

Stuck in the Middle: Recession, Vulnerability and Disillusionment

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Abstract

This paper explores the effect of the 2009 global economic recession on the subjective well-being (SWB) of individuals. It is based on the literature and empirical methods of well-being analysis and uses the Gallup World Poll survey data for the period 2007-2010. We find that respondents' SWB did indeed decline in the countries that experienced economic downturns. Secondly, the loss in SWB was slightly more pronounced in countries that were more integrated to the global economy. And finally, within recession-hit countries, the middle group cohort (that closely mimics common notions of the middle class) suffered disproportionately larger losses of SWB when compared to the rest of the population. These results question our conventional assumptions and stylized notions of which cohorts in society are most vulnerable to economic shocks, and provide insights that are not captured by conventional economic measures such as income or wealth. We argue the need to revise our conventional perception of who are most vulnerable to economic shocks – and to possibly redesign the policy interventions that seek to protect this “at-risk” group.

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Introduction

The economic crisis of 2008-2009 in the United States triggered a global economic downturn – now referred to as “The Great Recession”. There is broad consensus that this macroeconomic shock, like similar widespread economic downturns, hurt individual well-being; the Great Recession adversely affected the welfare of billions of people world-wide. Yet we know much less about the nature of those effects: their reach across income and non-income domains, the duration of their impact, and how to accurately measure them. While we can measure the effects in terms of lost production, declining incomes and wealth, or rising unemployment, it is much more difficult to quantify the effects on the well-being of individuals. In this paper we take advantage of a new approach in economics – the economics of well-being, and of new data from the Gallup organization to do precisely that: to analyze the impact of this downturn on individual well-being.

There are three broad objectives of this paper. The first is to better understand the welfare effects of this the deepest and longest global recession since the Second World War. In particular we empirically test if this crisis had any detrimental impact on individual well-being above and beyond its economic effect through income and wealth declines. The second is to determine whether the impact on well-being was uniform, or whether certain segments of the global population suffered disproportionately larger losses. Such groups, if they exist, would thus be the sections of society rendered most vulnerable from a well-being perspective. And the final objective is to reflect on these empirical results, and to assess if existing policy interventions designed to mitigate the welfare losses of individuals does indeed succeed in identifying and targeting these most vulnerable.

Background

The period 2000-2007 had witnessed sustained positive GDP growth rates across all geographic regions and country income categories (Table 1). This trend was sharply reversed by 2008-2009. While only seven countries had negative GDP growth rates in 2007, there were 25 such countries in 2008 and 91 countries in 2009. Conversely the number of countries with positive annual GDP growth rates plummeted from 208 in 2007, to 190 in 2008, to only 123 countries in 2009. Even in these 123 countries with positive growth rates, the levels of growth were precipitously lower in 2009 than they were in the immediately preceding years (Table 1, lower section).

The global recession was largely attributed to the lagged contagion effects of the financial crisis in US that began in the second half of 2008. The International Monetary Fund (2009a and 2009b) estimated that real GDP in the developed economies contracted by 7.5 percent in the fourth quarter of 2008 and by another 3.5 percent in 2009.

The financial crisis subsequently spread to the developed economies with shared strong financial market linkages. By 2009 its impact had reached individuals far removed from the initial epicenter of the shock. Real GDP in emerging economies declined by 4 percent in this period, partly on account of the financial crisis in the developed economies and shrinking global trade, and partly because their pre-existing domestic financial problems came under greater scrutiny and stress. The World Bank (2009) estimated that an additional 30 million people became unemployed around the world – predominantly in the developing countries. Those in extreme poverty (living on less than US\$ 1.25 a day) increased from 55 to 90 million.

Even though the trigger of this crisis was financial in nature, and its influence spread through an erosion of trust in the global financial system, the exposure to the crisis spanned beyond the

financial realm. We posit that such a drastic decline in economic prosperity across the world must have had a widespread and detrimental impact on the subjective well-being (SWB) of individuals. In this paper, we explore three related lines of inquiry intended to deconstruct the possible impact channels of the economic downturn on individual SWB:

- (a) Did the global economic recession affect the SWB of individuals in their respective countries?
- (b) Were countries that were more integrated in the global economy more exposed or more insulated from SWB losses during the recession?
- (c) Within each country, did the middle section of the population feel more or less vulnerable during this global recession?

Key Hypotheses

Hypothesis 1

The Great Recession stymied economic activity worldwide, and thereby adversely affected aggregate and individual income and wealth. Even where it did not directly reduce personal incomes and wealth, it raised public anxiety at the prospect or potential for such losses (Table 2: Summary statistics from GWP). The first hypothesis we test is: *Did individuals suffer a loss of subjective well-being during the global economic recession?*

Easterlin (1974, 2003) proposed that levels of individual income and wealth at a point in time have a strong positive correlation with their current state of individual well-being. This result has been corroborated through subsequent empirical studies both within and across countries (Blanchflower and Oswald, 2004; Blanchflower, 2009; Clark, Frijters & Shields, 2008; Deaton, 2008; Frey & Stutzer, 2002; Layard, 2005; Stevenson & Wolfers, 2008). Further, Kahneman and

Deaton (2010) have found higher levels of income in the United States to be correlated with higher levels of life evaluation.

Conversely, in a period of economic recession, we posit that individuals confronting actual or potential financial loss would suffer significant declines in their perceived well-being. The notion of loss aversion proposed by Kahneman & Tversky (1979) suggests that individuals value losses disproportionately more than gains of matching magnitude. In this context, the global recession ought to have a more pronounced negative impact on SWB than the positive impact of a period of economic boom.

Hypothesis 2

For decades, countries across the world have pursued greater global integration as means to stimulate economic growth to the extent that this doctrine has become an established development strategy. Increased access to resources, technologies, and markets have been proven catalysts in stimulating domestic economies and in conferring the benefits of development to their citizens – particularly in the developing world, and notably for countries such as China, India, and other South-East Asian economies before them (Rodrik, 1999; Stiglitz and Yusuf, 2001).

However, during the Asian Financial Crisis of 1997-1998, these same global network linkages acted as conduits that helped transmit the negative shocks; countries with greater international economic integration suffered faster and deeper effects of the crisis. By the time of the financial crisis of 2008-2009, the degree of global integration had grown many fold and the linkages had become much more complex than before (Rogoff & Obstfeld, 2009). Extrapolating from the macroeconomic experience, we anticipate a similar “contagion” of the economic crisis that

extends to individuals and their perceptions of personal well-being, proportional to the exposure of the country (and individual) to the global economic landscape.

The perception of personal well-being is contingent upon the macroeconomic landscape within which the individual operates. We posit that the impact of the global recession on individuals' well-being – even after controlling for person-specific characteristics of the respondents – would be mediated by the extent of their exposure to the global economic environment. The degree to which an economy is integrated to the world economy captures this element of exposure of both the country and an individual to global macroeconomic shocks. And this key mediating influence is observable, measurable, and therefore empirically controllable. Hence our testable hypothesis here is: *Were individuals in countries that were more integrated to the global economy more exposed or more insulated to the SWB losses of the global recession?*

We anticipate two distinct and competing influences of global economic integration on countries and individuals. On the one hand is the proximate effect: greater inter-connectedness would make the fortunes of people in such countries synchronous with the global economic fortunes and thereby more vulnerable to global shocks. Their perceived SWB ought to have larger declines during a crisis, and the extent of SWB decline should be positively correlated with the degree of global integration. Conversely, countries that are more insular – at least in their relationship to the US and the other OECD economies – should demonstrate smaller, if any, losses of individual SWB.

