Happiness Measures as a Guide to Development Policy?
Promise and Potential Pitfalls

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Abstract

The study of happiness was of interest to early economists and philosophers. Centuries later, it has gone from the fringes of economics to the mainstream. Economists are using happiness surveys to study a host of questions, ranging from the happiness effects of health, marriage, and various institutional arrangements, to the unhappiness effects of unemployment, divorce, and commuting time. Because happiness surveys rely on expressed versus revealed preferences, they can be used to explain behaviors that do not reflect optimal choices, but rather norms, addiction, or self control problems, such as poor savings or schooling choices by individuals with limited education and information, and/or public health problems like obesity and smoking. A number of countries are attempting to develop national well being measures that can be used as complements to traditional income and GDP data. These efforts to define well being beyond its income dimensions can surely contribute to our understanding of the development process. But should we be using happiness measures as a guide to development policies? Should the pursuit of happiness be part of the charter of the international financial institutions, as it is in the U.S. Constitution? This paper reviews what we know about the determinants of happiness across and within countries of different development levels. It then raises the challenge that adaptation poses for the use of these measures as comparative indicators, and discusses the potential and the challenges associated with applying them to policy.

Happiness Measures as a Guide to Development Policy?
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The study of happiness was of great interest to early economists and philosophers, such as Adam Smith and Jeremy Bentham. Yet as quantitative methods in economics called for more parsimonious definitions of welfare, and utility became synonymous with income, happiness fell out of fashion. Over a century later, economists seem to have circled back around: research on happiness has gone from the fringes of the profession to the mainstream. There is a renewed debate over the relationship between happiness and income, and economists are using happiness surveys to study a host of questions, ranging from the happiness effects of health, marriage, leisure time, and institutional and environmental arrangements, to the unhappiness effects of unemployment, divorce, commuting time, and inflation.

Happiness surveys depart from traditional approaches in their reliance on expressed versus revealed preferences. Put more simply, happiness economics relies on data based on what people say as opposed to what they do (via consumption choices). While not without flaws, these data are uniquely well suited to answering questions that standard revealed preferences approaches do not answer well, such as the welfare effects of institutional arrangements that individuals are powerless to change. How can a poor peasant in Bolivia, for example, who is made unhappy by inequality or macroeconomic volatility, reveal his or her preferences short of emigrating or protesting? Happiness surveys can also be used to explain behaviors that do not reflect optimal choices, but rather norms, addiction, or self control problems. Seemingly perverse savings or schooling choices by very poor individuals with limited education and information, and/or public health problems like obesity and smoking, come to mind.

As a result of the burgeoning research on happiness and the kinds of questions it addresses, there are a number of efforts underway to develop national level well being measures. The objective is to develop metrics that can be compared within and across countries and ultimately used as complements to traditional income and GDP data. Most recently, the Sarkozy Commission, chaired by two Nobel Prize winning economists and sponsored by the President of France, called for an international effort to develop and use such measures to assess human well being and progress.

Surely the research is relevant to developing economies. Finding a definition of well being which is broader than income, meanwhile, seems to be an exercise that can contribute to our understanding of the development process, both across and within countries. Beyond that, should we be using happiness measures as a guide to development policies? Should happiness be an objective of these policies? The pursuit of happiness is written into the U.S. Constitution. Should it be part of the charter of the international financial institutions?

This paper addresses these questions. I first review what we know about the determinants of happiness across and within countries of different development levels. I then raise the challenge that adaptation poses for the use of these measures as

comparative indicators. Finally, I discuss the potential for applying these measures to policy, and identify a number of questions that need to be resolved prior to doing so.

Happiness around the World:
How Do Developing and Developing Countries Compare?

Studying Happiness: The Method

Happiness surveys are based on questions in which the individual is asked, 'Generally speaking, how happy are you with your life' or 'how satisfied are you with your life', with possible answers on a four-to-seven point scale. These open-ended questions measure *reported* happiness, begging the question of the *definition* of happiness. We do not know when individuals answer these questions if they are thinking about happiness as contentment today versus happiness in the concept of their overall lives and opportunities. While I discuss the importance of this latter question later in the paper, throughout the text I am using happiness as a short hand for reported well being rather than happiness as defined in a particular manner.

