to conduct research with and within team. While I had prior research experience, those were: (i) not in a typical organizational setting with clear objectives; and (ii) not conducted with a team and under experienced supervision. This meant I was often walking into blind alleys. However, the internship allowed me to better learn how to have a predefined set of objectives and goals and also to redefine them periodically as new information is obtained, resulting in a greater appreciation for the immense work that goes into making research reports. On a broader scale, the internship allowed me to develop a clearer understanding about how civil society think-tanks function and their roles in the society.

Section 2: Independent Project

1. Introduction

One of the foremost paradoxes in economics is the "Easterlin Paradox", which suggests that there is no link between economic development of a society and the overall happiness of its residents. This paradox calls into question a long held belief that making policies to promote economic growth will raise overall well-being and happiness. The other side of the argument, which suggests that income does increase happiness, also has its fair share of evidence to compel further research on the topic. If the arguments supporting the Easterlin paradox get more overwhelming, then it will have far reaching implications for policy makers because if income does not increase wellbeing, then the underlying assumption of government policy formulation needs further assessment.

The objective of this study however, is not to reassess the validity of the Easterlin paradox. I simply draw an analysis between wellbeing indicators and the stock market size and activity, which we consider a presupposition of economic development. The reasoning for this is simple: stock market size and activity has been shown to be integral components of overall economic growth (Boubakari and Jin, 2010; Ngare, Nyamongo and Misati, 2014; Caporale, Howells and Soliman, 2014). However, much of the prior research documenting the links between economic growth and well-being focus on the GDP. This view, I believe, can be broadened to include stock market development. While the prior studies assessed whether richer countries are happier, this study will look into whether there is a link between happiness, wellbeing and stock market development. The results of the study will thus seek to answer whether happier people tend to investment more.

The results of this study indicate a clear and positive relationship between overall stock market size and activity and wellbeing. We see that countries that score high on the wellbeing index also tend to have higher capitalization stock markets (documented by higher capitalization to GDP ratio and more listings per million populations) and turnover ratios. In particular, the growth in market capitalization was related to confidence in national governments, democracy and freedom to make life choices. It was also found that countries with lower Gini coefficient (i.e. more equitable distribution of wealth) and lower levels of corruption tended to perform better in the stock market indicators.

The rest of the paper is organized as follows: the next section provides background on the measurement and reasoning for the subjective wellbeing and stock market development indicators. The next section assesses and compares the average well-being and the various stock market indicators. In the subsequent sections, we reconfirm our findings from the prior section and then conclude.

2. Data

To establish the database used in this study, data from different databases are collected, compiled and broadly divided into two segments: (i) the exogenous variables collected from the happiness index constructed in the World Happiness Report (Helliwell, Layard & Sachs, 2016); and (ii) the endogenous variables explaining the stock market size and activity. The data from the happiness index is collected from the World Happiness Report annex table and the data for the stock market performance (used analogously with size and activity throughout the paper) are collected from the Federal Reserve Economic Database (FRED, 2017).

The section below contains details about the multitude of exogenous indicators used in this study:

1. As a measure of happiness, we use the Cantril Life Ladder (LIFE_LADDER), which is defined as the average of binary responses to the question: *Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?*

In the World Happiness Report, the Life Ladder index was treated as the endogenous variable which is explained by the indicators (described below). However, we will treat this indicator (along with the ones below) as exogenous variables explaining stock market size and activity. The details of why we do this are highlighted in the next section.