This effect works through the traditional economic channels of financial and goods flows. The human aspect of these channels compounds the effect on individual well-being. As an illustrative case, migration from Latin America to US sharply declined during the US recession (OECD,

2009) and reverse migrations to native countries increased (Rendall, Brownell & Kups, 2010). Simultaneously, income remittances by migrants from US to their native countries fell. In some instances, reverse remittances supported migrant workers whose employment opportunities had dried up in US (Orozco, 2009). Similar patterns were witnessed in Europe as well (OECD, 2011). For many developing countries, migrant remittances are central to economic well-being – not just for the nation, but for its people as well (Sirkeci, Cohen & Ratha, 2012). Declines in these flows should have resulted in well-being declines in the native countries too – illustrating just another route that transmitted the effects of the recession on to a broader international scale.

On the other hand, however, greater integration in the global economy also has the potential to offer increased alternatives through access to a wider economic landscape. Diversified economic links could possibly help lower a country's sensitivity to the events in any particular partner country or region – such as the economic downturn that had its epicenter in the US financial markets. Extending the illustration on migration and economic opportunities, greater integration could also provide individuals alternative locations to migrate to, offer businesses new sources of materials and new markets for their produce. A case in example is Singapore that, despite being globally integrated, remained insulated to the US crisis largely because it had diversified international linkages – and was thus less reliant on a select few international partners.

It is difficult to predict the dominant direction of influence from among these competing forces. Existing literature is also not a helpful guide since studies until now have used country-specific surveys that are by design incapable to performing this cross-country analysis. This analysis, using responses from across countries that vary in their degree of integration, can help quantify the net effect on individual well-being, particularly during an economic downturn.

Hypothesis 3

Anecdotal evidence suggests that the global economic recession had differential effects on separate segments of the society even within the same country. (See Table 3). The affluent were hurt through declines in wealth. The poor who may not have lost much wealth had fewer job prospects. But the middle group – who comprised of the educated, employed, living on earned incomes – suffered multiple shocks simultaneously – job losses, earnings losses, as well as wealth and assets losses (Ravallion, 2009). By extension we anticipate that this cohort might suffer disproportionately larger well-being losses. In this section we therefore test if the global data supports this notion empirically – by comparing the well-being losses of the middle group to those who are not in the middle. Our testable hypothesis here is: *Did the middle group of the population within the countries suffer a greater well-being?*

There are, however, multiple conceptual problems in tracking the “middle class”: from the non-conformity in its definition to its measurement. The middle class remains “an ambiguous social classification, broadly reflecting the ability to lead a comfortable life” (Kharas, 2010).

Sociologists and political scientists prefer a definition based on the occupation, education, and social standing of the person, whereas economists use the position on income or wealth distribution as the marker. The sociological definitions in turn have evolved over time with changes in vocations and norms about social strata. Moreover, in the present study, the available information on respondents’ occupation in the GWP data does not have detailed distinctions to capture the sociological parameters of the middle class.

Economic definitions that are based on income (or wealth) distributions offer their own challenges. Firstly, there are competing methods: the relative measures versus the absolute levels. And secondly, there is no universally accepted span of what within each distribution is the

middle-class. Among the relative measures, the “middle 60 percent” (Robert Solow in Estache & Leipziger, 2009) is a commonly used criterion. It is close to the alternative criterion of people between 75 percent and 125 percent of the median income distribution of each country (Birdsall, Graham & Pettinato, 2000; Easterly, 2001; Ravallion, 2010). Absolute income level measures such as those living on between \$10 and \$100 per person per day in PPP terms are used more often for cross-country global comparisons (Milanovic & Yitzhaki, 2002; Banerjee & Duflo, 2008).²

In the midst of such conceptual and methodological ambiguity we select our own criterion to construct the cohort of the “middle group” that we feel reasonably mirrors common notion of middle class – and thereby avoiding the conceptual and empirical complexities of defining and identifying this cohort. Our construct is a hybrid concept with three concurrent parameters: income, age, and education. The cohort consists of those in the ages 25 to 45 (both end points included), who have attained at least a high school education, and whose self-reported household income places them in the 2nd to 4th quintile of the household income distribution within their respective country.

The income classification mimics that which is accepted in the literature. Yet it also adds two other components that capture the social characteristics of those who are in the “middle”. The age and education criteria as additional parameters restrict inclusion into this group, but also fit the demographic particulars on the group of people on whom we particularly wish to test the applicability of hypothesis three in the paper. Put together, this construct captures the essence of what we label as – “the middle group”.

² Atkinson and Brandolini, (2011), Cashell (2007), and Kharas (2010) provide a detailed discussions and comparisons of alternative economic measures of the middle class.

This group ought to be of particular interest in gauging the SWB effects of this economic recession. The educated and skilled unemployed, in their early to mid-careers, would feel the effects of this downturn even more acutely than the rest. The elderly and the affluent would have larger proportions of savings to tide through the rough economic times; those who have barely begun a career would have lower financial expectations. The poor, and those with low levels of skill and education, on the other hand, may be better accustomed to dealing with such adversity through experience, also have lower expectations, and have greater access to government support programs.

Also in those in this 25-45 years middle-age group are likely to have fixed financial obligations – such as loans and mortgages – and growing families on one hand and threatened employment opportunities squeezing their income on the other end. To make matters worse, prior to the recession they may have become accustomed to lifestyles that their new conditions and altered economic environment could no longer support – causing additional loss of SWB, regardless of their actual financial and economic loss.

With increased globalization and the spread of financial instruments in the decades leading up to the global recession, the “middle group” had increasingly invested directly in the financial markets. So the financial nature of this recession likely compounded their exposure to the fortunes of the financial markets – and increased their sense of vulnerability. This confluence of factors could create “a perfect storm” for this cohort and would be a probable explanation for the disproportionate decline in well-being in this cohort.

I emphasize here that our metric is SWB rather than income, wealth, or any monetary asset. We hypothesize that for this group, the fear of an uncertain future, greater job-insecurity, and

increased perception of vulnerability in the face of recession while struggling to sustain a lifestyle that they had become accustomed to – has a compelling influence on their life evaluation on account of their position in life, their circumstances, and the lack of eligibility for means-tested government safety-net programs.

Data and Methodology

The Well-being indicators

The Gallup World Poll (GWP) survey conducted since 2005 is the source of data on individual well-being for this paper. This survey is typically conducted annually across 160 countries – with a select set of countries being polled two to four times in a calendar year. In each annual wave, about 1000 nationally representative households are sampled with a few exceptions (4000 in China, India, and Egypt, and about 500 in smaller countries such as Puerto Rico). Respondents aged 15 or above, in a particular household, are the unit of observation in these surveys. The GWP asks identical questions and offers identical response options to the survey respondents globally, which allows us to make an assessment on a global scale.

The demographic and socio-economic variables within this data include the respondents' age, gender, marital status, the highest level of education attained, the household location and size, the household income – both in constant international dollars as well as the income quintile in the distribution of household incomes within the country. The interviews are conducted primarily through landline phones in countries with high phone network coverage, some through mobile phones, and the rest through face-to-face interviews where telephone service penetration is scant.