Different happiness questions, meanwhile, are used – at times inter-changeably - depending on the survey. Answers to happiness and life satisfaction questions, for example, correlate quite closely (Blanchflower and Oswald 2004; Graham and Pettinato 2002).[2] Still, the particular kind of question can matter to the results. For example, respondents' income level seems to matter more to their answers to life satisfaction questions than it does to their answers to questions which are more focused on the innate character component of happiness (affect), as gauged by questions such as "how many times did you smile yesterday?"

Happiness questions are also particularly vulnerable to order bias. People will respond differently to an open-ended happiness question that is in the beginning of a survey than to one that is framed or biased by the questions posed beforehand, such as those about whether income is sufficient or the quality of their job. Bias in answers to happiness surveys can also result from unobserved personality traits. A naturally curmudgeonly person, for example, will answer all sorts of questions in a manner that is more negative than the average. (These concerns can be addressed via econometric techniques if and when we have panel data). Related concerns about unobservable variables are common to all economic disciplines, and not unique to the study of happiness. For example, a naturally cheerful person may respond to policy measures differently and/or put more effort in the labor market than the average.

Despite the potential pitfalls, cross-sections of large samples of respondents across countries and over time find remarkably consistent patterns in the determinants of happiness. Psychologists, meanwhile, find validation in the way that people answer these

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[2] The correlation coefficient between the two – based on research on British data for 1975–92, which includes both questions, and Latin American data for 2000–1, in which alternative phrasing was used in different years – ranges between .56 and .50.

surveys based in physiological measures of happiness, such as the frontal movements in the brain and in the number of 'genuine' – Duchenne – smiles (Diener and Seligman 2004).

The data in happiness surveys are analyzed via standard econometric techniques, with an error term that captures the unobserved characteristics and error described above.[3] Because the answers to happiness surveys are ordinal rather than cardinal, they are best analyzed via ordered logistic (logit) or probability (probit) equations. These equations depart from standard regression equations, which explore a continuous relationship between variables (for example happiness and income), and instead explore the probability that an individual will place him or herself in a particular category, typically ranging from unhappy to very happy. These regressions typically yield lower R-squares than economists are used to, reflecting the extent to which emotions and other components of true well-being – in addition to any number of other unobservables – are driving the results, as opposed to the variables that we are able to measure, such as income, education, and employment status.

While it is impossible to measure the precise effects of independent variables on true well-being, happiness researchers have used the coefficients on these variables as a basis for assigning relative weights to them.[4] For example, they have estimated how much income a typical individual in the United States or Britain would need to produce the same change in stated happiness that comes from the well-being loss resulting from, for example, divorce ($100,000) or job loss ($60,000) (Blanchflower and Oswald 2004). Because of the low R-squares in these equations, as so much of happiness is explained by individual-specific character traits, these figures should be interpreted in relative terms – e.g. how much the average individual values employment relative to marriage, for example – rather than as precise estimates of willingness to pay.

Happiness within Countries

My research around the world builds on the extensive studies of happiness in the advanced economies and finds a remarkable consistency in the determinants of happiness across countries of all different levels of development. On average, stable marriage, good health, friendships, and enough income are good for happiness (with how much income is enough varying across countries), and unemployment, divorce, and economic instability are bad for happiness. We cannot always establish the direction of causality – at least when we are relying on cross-section data, and it may be that happier people are more likely to have friends and/or to get married rather than the other way around. The same

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[3] Micro-econometric happiness equations have the standard form: $W_{it} = \alpha + \beta x_{it} + \varepsilon_{it}$, where W is the reported well-being of individual i at time t, and X is a vector of known variables including socio-demographic and socioeconomic characteristics. Unobserved characteristics and measurement errors are captured in the error term.