2. To measure democratic quality, we use the democratic quality of governance (DEMOCRACY) based on World Governance Indicators (WGI) project.
3. As a measure of confidence in the government (CONFIDENCE), we use the average of the binary responses to the questions: *Do you have confidence in each of the following, or not? How about the national government?*
4. We use the social support metric (SOCIAL) defined as the national average of the binary responses (either 0 or 1) to the Gallup World Poll (GWP) question: *If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?*
5. We use the freedom metric which is defined as the freedom to make life choices (FREEDOM) as the national average of binary responses to the GWP question: *Are you satisfied or dissatisfied with your freedom to choose what you do with your life?*
6. We use the generosity metric (GENEROSITY) which is defined as the residual of regressing the national average of GWP responses to the question: *Have you donated money to a charity in the past month?* on GDP per capita.
7. We use the perceptions of corruption metric (PERCEP_CORRUP) which is defined as the average of binary answers to two GWP questions: (i) *Is corruption widespread throughout the government or not?* And (ii) *Is corruption widespread within businesses or not?*

8. The healthy life expectancy (LIFE_EXPECT) is defined as the ratio of healthy life expectancy to life expectancy

These indicators are collectively called the HAPPINESS indicators.

To measure the development of the stock market, we use the following indicators:

1. We use the ratio of the market capitalization to GDP as a measure of stock market size. This is the ratio of size of the stock market and is widely used in literature as a measure of the development of the equity market.

However, this has several shortcomings, one of which is that this method cannot tell if the increase in market capitalization is due to enlistment of more companies or the increase in market capitalization of individual companies. This measure can also misrepresent the true market capitalization of the market. If for example, a very large company's share price increases, the total market capitalization will also increase substantially, giving the impression that the overall market is doing well, when in fact only one company is. This is particularly likely in smaller economies where it is common to have a very concentrated market in terms of size, volume and liquidity. Moreover, Allen et al. (2006) point out that this measure only captures the present value of equity and not the total value raised from the market. To mitigate this problem,

2. We also use the ratio of the total number of listed companies to the total population in millions.

While this metric is not influenced by the market valuations, this helps to overcome the problem of overly concentrated market capitalization. Rajan and Zingales (2003), however, suggest that this method is too slow moving to fully capture the changes in the ratio over a period of time. However, both the measures suffer from cyclicality of equity issue - during periods of market boom, more companies prefer to get enlisted because of the illusion of high price during IPOs. So this method is prone to over and under estimation based on underlying economic conditions. As a complement to the two indicators, we also use the stock market liquidity indicators which Levine and Zargos (1998) find to be positively linked to higher growth of the economy. Therefore, we choose to the liquidity measures of an equity market as indicators of the trade activity.

3. To measure the liquidity of the equity market, we use two measures: (i) the ratio of volume traded to GDP and (ii) the stock market turnover ratio. The ratio of volume traded to GDP is calculated by dividing the total volume traded over a period of time (1 year) by the GDP while the turnover ratio is the ratio of the total number of shares traded to average number of shares outstanding.

Both measure the depth of liquidity in the market. Bencivenga, Smith and Starr (1995) argue that the liquidity provided by capital markets was an important factor that made the UK's growth during the Industrial Revolution. Again, this measurement is easily misconstrued by market booms and busts. However, like all other ratios, we use this over a long time-series and large cross section of country data. Also, when used together, all four indicators are capable of giving us a sense of the development of the financial services system (Rajan and Zingales, 2003).

These indicators are collectively called the stock market indicators (STOCKDEV).

2.1 Econometric model

In this study, we use different regression models to assess the role of wellbeing and happiness on the market size and activity. Our database combines country level data on the variables that impact happiness economic performance of capital markets. We use a cross country dataset of 64 countries from different geographic regions, both developed and developing, and cover a period from 2006 to 2015. The countries represent over 80% of the worlds GDP and stock market capitalization.

First, we use a model of country fixed effects (individual effects) to deal with unobserved heterogeneity and to partial out time-invariant factors. Even though the time fixed effects should also be employed to deal with possible endogeneity, the indicators used in this regression are slow moving over time and so the time-fixed effects would not be ideal. We arrive at the following basic model:

$$STOCKDEV = B_{20} + B_{21}(LogGDP) + B_{22}(HAPPINESS) + u_i \qquad (i)$$

Here, the stock market development is represented jointly by four indicators: (i) total market capitalization to GDP ratio; (ii) total value traded to GDP ratio; (iii) turnover ratio, and (iv) the listed companies to population in million ratio. These are determined jointly by the log of GDP per Capita, the various happiness indicators and Ei for the error term in the estimated equation.