There are competing measures of well-being in the survey. Some reflect the respondents' SWB from a personal perspective, and others reflect the respondents' perception for the society in

which he/she lives. They range from indicating the level of well-being at present to that in the past (five years ago), to that anticipated in the foreseeable future (five years hence). They also encompass both evaluative and hedonic dimensions of well-being. Evaluative measures capture the reflective aspect of the individual's life from a longer time horizon, whereas hedonic measures capture the experiential elements of well-being based on the short term, immediate experiences (also referred to as the emotional well-being below).

Of these measures, we use the life-evaluative question *“Imagine a ladder with steps numbered 0-10. Suppose 10 represents the best possible life for you, and 0 represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand today”* – as the metric for individual SWB. This indicator is also referred to as the “Cantril Ladder of Life” question. This definition is now an established metric in the subjective well-being literature (Kahneman & Deaton, 2010; Diener, Helliwell & Kahneman, 2010; Graham, 2009). It offers a reference scale to the respondents – unlike open-ended well-being questions such as *“How satisfied/happy are you with your life?”* While the Ladder of Life question and the open-ended life questions are correlated, the former has in turn a higher correlation with individual and household economic indicators, and is more robust in cross-country comparisons. The life evaluative question elicits more stable responses since they encompass a longer reference time horizon (Figure 1 displays the distribution of Cantril Ladder of Life question responses) and less susceptible to transitory influences that are not pertinent to the analysis here – and hence more stable.

Additionally, the Ladder of Life metric being the literature standard enables us to compare and contrast our research findings to existing models and results. It also allows us to perform a robustness test using a comparable Gallup Healthways Survey that poses the same question with

identical response options daily to 1000 respondents in US (as explained later in the results section).

The GWP is rich in measures of individual perceptions of well-being and other individual correlates. It is, however, a collation of cross-sectional annual surveys, and not a panel data. This limits the nature of econometric tests. Ideally the effect of an extraneous shock on an individual can be best estimated using a panel data that polls the same set of respondents repeatedly (or at least before and after the shock). A difference-in-difference estimation method on a panel data reveals more accurately the effect of the treatment (or shock). A panel data helps minimize the need to account for the unobservable individual traits that affect their responses (the dependent variable) but are orthogonal to the shock (the treatment variable).

In the absence of panel data, the collated cross-sectional data requires controls for individual characteristics of respondents using both their observed, enumerable behavior, as well as their unobserved individual traits. Within the GWP, we use the hedonic measures that track the respondents' emotional state around the time of the survey as controls for personal affect conditions that influence well-being responses – assuming that these emotions are not systematically affected by the onset of the recession. These measures include respondents' feeling sadness, anger, worry, or having smiled in the day prior to the survey (See Table 4 for a list and descriptions of key variables used from the Gallup surveys, and Table 5 for the summary statistics of these demographic and socio-economic particulars). We use the anticipated life-evaluation question (on a Cantril Ladder of Life scale, where the respondents anticipate to be in 5 years) as a proxy to control for the innate level of optimism of the respondent that is otherwise unobserved and unmeasured.

The macroeconomic state and control variables

We use the World Bank's World Development Indicators (WDI), 2012 on two important accounts. The annual GDP growth rates help us identify countries in the GWP sample that experienced a recession during 2008-2009, and segregate them from the few but significant countries – such as China, India, Brazil and Indonesia – that had no or minimal decline in GDP growth rates during the crisis that beset the rest of the world.

The economic landscape of this international sample is highly heterogeneous. The second use of macroeconomic variables from WDI is to control for the anticipated country-specific peculiarities that color individual perceptions of well-being. In addition, we also use the WDI country income level classifications (low, middle, and high) as control variables in a more parsimonious specification of the same estimation. This thus compares respondents in countries with similar income category to others in countries with different income level classification. And it reduces the number of country dummy variables from over a hundred (depending on the equation specification) to two dummy variables.

The global recession took hold in 2009, lagging behind the onset in US in the last three months of 2008. Since most waves of the GWP survey were conducted early in the year, we denote 2009 as the recession year and compare it to the SWB scores of 2008 – the pre-recession year. We choose to exclude 2007 and 2006 from the pre-recession years, as fewer countries were sampled in those years. Those that were sampled tended to be the more affluent countries. We thus avoid the possibility of skewing our sample resulting in a potential selection bias of only the affluent (and fewer) countries.

The global recession was not uniform – neither in its timing, nor in its spread. A select group of countries such as China, India, Indonesia, Poland, Brazil, and Australia had minimal slowdown of their economies, or had higher growth rates while the rest of the world was in the doldrums. Since the aim of this paper and exercise is to analyze the SWB effect of the recession, the presence of such countries in the data could obfuscate the effect we seek to study. Hence we use a selection criterion to limit the countries in the study. To be included in the sample, the country of the respondent has had to have either (a) a negative GDP growth rate in 2009 – denoting a recession, or (b) if it had a positive GDP growth rate, then the growth rate in 2009 must have been at least 25 percent below the GDP growth rate in 2007 – indicating a sharp slow-down in the economy. We call this the “permissive country sample” henceforth. This reduces our sample of countries from 160 to 126 (India, Indonesia, Australia, Brazil being the prominent countries thus excluded). We try the same analysis with a slight modification of the criterion – including only those countries with a negative GDP growth rate in 2009 and those with a positive GDP growth rate in 2009 but a 40 percent decline over the 2007 levels. This further restricts the number of countries in the sample to 115 (with China being a prominent country among the additional 11 countries excluded). We call this the “restrictive country sample” henceforth.

To test the second hypothesis, we supplement the data with country level measures of global integration from different sources. The Index of Globalization from the KOF Swiss Economic Institute (Dreher, 2006), the World Market Research Center/AT Kearney/Foreign Policy Index of Globalization, and the Global Civil Society Index (Salomon & Sokolowski, 2004) are the most prominent ones. These indices differ in the parameters they include and in the relative weights they attributed to each element.

We run OLS regressions to estimate these models and test the hypotheses. In all formulations, SWB, as measured by the Cantril Ladder of Life Question in the Gallup World Poll, is the dependent variable. This metric is categorical in nature, and so using ordered logistic regressions is an alternative method of estimation. However the “Ladder of Life” scale is more than just an ordinal ranking of preferences or a mere classification into categories – it offers respondents a linear scale with equally separated steps within the reference points at either end of the spectrum of best and worst imaginable condition. Hence this is a cardinal metric – just non-continuous in nature. The OLS estimation is therefore a viable alternative technique. It has now become the norm in the literature with such data – particularly helped by the ease of interpretation of the estimated results. Not surprisingly therefore, the key results remain consistent whether using OLS regression or ordered logistic regression.

In the instances where we include country level variables (such as KOF Index of Globalization) as explanatory variables, we cluster the standard errors at a country level. To control for the unobserved country-specific fixed effect we include dummy variables for each country, and use United States as the control group. Alternatively we also use a more parsimonious set of dummy variables based on the country income classification in the World Development Indicators that categorizes countries into three levels: Low Income, Middle Income, and High Income. With this specification, we treat the Low Income Country category as the control group. We assume here is that while there are significant differences in the unobservable characteristics between countries in different income categories, these differences are not significant between countries within the same income category.