[4] The coefficients produced from ordered probit or logistic regressions are remarkably similar to those from OLS regressions based on the same equations, allowing us to substitute OLS equations for ordered logit or probit and then attach relative weights to them. For an extensive and excellent discussion of the methodology underpinning happiness studies – and how it is evolving – see Van Praag and Ferrer-i-Carbonell 2004.

goes for health and earning higher levels of income. There is some evidence suggesting that the causality runs in both directions for many of these variables. Several studies suggest that happier people are healthier, more optimistic, invest more in their future, and perform better in the labor market, among other things.

Age and happiness have a remarkably consistent U-shaped relationship, with the turning point in the mid to late forties, at which point happiness increases with age, as long as health and partnerships stay sound. Indeed, I have studied this relationship in countries as diverse as Uzbekistan and Great Britain, and Chile and Afghanistan, and it holds in all of them, with modest differences in the turning point. Among other things, this relationship reflects an alignment of expectations and reality as people "grow up".

My findings on gender, in contrast, are mixed. Women are typically happier than men in the U.S. and Europe, while there is no difference in Latin America. Men are happier than women in Russia, while in Afghanistan the few women that we were able to interview were happier on average than men, but they were, no doubt outliers (and primarily urban and educated), while we were unable to measure the happiness of those women who were afraid to respond to our interviewers (our priors are that they would be less happy than the average but we have no way of testing that). The differences in these findings may reflect differences in the satisfaction of gender rights in these places, among other things.

Context also mediates the relationship between happiness and religion. In places where religion is a moderate force, such as Europe, the U.S., and Latin America, respondents with faith are happier, on average, than others. The direction of causality is unclear: it may be that happier people are more likely to have faith. There are some indications, though, that religiosity per se (and broadly defined) has positive effects on happiness. A recent study in Europe finds that even atheists are happier when they live in neighborhoods where there are more religious people around them, likely because of the positive social externalities that come from religious organizations (Clark and Lelkes 2009). Yet in places where religion is a more divisive force, such as Afghanistan and Central Asia, there is no consistent relationship between faith and happiness (Graham 2010).

Participating in politics and in civic associations is associated with higher levels of happiness. (Helliwell et al. 2008). Indeed, one study based on research in Swiss cantons finds that there is a happiness effect that comes from political participation (voting in referendums) that is above and beyond that of the public goods and freedom that democracy provides (Frey and Stutzer 2002). My own research in Latin America finds that happier people are more likely to be satisfied with democracy and with market policies (Graham and Pettinato 2002).

Happiness Across Countries:
The Easterlin Paradox – Revisited

In the mid-1970's, Richard Easterlin, the first modern economist to study happiness, uncovered a seeming paradox: average happiness levels did not increase over time as countries grew wealthier, nor was there a clear relationship between average per capita GDP and average happiness levels across countries, once they achieved a certain minimum level of per capita income. This now well known puzzle is called the Easterlin paradox.

In recent years there has been a renewed debate about whether or not the Easterlin paradox holds. Studies by Betsey Stevenson and Justin Wolfers 2008, and by Angus Deaton 2008, based on new data from the Gallup World Poll, find a consistent log-linear, cross-country relationship between income and happiness, directly challenging Easterlin's findings. This has resulted in a heated and at times even acrimonious debate among economists.

Rather ironically, both sides of the debate may be correct. One reason for this is substantive: on the one hand it makes sense that people in richer countries are happier are than those in destitute ones, and, on the other, many things other than income contribute to people's happiness, regardless of their level of income. Many of these things – like freedom, stable employment, and good health – are easier to come by in wealthier countries. Still, there is plenty of variance in their availability, even across countries with comparable income levels.

The other reason is methodological. The later studies use new data from the Gallup World Poll, which includes many more (un-weighted) observations from small poor countries in Africa and from the transition economies than did Easterlin's original studies (as well as his more recent ones). The transition countries in particular have relatively low levels of happiness, in part as a result of happiness levels falling markedly with the painful structural changes that accompanied the collapse of centrally planned economies. And some of the sub-Saharan African countries have had flat or even negative rates of growth over time. Thus rather than a story of higher levels of income pulling up happiness at the top, it may be one of falling or volatile income trajectories pulling down happiness at the bottom.