Because the variable HAPPINESS in equation (i) itself is a function of other explanatory variables, we may unavoidably run into multicollinearity. One option would be to use a two-stage least squares where we treat the happiness indicator as an endogenous variable, i.e., treating it to be function of other variables present in the system. However, that itself presents a new set of challenges, as presented below:

Suppose happiness is explained by the independent variable X_{1i}

$$HAPPINESS = B_{10} + B_{11}(X_{1i}) + E_i \qquad (ii)$$

Where X_{1i} are the explanatory variables of happiness

Then,

$$STOCKDEV = B_{20} + B_{21}(LogGDP) + B_{22}(HAPPINESS) + u_i \qquad (iii)$$

Now we substitute the second equation into the third:

$$STOCKDEV = B_{20} + B_{21}(LogGDP) + B_{22}(B_{10} + B_{11}(X_{1i}) + u_i) + v_i \qquad (iv)$$

We see that STOCKDEV is a linear function of u and hence will be correlated with u. This violates the Gauss-Markov assumptions[1] and the OLS estimators will thus be biased.

To avoid this problem, we use a method of residualization. First, we fit a model for IV2 (independent variable 2, i.e. the second explanatory variable of happiness, whatever that may be) ~ IV1 (independent variable 1, i.e. the first explanatory variable of happiness, whatever that may be), then take the residuals of that model as rIV2. Since all the explanatory variables are correlated to Happiness, we residualize all of them. The steps are outlined below:

rIV2 = residual (HH_Gini ~ CONFIDENCE) [regressing HH_Gini on CONFIDENCE]

rIV3 = residual (DEMOCRACY ~ CONFIDENCE + rIV2)

rIV4 = residual (FREEDOM ~ CONFIDENCE + rIV2 + rIV3)

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rIV9 = residual (LIFE ~ CONFIDENCE + rIV2 + rIV3 + rIV4 + … + rIV8)

Now, the model is fitted with:

STOCKDEV ~ CONFIDENCE + rIV2 + rIV3 + rIV4 + … + rIV9 + COUNTRY$_i$ + LogGDP$_i$

Now, the coefficient for rIV2 represents the independent effect of IV2 given its correlation with IV1.

As a result, we now get our final econometric model:

$$STOCKDEV_i = B_{10} + B_{11}(CONFIDENCE_i) + B_{12}(X_{1i}) + B_{12}(COUNTRY_i) + B_{12}(LogGDP_i) + E_i$$

Where,

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[1] Gauss-Markov assumption: X_i is deterministic:

x is uncorrelated with the error term since x_i is deterministic: $Cov(X_i, e_i) = E(X_ie_i) - E(X_i)*E(e_i)$

$X_iE(e_i) - X_iE(e_i) =$ since X_i is deterministic.

STOCKDEV$_i$ are the stock market indicators

CONFIDENCE$_i$ is the confidence in the government

X$_{1i}$ are the residuals of the aforementioned set of regressions i.e. rIV2, rIV3, …, rIV9

COUNTRY$_i$ is the country-fixed effect

LogGDP$_i$ is the log of GDP per capita

E$_i$ is the error term

3. Results and Discussion

The tables 1 below presents the descriptive summary statistics for the variables used in the study.[2] The table shows that the sample consists of 471 country-level data. The highest values for the stock market indicators are seen for the countries such as Hong Kong, Switzerland and Singapore that enjoy high listings compared to their population, resulting in larger capitalizations and more active markets.