The base-line form of the estimation model we have used to test hypothesis 1 is:

$$SWB_{ic} = \beta_0 + \beta_1 X_{ic} + \beta_2 X_c + \beta_y X_y + \varepsilon_{ic}$$

where:

- SWB_{ic} is the self-reported subjective well-being (SWB) of the individual respondent i in country c on a 0 – 10 Cantril Ladder of Life Scale
- X_{ic} is a vector of person-specific respondent characteristics that includes age, gender, marital status, highest education level attained. It includes his/her emotional conditions (both positive and negative) such as feelings of sadness, anger, worry, joy, and having smiled the previous day, household income quintile position (within the country), household location (from rural to urban), household size. β_1 is the corresponding coefficient vector.
- X_c is a vector of country-specific controls – such as country income level dummy variable (for low, middle, high income country) or country dummy variables and β_2 is the corresponding coefficient vector. In instances where we use the country income level dummy variable, we use the low income country group as the control category. In instances where we use the county dummy variables, we use the United States as the control category.
- X_y is a dummy variable denoting the year (comparing pre-recession to recession) and β_y is the corresponding coefficient that denotes the marginal effect of the recession year on individual SWB.

We anticipate that $\hat{\beta}_y < 0$ denoting that the onset of the global recession lowered individual SWB on average across the countries in the sample.

To test hypothesis 2, we use the KOF Index of Globalization, which matches the GWP very closely in terms of the span of 160 countries included, the period for which the indices are available, and the annual frequency with which these series are routinely updated. The index

includes the economic, social, and political dimensions of globalization – and is therefore broader in concept than just measuring the economic co-dependence of a country on the rest of the world. The World Market Research Center/AT Kearney/Foreign Policy Index of Globalization is a more widely used measure, which also has a broad set of components that encompasses the economy, the political system, mobility and migration of people. But since this series only covers 62 countries that are predominantly high income countries, we use the KOF series instead. This series runs on a 0 to 100 scale (where 100 is the highest possible level of global integration and 0 denotes a socially, culturally, politically and economically isolated autarky).

On including the KOF globalization index (X_c) and interacting it with X_y , the estimated model is augmented to:

$$SWB_{ic} = \beta_0 + \beta_1 X_{ic} + \beta_2 X_c + \beta_y X_y + \beta_g X_g + \beta_{gy} X_{gy} + \varepsilon_{ic}$$

where:

- X_g is the KOF Globalization Index for the country in 2007, such that the coefficient β_g denotes the marginal effect of increased globalization on individual SWB – indicating whether respondents in more globalized countries have higher SWB in general, or not.
- X_{gy} is the interaction variable ($X_g * X_y$) such that the estimated value of $\hat{\beta}_{gy}$ would indicate if countries that are more integrated (hence higher values of X_c) have witnessed a larger or smaller decline in average SWB due to the global recession.

Our priors here are that $\hat{\beta}_y < 0$, $\hat{\beta}_g > 0$ and $\hat{\beta}_{gy} < 0$. The first conjecture is an extension of hypothesis 1 wherein the recession induces a lower SWB. The second conjecture indicates that

countries that are more globally integrated have a higher average level of SWB owing to greater access to wider opportunities. Since global integration has high correlation with aggregate measures of per capita wealth (or income), we anticipate this coefficient to also mirror the wealth effect on individual SWB. Our third conjecture of the interaction coefficient, however, is that the greater access to the global economy could have a negative impact on SWB through greater exposure to an adverse shock – in this case, the global recession. The same linkages that are a source of opportunities for enhancing well-being in times of prosperity could also become the conduits for the maladies of a downturn.

Hypothesis 3 tests the differential effects of the recession on the SWB of different cohorts within an economy, particularly on the “middle group” that closely resembles the “middle class”. We augment the estimated model to include this variable denoting “middle group” cohort membership. The empirical model we estimate is:

$$SWB_{ic} = \beta_0 + \beta_1 X_{ic} + \beta_2 X_c + \beta_y X_y + \beta_m X_m + \beta_{my} X_{my} + \varepsilon_{ic}$$

where:

- X_m is the dummy variable for membership in the “middle group” cohort, and β_m is the associated coefficient that indicates the marginal effect of the being in the middle group on the average SWB.
- X_{my} is the dummy variable for the interaction between the dummy variables for the year and the “middle group” cohort ($X_{my} = X_m * X_y$), and β_{my} is the corresponding coefficient denoting the additional influence on average SWB of being in the middle cohort in the recession year (as opposed to the non-middle cohort in the non-recession year)

Our a priori expectations are that:

$$\hat{\beta}_y < 0, \hat{\beta}_{my} < 0 \text{ such that, overall, } [\hat{\beta}_y + \hat{\beta}_m + \hat{\beta}_{my}] < 0$$

As before, $\hat{\beta}_y = E(\text{SWB} | \text{prior to recession}) - E(\text{SWB} | \text{during recession in 2009})$ denotes the estimated marginal effect of the onset of the recession; we expect it to at least lower the average SWB levels of the respondents affected by the economic downturn.

$\hat{\beta}_m$ denotes the estimated marginal effect of being in the middle group as opposed to the non-middle group. The non-middle group includes both the extremely poor and the most affluent in any particular country (the 1st and 5th quintiles of the household income distribution of the country). So while we anticipate the middle group to have a higher SWB level than the poor, the middle group should have a lower SWB than those in the 5th quintile of the household income distribution. Since the estimated coefficient aggregates these two competing effects moving in opposite directions simultaneously, and we do not have an expected prior on which effect would be more dominant, and hence have no clear anticipation for the sign on this estimated coefficient.

We anticipate $\hat{\beta}_{my} < 0$. This coefficient denotes the estimated marginal effect of the onset of the recession on the middle group as compared to the remaining (non-middle-group) control cohort. So this estimated interaction coefficient should indicate that the recession adversely affected the middle group, and it being negative would indicate that the middle group suffered a larger well-being loss than those not in the middle group during this period. This, if proven so, is one of the key results of this paper.

Combining the expected results, $[\hat{\beta}_y + \hat{\beta}_m + \hat{\beta}_{my}] < 0$ implies that while SWB declined for all cohorts as a consequence of the global recession, the total adverse impact on the middle group

was negative and greater than that to the other cohorts. It re-emphasizes that the middle group suffered a disproportionately larger decline in SWB at the onset of this economic downturn.

Results and analysis

Firstly, the estimated coefficients match the general results established in the well-being literature. This helps as a consistency check for the models and general methodology. Secondly, the results mostly confirm our priors in support of the hypotheses we set out to study – namely, the impact of the global recession on individual well-being. We discuss both sets of results in greater detail below.