There are also differences in the questions that are used to measure happiness. Easterlin's work is based on the World Values survey, the U.S. General Social Survey, and the Eurobarometro survey, among others, all of which use open ended happiness or life satisfaction questions (generally speaking, how happy are you with your life? or generally speaking how satisfied are you with your life?, with possible answers ranging from not at all to very on a 4 or 5 point scale). The Gallup World Poll uses Cantril's best possible life question, which is "please imagine a ladder with steps from zero to ten, if the higher the step, the best possible life, on which step of the ladder do you personally feel you stand?"

Both sets of questions are reasonable gauges of happiness, broadly defined, and both correlate in a similar manner with the usual variables that are used to study happiness (discussed above). At the same time, there is some variance in the findings

based on different questions. The best possible life question is more framed than the open-ended happiness questions, providing respondents with a relative component when they are asked to assess their lives. Mario Picon, Soumya Chattopadhyay, and I tested the questions against each other in the Gallup World Poll for Latin America, a region for which we had both sets of questions in the same survey (Graham, Chattopadhyay and Picon 2010b). We found that the answers to the best possible life question correlate more closely with income – both across and within countries – than open ended happiness questions. The difference is greater across countries than within them, meanwhile, suggesting the extent to which un-observables across countries, including cultural differences, influence answers to open ended happiness questions more than they do answers to more framed best possible life questions.

The objectives driving the particular study, meanwhile, dictate which happiness question is most appropriate. If the objective is to find a measure of reported well being that has the most consistency across countries, then a more framed question – such as the ladder of life – may be more appropriate. If the objective is to see how happiness varies across countries and cultures, then a more open-ended question, such as a general happiness question, is more appropriate. Depending on which question is used, the happiness-income relation may vary.

Two more recent studies, one based on world-wide data and another on detailed data for the United States, provide strong support for the basic direction of our findings. They also highlight the different dimensions of happiness. Ed Diener and colleagues, in a study based on the Gallup World Poll (136,000 respondents in 132 nations) finds that income is strongly correlated with how people evaluate their lives, based on the ladder of life question, but only moderately correlated with day-to-day positive feelings like smiling yesterday.[5]

Daniel Kahneman and Angus Deaton, in a study of 450,000 respondents in a Gallup daily survey of U.S. respondents from 2008-2009, also used the ladder question as well as questions about emotional experiences the prior day. They found that hedonic well-being – the emotional quality of an individual's everyday experience – correlated less closely with income than did life evaluation – the thoughts that people have about their life when they think about it – as measured by the ladder of life question. Both questions correlated closely with income (in a log-linear manner) at the bottom end of the income ladder, but the correlation between hedonic well being and income tapered off at about $75,000 per year, while the one between life evaluation and income did not. Thus more money does not necessarily buy more happiness, but less money is associated with emotional pain. Their findings highlight the importance of the distinction between the judgments people make when they think about their life and the feelings they experience as they live it. The former is sensitive to socio-economic status, the latter to circumstances that provoke positive and negative emotions, like spending time with friends or caring for a sick relative.[6]

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[5] Diener et al (2010).
[6] Kahneman and Deaton (2010).

Thus, simply due to methodology – e.g. what sample of countries and which happiness questions are used - it is possible to come to different conclusions about the Easterlin paradox. The substantive question of what beyond income makes people happy is an additional and more complicated part of the story. The following chart, from my previous research with Stefano Pettinato, and based on an open ended happiness question and a very simple linear specification of income, is illustrative. While the richer countries are, on average, happier than the poorer ones, there is no clear income and happiness relationship *within* each set of countries, making it impossible to draw a clear conclusion about the Easterlin paradox. [See Figure 1]

The figure drums home the point that wealthier countries are, on average, happier than destitute ones, but after that, the story is more complicated. Country level averages are influenced, among other things, by cultural differences in the way that people answer surveys, and these cannot controlled for in the cross country comparisons in the way they are when we assess happiness across large samples of individuals within and across countries.