Table I: Descriptive statistics

	Mean	Median	St. Dev.	Max	Min	Obs.
LIFE_LADDER	5.92	5.89	1.04	7.97	3.23	471
SOCIAL	0.85	0.88	0.10	0.98	0.37	471
LIFE_EXPECT	64.99	66.38	7.25	75.91	41.94	471
FREEDOM	0.75	0.78	0.14	0.97	0.36	471
GENEROSITY	0.014	-0.020	0.18	0.54	-0.33	471
PERCEP_CORRUP	0.74	0.81	0.21	0.98	0.035	471
CONFIDENCE	0.46	0.45	0.18	0.97	0.079	471
DEEMOCRACY	0.20	0.27	0.82	1.54	-1.84	471
HH_Gini	0.41	0.40	0.085	0.75	0.21	471
LISTEDPOP	19.64	6.73	32.57	229.34	0.15	442
CAPGDP	64.97	36.25	128.08	1086.48	0.34	364
TRADE	42.40	11.97	84.64	821.96	0.0022	433
TURNOVER	51.05	33.36	53.34	341.24	0.043	408
LogGDP	9.64	9.76	0.92	11.28	7.20	471

Data collected for the Happiness indicators compiled from World Happiness Report and Stock Market indicators compiled from Federal Reserve Economic Data. The table shows the mean, median, standard deviation, maximum, minimum and the number of observations for the data used in this study. The first nine variables are the Happiness indicators while the next four are stock market indicators.

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[2] Table 1 presents the data with outliers (2% from both ends) included. The statistical tests presented in table 3 and 4 are with the outliers included. These tests were run with and without the outliers, and there was no observable and significant change in the results. However, the figures 1 and 2 are presented without the outliers to clearly illustrate the relationship within the dimension of the plot

The table 2 below presents the correlation matrix for the data used in this study. Subjective happiness has a positive correlation with all variables except for the Gini (implying more equitable distribution of wealth has a positive relation with happiness) and corruption (implying perception of corruption has a negative relation with happiness. Happiness also has a negative relation with confidence in national government, although the coefficient is almost zero (-0.03). The same relation is observed with the case of social support and life expectancy. All the stock market indicators have positive relation with all variables except perception of corruption (i.e. more corrupt countries tended to have less developed stock markets) and Gini (i.e. more equitable distribution is related to more developed stock markets). The strongest correlation is observed between the stock market indicators and democracy index, perception of corruption, life expectancy, freedom to make life choices and generosity. The graphical representation is presented below in figure 1.

Table II: Correlation matrix

	LIFE_LADDER	LogGDP	SOCIAL	LIFE_EXPECT	FREEDOM	GENEROSITY	PERCEP_CORR_UP	CONFIDENCE	DEMOCRACY	HH_Gini	LISTEDPOP	CAPGDP	TRADE	TURNOVER
LIFE_L ADDER	1.00													
LogGDP	0.71	1.00												
SOCIAL	0.60	0.64	1.00											
LIFE_EX PECT	0.66	0.85	0.51	1.00										
FREEDOM	0.54	0.33	0.51	0.33	1.00									

	GENEROSITY	PERCEP_CORRUP	CONFIDENCE	DEMOCRACY	HH_Gini	LISTEDPOP	CAPGDP	TRADE	TURNOVER
	0.29	-0.59	-0.03	0.57	-0.38	0.27	0.09	0.18	0.26
	0.12	-0.50	-0.20	0.71	-0.57	0.48	0.32	0.41	0.44
	0.16	-0.34	-0.14	0.59	-0.29	0.23	0.08	0.14	0.15
	0.12	-0.44	-0.15	0.62	-0.61	0.47	0.32	0.34	0.38
	0.46	-0.57	0.37	0.51	0.05	0.25	0.22	0.23	0.02
	1.00	-0.39	0.30	0.18	0.14	0.29	0.25	0.24	0.11
		1.00	-0.43	-0.51	0.12	-0.52	-0.42	-0.44	-0.17
			1.00	-0.14	0.20	0.09	0.15	0.12	-0.05
				1.00	-0.28	0.35	0.18	0.26	0.26
					1.00	-0.19	-0.09	-0.13	-0.23
						1.00	0.79	0.71	0.17
							1.00	0.89	0.15
								1.00	0.47
									1.00

Data collected for the Happiness indicators compiled from World Happiness Report and Stock Market indicators compiled from Federal Reserve Economic Data. The table shows the correlation coefficients for the variable used in this study.