The general results:

In line with established results, age, gender, marital status, level of education attained, and household income remain the primary statistical explanatory factors of individual SWB. Positive emotional experiences have a positive impact on their assessment of personal well-being, and negative emotional experiences do the reverse.³ The coefficients of age and age-squared reveal that SWB has a convex (inverted U-shape) relationship with age. The convexity in the age-SWB relationship indicates that middle ages are increasing stressful; early careers with growing family and financial responsibilities are stressors that keep lowering SWB – even after controlling for gender, marital status, education level, and income. Beyond the middle years, SWB rises gradually – which seems to suggest that the stressors contributing to the decline in earlier years either get mitigated over time, or people adapt and adjust their expectations to match their realities, or both. The results are in Table 6, columns 1-4. (Column 1 includes all countries in the GWP sample, column 2 is based on countries in the “permissive country sample”, and column 3

³ See Blanchflower (2009) for a summary of the established results from multiple empirical studies of individual well-being covering a broad international spectrum; and Graham (2009).

includes countries only in the “restrictive country sample”. Column 4 includes the dummy variables for country income categories – with the Low Income Country category as the control cohort). This result has additional implications and significance when interpreted in conjunction with the effect on the middle group, as we do later in this section.

Those married (including those in domestic partnerships) report a statistically significantly higher average SWB level, as do women – compared to men. Higher levels of education are associated with higher SWB – which points to increased “capabilities” of the person to operate in the world. Increased urbanization of the respondents’ location is also positively correlated with SWB – as we would expect more educated people living in urban localities. SWB is also positively correlated with increasing household income – as measured by their position in the country-specific income quintile distribution.

The other statistically significant correlations with SWB are the emotional (or experiential) well-being conditions of the respondent in the day before the interview. Asked “*Did you experience the feeling of ... a lot yesterday*”, the affect/emotions included sadness, anger, worry, smile – the negative emotions and experiences all elicit a negative impact on SWB, and the positive experience of smiling has a positive effect on SWB. This is both an instrumental and an intrinsic result. As we indicate in the hypothesis, we include these emotional experiences to control for the persons’ unobserved emotional state of mind that may affect SWB without any direct link to the recession. So it is not the estimated coefficients attached to these variables that are of interest; their importance is in what they do to the residual variation that is then explained by the key tests of our three layers of hypotheses. Having said that, these coefficients have an intrinsic value: they match the directions of the SWB that we expected them to – and this therefore is an additional test of confidence in the data and estimation methodology.

Since this is a set of OLS regressions and as the explanatory variables have similar range of values (in units), we can compare the relative magnitudes of the coefficients to attribute relative order of importance of factors that affect SWB as measured in the data. Anticipated future prospects for life (that uses a matching 11-step Cantril Ladder of Life question for where the respondents expect to be in five years), and the respondents' level of education are the two most important correlates of their current SWB. Household income (in quintile levels) does matter, but its magnitude is only about 15 percent of that for the measure of anticipated future prospect. In fact both gender and marital status are slightly more important than the income quintile level in determining the level of individual well-being.

We are mindful that this comparison is at best a marker for the orders of magnitude difference of competing influences on well-being. Because so much of SWB is determined by factors that are both unobservable and endogenous to particular character traits and even genes, the coefficients are far from definitive. And even among the observable factors, there is an element of endogeneity. For instance, household income level can be expected to have instrumental influences on education level, household location, and household size, which are all separate and statistically significant correlates of SWB – over and beyond their intrinsic effect on the well-being of a person. Hence we focus more on the relative magnitudes of the estimated coefficients and their competing influence on SWB rather than on the marginal effect of any one particular explanatory factor.

Tests of hypotheses

In the test of hypothesis 1, the onset of the global recession appears to have definitely caused a loss of SWB in the respondents in countries that witnessed this economic downturn. $\hat{\beta}_y$ is

negative and is statistically significant. We run this test on three separate sets: one that includes all countries in the data regardless of whether they witnessed an economic downturn or not; then on countries that witnessed mild to severe economic downturn; and lastly on countries that witnessed a severe downturn. The estimated $\hat{\beta}_y$ remains negative throughout, but the magnitude of the coefficient (effect on SWB) and its statistical significance grew as we used stricter conditions on countries included in the analysis. This result is not surprising as countries such as China, India, Brazil, Indonesia, and Singapore – which are significant contributors to the global economic landscape and have large populations, witnessed an increase in their GDP growth rates during this period of global recession elsewhere. So, restricting the analysis to only those countries that had a negative GDP growth rate in 2009, or where although GDP growth rate was positive in 2009 but it had declined by at least 40 percent over their level in 2007 – is a reasonable way to restrict the sample to truly test the hypothesis of interest: Did individual subjective well-being actually suffer a loss during this period of the global economic recession? Since $\hat{\beta}_y$ is negative and is statistically significant, this affirms our hypothesis. (Table 6: Column 3, coefficient of “Recession year”).

In test of hypothesis 2, we augment the explanatory variables in the regression to include the KOF Index of Globalization. The estimated coefficient on this explanatory variable is positive and statistically significant – denoting that those living in increasingly globalized economies have a higher level of SWB. (Table 7: Columns 2 and 3, coefficient of “KOFGI2007”). Global integration of a country and its GDP per capita levels are highly positively correlated, and so this outcome resonates with the established result that at a point in time average well-being levels are correlated with country income levels (Easterlin, 2003; Deaton, 2008; Diener, Kahneman, Tov & Arora, 2010).

The true test of hypothesis 2 is the behavior of the interaction term of the recession year with the globalization index. The estimated coefficient $\hat{\beta}_{cy} < 0$ denotes that the onset of the recession resulted in larger SWB declines in countries that were more globally integrated (and thus had higher levels of the index X_c). (Table 7: Column 3, coefficient of “Interaction of KOFGI2007 and recession year”). The small size of the estimated coefficient relative to the other coefficients possibly indicates the competing influences of greater global connectivity. It is however statistically significant.

In the remaining test – of hypothesis 3 – the methodology is similar to that of hypothesis 2. The difference though is that here we test the marginal effect on the “middle group” instead of on all the respondents in the more globally interconnected countries. The results indicate that $\hat{\beta}_y < 0$, $\hat{\beta}_{my} < 0$ and that $[\hat{\beta}_y + \hat{\beta}_m + \hat{\beta}_{my}] < 0$.

The key finding is that $\hat{\beta}_{my} < 0$ at a 1% level of statistical significance. The coefficient of the interaction term of the middle group with the recession year dummy variable denotes how with the onset of the recession in 2009, the SWB of middle group changed vis-à-vis that for the control group. The control group here includes the poor and the affluent (the 1st and 5th income quintile in each country), those who are less than High School graduates, young adults (below 25 years of age) and those not young (above 45 years of age). This result affirms hypothesis 3 that the middle group globally suffered a disproportionately larger well-being decline during the global recession. (Table 8: Column 3, coefficients of “Recession year”, “Middle group” and “Interaction of middle group and recession year”).

Moreover $\hat{\beta}_m < 0$, although this negative coefficient is not statistically significant in certain specifications. That, in itself, indicates that regardless of whether this is during a global recession

or not, SWB is possibly lower (and definitely not higher) for the middle group than for the control group. It is consistent with the general convex relationship between SWB and age with the minimum in the mid-forties in age. Combined together with the coefficient of the interaction term and the coefficient of the recession year dummy variable $[\hat{\beta}_y + \hat{\beta}_m + \hat{\beta}_{my}] < 0$, and this is the cumulative magnitude of the well-being loss of the middle group.

Robustness tests

To confirm the results, particularly of hypothesis 3, we perform three separate robustness tests: one using an altered income criterion to classify respondents into the “middle group”, the second using different country income classifications of the World Bank, and the third using different survey poll while keeping the model specifications unaltered.