The figure 1 below is a matrix of the figures demonstrating the linear relationship of the market capitalization to GDP ratio and the wellbeing indicators. The results show that the stock market indicator has a positive relation with confidence in the government, democracy, freedom, social support, generosity, life expectancy and life ladder. It has a negative relation with Gini and perception of corruption indicating that countries that tend to score high on Gini and the

corruption index (i.e. those who have unequal distribution of wealth and those who are perceived to be more corrupt) tend to have smaller market capitalization compared to the GDPs.

Table 3 reports the estimates of the regression on stock market indicators using various measures of happiness. Since the regression controls for country-specific effects, the only effects observed are those relative to variables that vary across countries.

We start with the market capitalization to GDP ratio as a measure of stock market activity. As seen from the first column, confidence in the national government has a positive impact of stock market activity, although the impact is statistically insignificant. This implies that a country where the residents are confident in their government's abilities to handle domestic as well as international problems properly tend to perform better in stock market indicators. One could also perhaps draw a relationship between developed countries, where confidence on the government is generally higher, and stock market performance, an indicators develop countries also tend to do well in.

Figure 1: Stock market size with happiness indicators matrix

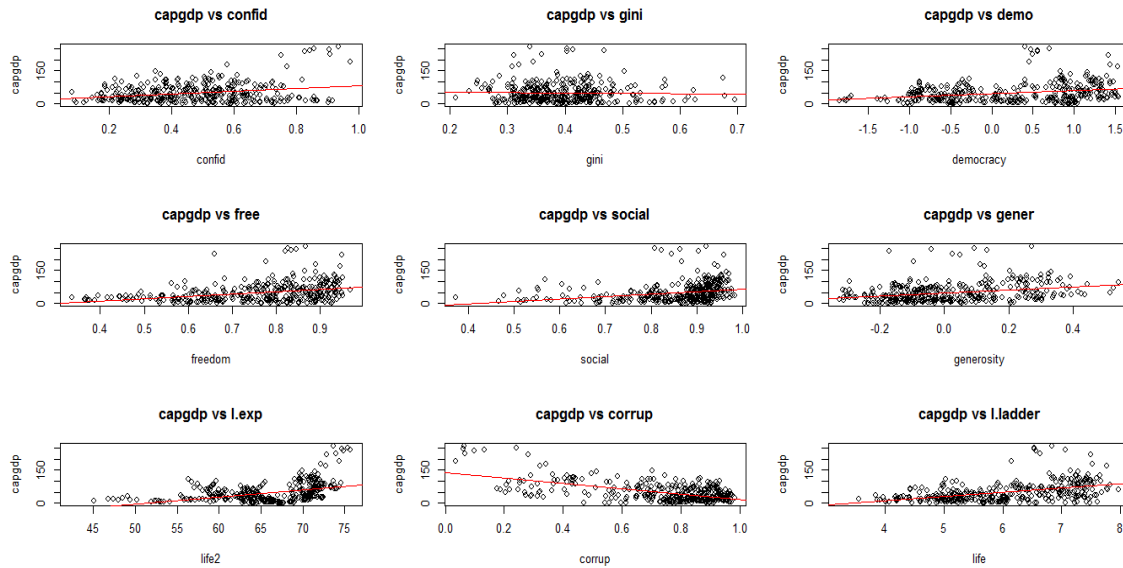Table III: Effect of happiness on stock market size

	CAPGDP (with fixed-effect)	CAPGDP (without fixed-effect)	LISTED (with fixed-effect)	LISTED (without fixed-effect)
CONFIDENCE	9.92	138.99***	0.35	29.45***
	(12.70)	(33.55)	(1.91)	(7.12)
HH_Gini	-23.83	118.39	-8.85**	-4.07
	(21.61)	(137.56)	(3.08)	(23.42)

DEMOCRACY	8.35**	-12.11	1.07*	4.04
	(3.22)	(13.41)	(0.42)	(2.54)
FREEDOM	5.01	62.12	1.76	0.79
	(17.31)	(56.20)	(2.42)	(12.07)
SOCIAL	-44.37.	-275.85***	-6.99.	-33.69.
	(26.76)	(83.05)	(3.73)	(17.48)
GENEROSITY	-1.99	120.13***	-0.53	40.65***
	(12.99)	(36.06)	(1.86)	(7.60)
LIFE_EXPECT	0.51	3.19	0.14*	1.09**
	(0.48)	(2.22)	(0.07)	(0.34)
PERCEP_CORRUP	-42.43**	-192.07***	-3.13	-54.87***
	(15.54)	(42.15)	(2.28)	(9.25)
LIFE_LADDER	-3.87	-72.69***	-0.064	-13.51***
	(3.09)	(8.99)	(0.43)	(1.94)
No of obs.	364	364	462	432
R-squared	0.079	0.38	0.059	0.45

The table shows the results of the coefficients and the regression. In the first column, the dependent variable is the market capitalization to GDP ratio and the independent variables are confidence on government, household Gini, democracy index, freedom to make life choices, social support, generosity, life expectancy, perception of corruption and life ladder. For the third column, the dependent variable is the number of listed companies to populations in million. For the second and fourth columns, the dependent variables are the same as those from the first and third column respectively, but with fixed-effect removed. Standard errors in parenthesis.

The next variable we look at is the household Gini coefficient, which has a negative relationship with stock market activity. Gini, a measure of inequality or wealth distribution, ranges from 0 to 1, where a score of 0 expresses perfect equality. Intuitively, this means all residents have the same income. Therefore, a country with lower Gini is more equitable than a country with a higher Gini. A negative relationship with stock market activity implies that wealth deconcentration (i.e. more equality) results in bigger sized markets. Perhaps an intuitive explanation or this behavior lies in the fact that in a country where wealth is concentrated tend to be dictatorships/autocratic and stock market development is typically not in the priority list of the government. Also, wealth concentration discourages investment as opposed to when wealth is spread out allowing greater participation in stock markets.

The next variable is the democracy index, which shows a positive and statistically significant relationship with stock market activity. Therefore, scoring higher on the democracy index (i.e. more democratic) results in a bigger stock market. Intuitively, this implies that democracy tends to drive stock market activity. Perhaps this is because in a democracy, people feel more confident about the presence of a counter-balance in the governance system. They also feel more comfortable with the idea that the government does not have autocratic rights to seize property or make drastic changes to the law which could potentially endanger the business environment. Historically, countries that tended away from democracy have had periods of instability and

political, thus discouraging investment. Or perhaps this is because some of the lack of major theocracies/autocracies in the list (UAE, Qatar, Saudi Arabia). Some of these countries have vibrant stock exchanges, but due to their exclusion, their effect was not felt in the regression results.

The next variable we look at is the freedom variable, which measures the degree of freedom the respondent feels s/he has over life choices. The coefficient of this variable is positive, indicating that more freedom results in a market with higher market capitalization. The reason for this is perhaps intuitive – a country that allows more freedom in personal choices tends to be more business friendly. One could also draw a relationship with the freedom and democracy index, where freedom is a function of democracy. Along this line, a country that is more democratic tends to allow more personal freedom and greater market activity.

The next variable is the social support system, which measures whether respondents have someone to stand by him/her during times of trouble. The coefficient of this variable is negative, which implies, surprisingly, that having social support tends to result in smaller market capitalization compared to the GDP. The same case is observed regarding the generosity variable, where countries with respondents being "less" generous tended to have more active stock markets. The coefficients imply that less "generosity" and "social protection" in a society results in a lesser active stock market.

The next variable we look at is the life expectancy variable, which has a positive relationship with stock market activity. The intuitive explanation for this is possibly that developed countries have a higher life expectancy and also have more developed stock markets due to them being more business friendly and attracting more investment. Therefore, both higher life expectancy and developed stock markets are results of the overall development of a country and thus they have a positive relationship.