For the first, we use a question in the GWP survey that assesses the respondents’ feelings about the adequacy of the incomes (rather than household income distribution): *“Which of the following phrases comes closest to your own feelings about your household’s present income these days: (1) living comfortably on it, (2) getting by on it, (3) finding it difficult to live on it, or (4) finding it very difficult on present income?”* we use response options (2) and (3) as a proxy for the middle income groups – that were otherwise the 2nd to 4th quintiles of household income distribution in each country. To this we add to the two additional individual demographic criteria of age (25 to 45) and education (high school or beyond) to create the “middle group” category.

The results of the test of hypothesis 3 do not alter significantly with this alternative “adequacy of income” criterion. Some of the estimated coefficients do lose their statistical significance with this alternative measure. There are possible explanations for this. Actual income quintile distribution and adequacy of income question are only weakly positively correlated (coefficient

of correlation: 0.3567). In fact about 8 percent of the respondents in the 1st quintile of the income distribution report that they “live comfortably” in their present incomes. Conversely, almost 19 percent of the population in the 5th quintile of income distribution report finding it “difficult” or “very difficult” to live within their present incomes. There is an element of mismatch of subjective perceptions of “adequacy” with objective measures as well as a measure of long term adaptation of aspirations to available resources. Since the alternative construct of the middle group does not improve the statistical results in the test of hypothesis 3, we only report the results that are based on the more objective household income levels (and not their perceived adequacy).

These results cited above remain robust even when we control for unobserved country level fixed effects by including income category dummy variables (using the World Bank classification of poor, middle and high income country classification).

As the final test of robustness, we perform a matching empirical exercise using the Gallup Healthways Survey (also known as the Gallup US Daily Survey) data for the same period 2008 – 2011. This is a complementary survey restricted to a nationally representative sample within the United States – polling 1000 respondents every day. The two surveys use identical measures of well-being and coded identically, as well as respondents’ individual characteristics. Both surveys are also similar in nature; they are both repeated cross-sectional data and are not a panel data of same individuals being polled repeatedly. Hence the results are comparable between the global and US analysis. SWB remains the respondents’ indication of present well-being using the Cantril ladder of life scale (0-10).

One notable departure in the US dataset is this survey only began in 2008, and so does not cover the pre-crisis period as extensively as the GWP does. We denote the period from the first quarter of 2008 through the second quarter of 2009 as the recession period. This covers the period of the housing market crisis in early and mid-2008, the gasoline price spike in the summer of 2008, as well as the financial crisis that spanned the last two quarters of 2008 and into early 2009. And this definition matches with NBER's official assessment that the United States suffered an economic recession from December 2007 through June 2009⁴. The construct of the middle group remains identical with that in the rest of the paper. It is the cohort of respondents aged between 25 and 45, who are in the second through fourth income quintiles of the national household income distribution, and who have at least completed high school or technical/vocational degrees, and may have some college education. Those who have completed college education and beyond, and those who have not even finished high school are therefore excluded from the middle group. Since the data pertains only to the United States, the country level control variables are omitted.

The results of this set of matching OLS regressions indicate that the estimated coefficients $\hat{\beta}_y < 0$, $\hat{\beta}_m < 0$, $\hat{\beta}_{my} < 0$ and are statistically significant at 1% level. As a result, $[\hat{\beta}_y + \hat{\beta}_m + \hat{\beta}_{my}] < 0$. This demonstrates that in the United States, the economic crisis had an adverse effect on SWB across all groups of respondents. More importantly, the middle group again demonstrated a disproportionately larger decline in SWB (since $\hat{\beta}_{my} < 0$). The estimated coefficients of all other explanatory variables are also statistically significant at 1% level, and their magnitudes are comparable to the estimates derived from the analyzing the global impact of the recession.

⁴ See "US Business Cycle Expansions and Contractions", *National Bureau of Economic Research*, Boston: NBER (<http://www.nber.org/cycles.html>) for the official notification.

The results here thus mirror the conclusions from the worldwide sample. Since they are consistent across two different samples and surveys, this exercise provides both a robustness check on the hypothesis 3 and validates both sets of results.

Conclusions

In this paper we had set out to determine if the global economic recession of 2009 had an adverse effect on the well-being of people in countries that were caught in this recession. And if it did have such an effect then to probe into some anticipated patterns of this well-being loss within countries and between countries.

The results demonstrate that recession clearly resulted in lower well-being levels for respondents in countries that were in a recession. Worsening economic conditions – whether actual or prospective – is powerful enough to lower people’s perceptions of their well-being from a long term life evaluation perspective. A part of the decline is directly attributable to a decline in income of the individual and all things that are accessible to a person with greater financial means at their disposal. The analysis also however proves that household income is not the overwhelming influence of individual well-being globally; instead factors such as perceptions of anticipated future quality, education, gender, marital status are even more important determinants. While these set of factors cannot be expected to be orthogonal to each other, the degree of endogeneity is not statistically significant to invalidate the results. That these results hold when analyzed within each of the 115 countries in the sample individually, and also within broad classification of low, middle, and high income country type points to the robustness of the study and the universality of the key observable determinants of individual SWB.

Within the countries in recession, the degree of global integration is a key influence on the extent to which well-being levels declined in 2009. Those in countries with higher global interconnectedness clearly suffered greater well-being losses by being exposed to and left more vulnerable to the downcast economic environment that they found themselves in – with little power to change the conditions. Thus while increasing globalization is a boon in good economic times, the same channels reveal themselves to be conduits that transmit the effects of negative shocks across the world. They also transfer the worries and concerns of a recession resulting in additional decline in well-being in individuals even if their income or wealth did not decline. The same sentiment is reflected in OECD policy recommendations (OECD, 2010) encouraging policy makers in Latin America to focus on increasing resilience of economic institutions rather than on increasing trade exposure – as the region devises strategies to recover from the woes of the recent global recession.

The “middle group” is a cohort we construct that mimics some of the traditional notions of the “middle-class” using a combination of economic and demographic criteria. The results reveal that this cohort suffered a disproportionately larger decline in SWB due to the onset of the global recession. And this is true within each country in the sample individually – and the United States, in particular. This is a significant result. It indicates the possible emergence of a new vulnerable section of the society that was traditionally regarded as relatively more insulated against the effects of local and global economic downturns. The results indicate that the combination of the nature of the economic shock and changes in the characteristics of the society and economy have resulted in exposing the “middle group” to macroeconomic turbulence more than ever before. This cohort may not have lost more than the other groups (the affluent or the poor) in usual quantifiable metrics such as income or wealth or access to means of basic subsistence. But their

increased exposure to the economic conditions and the uncertainty that went with it does seem to have rendered them most vulnerable to a loss in the lifestyle they had been accustomed to. And this is reflected in their disproportionate decline in their individual perception of well-being.

These empirical outcomes not only add to the existing body of literature on the determinants of well-being and how the onset of the global economic recession affected these levels, it also points out that some patterns are universal within and across countries. Additionally it points out that commonly held stylized notions of who are the most vulnerable to 21st century economic crises may be due for a change. Well-being metrics that supplement means-based measures of vulnerability would be a definite improvement in focusing on cohorts – such as the middle group – that are currently excluded from consideration.