The corruption index has a negative relationship with stock market development. Like the previous variable, the relationship between these two can be intuitively explained by the fact that countries that perform high on the corruption perception index (i.e. are more corrupt) tend to be developing countries with underdeveloped market systems and structures, thereby restricting investments. Also, being high on the corruption index implies that there are bureaucracies in the governance system, which further tends to discourage investments and businesses, thus dragging down potential investments in the stock markets by both local and foreign investors. Unsurprisingly, these countries also tend to be low on the democracy index (i.e. more autocratic) – (-0.51 correlation coefficient) – so this might also explain why the same countries perform poorly in the stock market indicators.

The last indicator in our repressor is the life ladder – a variable which measures the degree to which a person has achieved the best possible life that s/he desires. Surprisingly, this has a negative relationship with stock market activity, indicating that countries where respondents are

unhappy with their lives tended to perform better on the stock market indicators. A counter intuitive explanation for this negative coefficient can be as follows: countries where respondents had low ratings on this variable are not necessarily those with lower happiness, but those with higher ambitions. For instance, a person with high ambitious goals will respond with a low figure to the question, "*On which step of the ladder would you say you personally feel you stand at this time?*" because s/he believes that s/he has a lot more to achieve in life. So a low score does not necessarily indicate lower happiness; it can also indicate higher ambitions or goals. So we could also infer the results differently – meaning countries with respondents who are more ambitious (i.e. score low on the "happiness" index) have stock markets with higher activity. This is perhaps because those who are more ambitious tend to think in terms of being better off tomorrow than today. This can be equated with deferring present consumption in favor of future consumption – a conclusion along that line of supporting the theory for a higher market activity.

The figure above is a matrix of the figures demonstrating the linear relationship of the market trade activity and the wellbeing indicators. The results show that the stock market indicator has a positive relation with confidence in the government, democracy, freedom, social support, generosity, life expectancy and life ladder. It has a negative relation with Gini and perception of corruption indicating that countries that tend to score high on Gini and the corruption index (i.e. those who have unequal distribution of wealth and those who are perceived to be more corrupt) tend to have lesser active stock markets.

Figure 2: Stock market trade activity and happiness indicators matrix
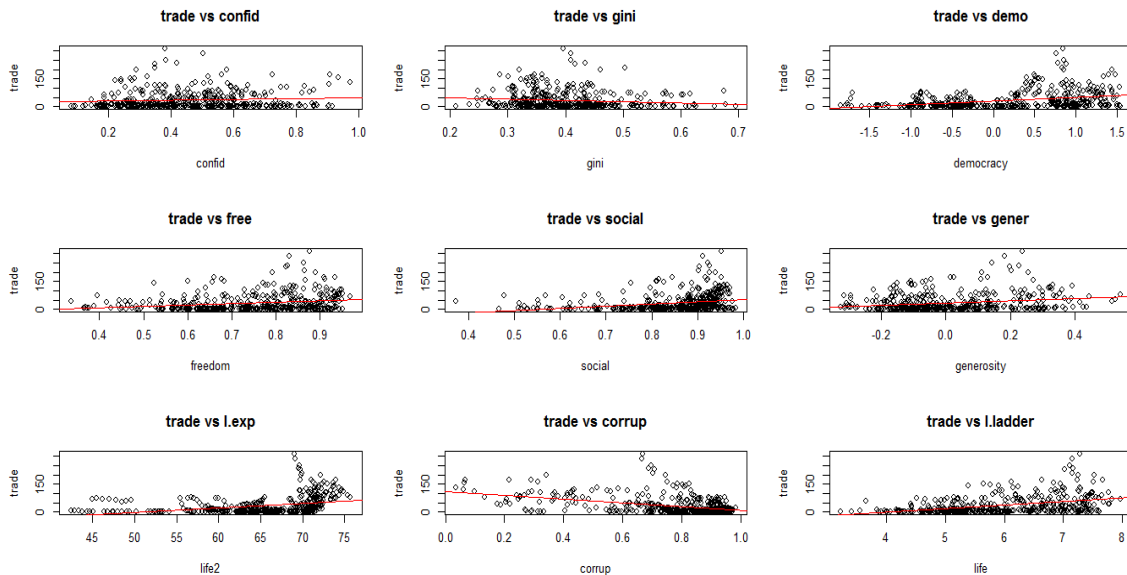
Now we move to the third column of the same table which shows the same relationship, but with the listed companies to population (in millions) ratio (which is another measure of stock market

size). As can be seen, the sign of the coefficients is the same as the market capitalization to GDP ratio, reconfirming the positive relationship between market size and overall wellbeing.