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Table 1: GDP growth rates across the world: 2000-2011

Country Classification	Annual GDP growth rates (in percentage)											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Geographic criterion												
East Asia & Pacific (all income levels)	4.1550	1.9407	2.9339	3.6667	4.6335	4.0991	4.8451	5.6965	2.4823	-0.3091	6.7132	3.3561
Europe & Central Asia (all income levels)	4.1293	2.0314	1.5505	1.7667	2.9949	2.5049	3.6821	3.5797	0.6171	-4.3435	2.5479	1.9495
Latin America & Caribbean (all income levels)	3.9566	0.5034	-0.3100	2.1039	6.0241	4.8401	5.6780	5.7009	4.1230	-1.5810	6.0080	4.6606
Middle East & North Africa (all income levels)	5.3845	1.7174	2.1373	5.1408	6.6170	5.2604	5.8527	5.0508	4.9490	1.7674	4.4788	5.1877
North America	4.2465	1.1422	1.9021	2.5064	3.4547	3.0714	2.6714	1.9277	-0.2864	-3.4752	3.0336	1.7534
South Asia	4.2315	4.4435	3.8417	7.2989	7.5928	8.7075	8.6538	8.9990	3.8799	7.4257	8.6372	6.4845
Sub-Saharan Africa (all income levels)	3.6255	3.7863	3.3027	4.1432	6.1579	5.5088	6.0150	6.2917	4.8509	2.2340	5.0699	4.7215
Aggregate Income criterion												
Low income	3.4912	5.2426	3.2878	3.7477	6.1021	6.2493	6.2039	6.4076	5.7413	4.7309	6.1179	5.9710
Middle income	5.4143	3.0463	3.7513	5.5685	7.5367	7.2569	8.1407	8.6943	5.7443	2.6726	7.7152	6.3854
High income	3.9386	1.3533	1.5721	2.1048	3.1582	2.5750	2.9300	2.6739	0.0639	-3.7266	3.2815	1.5346
World	4.1949	1.6703	1.9706	2.7441	3.9925	3.4998	3.9920	3.9492	1.3331	-2.2234	4.3410	2.7338

Data Source: World Development Indicators 2012, The World Bank

	2006	2007	2008	2009	2010	2011
Countries with annual GDP positive growth rates	206	208	190	123	196	202
Countries with annual GDP negative growth rates	9	7	25	91	18	13
Countries with negative growth rates or 25% decline in GDP growth rate				155		
Countries with negative growth rates or 40% decline in GDP growth rate				144		

Source: Calculations based on data from World Development Indicators 2012, The World Bank

Table 2: Subjective Well-Being and Worry: 2005-2010

Response categories	SWB on a Cantril Ladder of Life Scale						
	2005	2006	2007	2008	2009	2010	Total
0	297	1408	1555	1409	1237	1547	7453
1	291	1640	1795	1708	1854	2136	9424
2	434	3153	3574	3075	3598	4108	17942
3	834	6086	7256	6834	7452	8653	37115
4	1163	7610	9578	9090	9368	11273	48082
5	3743	16607	19012	19029	20127	24317	102835
6	2642	8632	10814	11050	12170	14491	59799
7	4962	8857	11479	13187	12933	15942	67360
8	5584	8001	10273	12723	11347	15121	63049
9	1871	2647	3524	4240	4422	5674	22378
10	1714	2901	3432	3732	4157	5039	20975
Total	23535	67542	82292	86077	88665	108301	456412
Percentage of respondents reporting 0-7	61.0%	79.9%	79.1%	76.0%	77.5%	76.1%	76.7%
	Did the respondent feel worry yesterday?						
Response categories	2005	2006	2007	2008	2009	2010	Total
No	15180	43825	53941	56390	58027	67243	294606
Yes	8424	23822	28219	26870	30472	33949	151756
Total	23604	67647	82160	83260	88499	101192	446362
Percentage of respondents reporting "Yes"	35.7%	35.2%	34.3%	32.3%	34.4%	33.5%	34.0%

Table 3: Subjective Well-Being for the Middle Group versus the Rest

	2006	2007	2008	2009	2010	2011
SWB for middle group	5.5011	5.9553	6.1404	5.9798	6.1404	6.3076
SWB for non-middle group	4.9621	5.2576	5.3846	5.3180	5.3495	5.4601

Decline in Avg SWB much larger in the middle group in 2009, than in the non-middle group the same year.

Table 4: Variable names and descriptions

Variable name	Variable description
age	Age
age2	Age squared
gender	Gender: 0=Male 1=Female
married	Married: 1=Yes (including Domestic Partners) 0=No
educ2	Dummy Var: Education level Secondary/Tertiary
educ3	Dummy Var: Education level High School completion and beyond
smile	Smiled yesterday: 1=Yes 0=No
sad	Experienced sadness yesterday: 1=Yes 0=No
anger	Experienced anger yesterday: 1=Yes 0=No
worry	Experienced worry yesterday: 1=Yes 0=No
freedom	Freedom in your life: 1=Satisfied 0=Dissatisfied
bplfut	SWB anticipated 5 yrs hence: Best=10 Worst=0
hhloc	HH location: 1=Rural 2=Small Town 3=Suburb 4=Big city
hhsiz	HH size: Residents aged 15+
hhincq	HH income quintile within country
educ	Education level of the respondent: 1=Elementary or less 2=Secondary 3=HS or more
rsc	Dummy Variable: Recession year 2009=1
kofgi2007	KOF Globalisation Index 2007
kofgircs	KOF Globalisation Index 2007 * Recession year interaction
cinmid	Dummy Variable: Middle Income Country (WDI classification)
cinhigh	Dummy Variable: High Income Country (WDI classification)
midgp	Dummy Variable: Middle Group 1=Yes 0=No
midgprcs	Middle Group * Recession year interaction
Explanation of countries included	
All	All countries included = 160
Permissive	Negative GDP growth rate in 2009 + those with positive GDP growth rate in 2009 but with 25% decline over 2007 GD growth rate = 126
Restrictive	Negative GDP growth rate in 2009 + those with positive GDP growth rate in 2009 but with 40% decline over 2007 GD growth rate =115

Table 5: Distribution of demographic characteristics of respondents

Socioeconomic Indicators	Observations	Mean	Std. Dev.	Min.	Max.
Age	866017	39.9340	17.1326	15	99
Gender 0=Male 1=Female	872586	0.5345	0.4988	0	1
Married 1=Yes (including Domestic Partners) 0=No	845581	0.5777	0.4939	0	1
Smiled yesterday 1=Yes 0=No	796178	0.7104	0.4536	0	1
Experienced sadness yesterday 1=Yes 0=No	827103	0.2040	0.4030	0	1
Experienced anger yesterday 1=Yes 0=No	806958	0.1961	0.3971	0	1
Experienced worry yesterday 1=Yes 0=No	829168	0.3318	0.4709	0	1
Freedom in your life 1=Satisfied 0=Dissatisfied	778525	0.7110	0.4533	0	1
SWB today: Best=10 Worst=0	852391	5.4667	2.1887	0	10
SWB anticipated 5 yrs hence: Best=10 Worst=0	783168	6.7492	2.3592	0	10
Education	Frequency	% of respondents			
Completed elementary education or less	257216	32.91			
Secondary - 3 year Tertiary/Secondary education	412241	52.74			
Completed four years of education or beyond	112159	14.35			
Total	781616				
Household Income Quintile	Frequency	% of respondents			
Poorest 20%	143084	20.73			
Second 20%	136450	19.77			
Middle 20%	137259	19.89			
Fourth 20%	133272	19.31			
Richest 20%	140158	20.31			
Total	690223				