Table IV: Effects of happiness on stock market activity

	TRADE (with fixed-effect)	TRADE (without fixed-effect)	TURNOVER (with fixed-effect)	TURNOVER (without fixed-effect)
CONFIDENCE	52.80***	116.18***	35.07**	23.45.
	(13.13)	(19.98)	(12.77)	(13.92)
HH_Gini	11.72	207.63***	23.43	79.74.
	(20.87)	(65.83)	(21.80)	(45.75)
DEMOCRACY	-1.90	-14.43**	0.13	-11.69*
	(2.73)	(7.25)	(3.06)	(5.01)
FREEDOM	-15.58	-16.04*	-31.97.	-94.08***
	(16.23)	(34.14)	(16.29)	(23.51)
SOCIAL	2.54	212.26***	-4.36	-85.33*
	(24.93)	(49.80)	(24.36)	(36.20)
GENEROSITY	9.35	65.85**	-18.39	30.35*
	(12.56)	(21.65)	(12.07)	(15.20)
LIFE_EXPECT	-0.59	-0.55	-0.053	0.21
	(0.45)	(0.95)	(0.48)	(0.65)
PERCEP_CORRUP	20.64	-91.94***	-2.12	40.91*
	(15.51)	(26.01)	(15.35)	(18.03)
LIFE_LADDER	-6.20*	-37.30***	-4.89	4.25
	(2.82)	(5.46)	(2.98)	(3.83)
No of obs.	423	423	398	398
R-squared	0.081	0.35	0.090	0.25

The table shows the results of the coefficients and the regression. In the first column, the dependent variable is the stock market value traded to GDP ratio and the independent variables are confidence on government, household Gini, democracy index, freedom to make life choices, social support, generosity, life expectancy, perception of corruption and life ladder. For the third column, the dependent variable is the turnover ratio. For the second and fourth columns, the dependent variables are the same as those from the first and third column respectively, but with fixed-effect removed. Standard errors in parenthesis.

The table 4 above presents the results of the regression on stock market activity indicators by wellbeing indicators. The results show that for most indicators, the sign of the coefficient is the opposite of what they were for the stock market activity. The confidence in government indicator results in more stock market trade volume. The household Gini has a positive coefficient, meaning wealth concentration tends to increase market trade volumes. Both freedom and democracy index have negative relation with trade volume, while the social and generosity index have a positive relation. Life expectancy, surprisingly, has a negative coefficient. Perception of corruption and life ladder both have a positive coefficient.

4. Conclusion

This report conducted a cross country study on the effect of subjective wellbeing and happiness indicators on stock market development and established a positive link between average wellbeing of a nation and size and the extent to which financial markets are active. In particular, the results note the fact that countries that score high on the wellbeing index also tend to have bigger stock markets (higher capitalization to GDP ratio and more listings per million populations) and turnover ratios.

At the micro-level results, we see that the growth in market capitalization was related to confidence on the government, democracy and freedom to make life choices. This is consistent with the a priori knowledge on economic growth. It was also found that countries with lower Gini (i.e. more equitable distribution of wealth) and lower levels of corruption tended to perform well in the stock market indexes. The results indicate a clear and positive relationship between overall stock market performance and wellbeing.

Of particular significance is the finding that countries where the respondents were not generally satisfied with their lives (i.e. low in the Cantril Life Ladder) performed better on the stock market performance indicators. I hypothesize that countries where respondents had low ratings on this variable are not necessarily those with lower happiness, but those with higher ambitions. Therefore, performing low on this index would imply bigger goals and make the relationship between the Cantril Ladder and stock market performance intuitive and consistent with a priori knowledge.

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