Table 6: Test of hypothesis 1

	Dependent variable: SWB on 0-10 scale			
	1	2	3	4
age	-0.012 [0.001]***	-0.012 [0.002]***	-0.010 [0.002]***	-0.021 [0.002]***
age2	0.000 [0.000]***	0.000 [0.000]***	0.000 [0.000]***	0.000 [0.000]***
gender	0.107 [0.009]***	0.106 [0.010]***	0.108 [0.010]***	0.092 [0.009]***
married	0.093 [0.010]***	0.073 [0.011]***	0.089 [0.012]***	0.085 [0.011]***
educ2	0.414 [0.010]***	0.394 [0.012]***	0.356 [0.013]***	0.107 [0.012]***
educ3	0.702 [0.015]***	0.632 [0.017]***	0.564 [0.018]***	0.202 [0.016]***
smile	0.236 [0.010]***	0.261 [0.012]***	0.291 [0.012]***	0.193 [0.011]***
sad	-0.148 [0.013]***	-0.168 [0.014]***	-0.185 [0.015]***	-0.157 [0.013]***
anger	-0.042 [0.012]***	-0.063 [0.013]***	-0.074 [0.014]***	-0.096 [0.013]***
worry	-0.073 [0.010]***	-0.102 [0.012]***	-0.107 [0.012]***	-0.163 [0.011]***
freedom	0.192 [0.010]***	0.200 [0.011]***	0.214 [0.012]***	0.119 [0.010]***
bplfut	0.541 [0.002]***	0.554 [0.002]***	0.556 [0.002]***	0.533 [0.002]***
hhloc	0.114 [0.004]***	0.120 [0.004]***	0.111 [0.004]***	0.037 [0.004]***
hhsz	-0.079 [0.002]***	-0.078 [0.003]***	-0.098 [0.003]***	-0.035 [0.003]***
hhincq	0.081 [0.003]***	0.081 [0.004]***	0.091 [0.004]***	0.110 [0.004]***
rscs	-0.040 [0.009]***	-0.066 [0.010]***	-0.065 [0.011]***	-0.002 [0.010]
cinamid				0.837 [0.014]***
cinhigh				1.678 [0.016]***
Constant	0.781 [0.036]***	0.806 [0.041]***	0.861 [0.044]***	0.650 [0.040]***
crc (Countries included)	All	Perm	Rest	Perm
country dv (Country Income level control)				Yes
cluster (At country level)	Yes	Yes	Yes	Yes
Observations	133503	104761	93569	104761
R-squared	0.456	0.465	0.467	0.515
Standard errors in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				

Table 7: Test of hypothesis 2

	Dependent variable: SWB on 0-10 scale		
	1	2	3
age	-0.022 [0.002]***	-0.022 [0.003]***	-0.022 [0.002]***
age2	0.000 [0.000]***	0.000 [0.000]***	0.000 [0.000]***
gender	0.083 [0.009]***	0.083 [0.017]***	0.083 [0.009]***
married	0.098 [0.011]***	0.098 [0.026]***	0.098 [0.011]***
educ2	0.105 [0.012]***	0.105 [0.062]*	0.106 [0.012]***
educ3	0.241 [0.016]***	0.241 [0.078]***	0.239 [0.016]***
smile	0.200 [0.011]***	0.200 [0.031]***	0.200 [0.011]***
sad	-0.165 [0.014]***	-0.165 [0.027]***	-0.164 [0.014]***
anger	-0.077 [0.013]***	-0.077 [0.031]**	-0.076 [0.013]***
worry	-0.152 [0.011]***	-0.152 [0.026]***	-0.151 [0.011]***
freedom	0.114 [0.011]***	0.114 [0.032]***	0.113 [0.011]***
bplfut	0.527 [0.002]***	0.527 [0.011]***	0.527 [0.002]***
hhloc	0.058 [0.004]***	0.058 [0.019]***	0.058 [0.004]***
hhsize	-0.020 [0.003]***	-0.020 [0.013]	-0.020 [0.003]***
hhincq	0.114 [0.004]***	0.114 [0.012]***	0.114 [0.004]***
rsc	-0.057 [0.010]***	-0.057 [0.066]	0.107 [0.040]***
kofgj2007	0.038 [0.000]***	0.038 [0.003]***	0.039 [0.000]***
kofgjrcs			-0.003 [0.001]***
Constant	-0.805 [0.042]***	-0.805 [0.211]***	-0.885 [0.047]***
crec (Countries included)	Perm	Perm	Perm
country dv (Country Income level control)			
cluster (At country level)	No	Yes	No
Observations	102492	102492	102492
R-squared	0.519	0.519	0.519
Standard errors in brackets			
* significant at 10%; ** significant at 5%; *** significant at 1%			

Table 8: Test of hypothesis 3

	Dependent variable: SWB on 0-10 scale		
	1	2	3
age	-0.012 [0.002]***	-0.021 [0.002]***	-0.012 [0.002]***
age2	0.000 [0.000]***	0.000 [0.000]***	0.000 [0.000]***
gender	0.106 [0.010]***	0.093 [0.009]***	0.106 [0.010]***
married	0.073 [0.011]***	0.085 [0.011]***	0.073 [0.011]***
educ2	0.394 [0.012]***	0.107 [0.012]***	0.394 [0.012]***
educ3	0.654 [0.018]***	0.240 [0.018]***	0.655 [0.018]***
smile	0.261 [0.012]***	0.193 [0.011]***	0.261 [0.012]***
sad	-0.168 [0.014]***	-0.157 [0.013]***	-0.168 [0.014]***
anger	-0.063 [0.013]***	-0.095 [0.013]***	-0.063 [0.013]***
worry	-0.102 [0.012]***	-0.163 [0.011]***	-0.102 [0.012]***
freedom	0.200 [0.011]***	0.119 [0.010]***	0.200 [0.011]***
bplfut	0.555 [0.002]***	0.533 [0.002]***	0.555 [0.002]***
hhloc	0.120 [0.004]***	0.037 [0.004]***	0.120 [0.004]***
hhsize	-0.078 [0.003]***	-0.035 [0.003]***	-0.078 [0.003]***
hhincq	0.080 [0.004]***	0.109 [0.004]***	0.080 [0.004]***
rscs	-0.066 [0.010]***	-0.002 [0.010]	-0.062 [0.010]***
cinamid		0.837 [0.014]***	0.837 [0.014]***
cinhigh		1.679 [0.016]***	1.679 [0.016]***
midgdp	-0.079 [0.028]***	-0.138 [0.027]***	-0.030 [0.039]
midgprcs			-0.089 [0.049]*
Constant	0.808 [0.041]***	0.653 [0.040]***	0.805 [0.041]***
crc (Countries included)	Perm	Perm	Perm
country dv (Country Income level control)		Yes	Yes
cluster (At country level)	No	No	No
Observations	104761	104761	104761
R-squared	0.465	0.515	0.465
Standard errors in brackets			
* significant at 10%; ** significant at 5%; *** significant at 1%			

Figure 1: Distribution of Subjective Well-Being (SWB) responses for 2005-2011