Cross country comparisons are also influenced by things which are difficult or impossible to measure, such as the nature of public goods. Some cross country studies find, for example, that countries with higher levels of social capital and with more democracy are happier, on average. And these variables correlate closely but not perfectly with income. While at some level we can isolate their specific effects, cross country comparisons in this arena are rift with endogeneity problems.

The Paradox of Unhappy Growth, Happy Peasants and Frustrated Achievers

We know that within societies wealthier people are happier than the average, but after that the income-happiness relationship becomes more complicated. At the macroeconomic level, the relationship between happiness and income may be affected as much by the pace and nature of income change as it is by absolute levels. Both the behavioral economics and happiness literature highlight the extent to which individuals adapt very quickly to income gains and disproportionately value income losses.

Based on the Gallup World Poll in 122 countries around the world, Eduardo Lora and collaborators find that countries with higher levels of per capita GDP have, on average, higher levels of happiness. Yet controlling for levels, they find that individuals in countries with positive growth rates have lower happiness levels. When they split the sample into above and below median growth rates, the unhappy growth effect only holds for those that are growing at rates above the median. [Table 1] In related work, Lora and I have called this the "paradox of unhappy growth" (Graham and Lora 2009).[7]

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[7] It is also possible that initially happier countries grew faster than initially unhappy countries with the same income (because they had happier, more productive workers?) and thus the coefficient on growth in a regression which compares the two with final income and final happiness is negative. I thank Charles Kenny for raising this point.

Deaton (2008) and Stevenson and Wolfers (2008) also find evidence of an unhappy growth effect based on the Gallup World Poll. Stevenson and Wolfers find insignificant effects of growth in general, but strong negative effects for the first stages of growth in "miracle" growth economies, such as Ireland and South Korea during their take-off stages. The negative effect becomes insignificant in later stages. Deaton finds that the inclusion of region dummies make a major difference to the results, with the significance being taken up by Africa and Russia, regions which were both fast growing at the time. It is important to distinguish between levels and change effects here, as happiness levels in Russia are lower than their income levels would predict, while in some – but not all – African countries, such as Nigeria, levels are higher than income levels would predict. Both seem to be unusually unhappy at times of rapid growth, for any number of plausible reasons. It is also possible that the unhappiness started before the growth and not after it.

Soumya Chattopadhyay and I (2008), using Latinobarometro data, also find hints of an unhappy growth effect, or at least we find an irrelevant growth effect. In contrast to the above studies, we use individual rather than average country happiness on the left hand side, with the usual socio-demographic and economic controls (including individual income) and clustering the standard errors at the country level. When we include the current GDP growth rate in the equation, as well as the lagged growth rate from the previous year (controlling for levels), we find that the effects of growth rates – and lagged growth rates – are, for the most part, negative but insignificant. [Table 2]

Another way of interpreting these findings, as noted by both Justin Wolfers and Charles Kenny, is that past income still matters to well being but is less important than current income.[8] Thus countries that started from lower income levels in past years (remember the growth rate is an average of the past five years) had lower happiness in those years than those with higher incomes. So the unhappy "growth" effect may be due to the starting point rather than to the effects of growth. In short, it is better to have had high levels of income for a long time, than to start at lower levels and increase them quickly.

The difficulty in disentangling these two interpretations is that both levels and changes effects are likely at play. The unhappy growth paradox focuses on the changes effect, while the Wolfers and Kenny interpretation focuses on levels. Stevenson and Wolfers' own work (with Sacks, 2010) notes that short term changes seem to have a more marked impact on subjective well being than long term trends.

To the extent the findings are driven by the changes effect, there are a number of factors that are easily identifiable, such as the insecurity that is attached to rapidly changing rewards structures and macroeconomic volatility, and the frustration that rapidly increasing inequality tends to generate. The findings highlight how individuals are better able to adapt to the gains that accompany rapid growth than to the potential losses and uncertainty that are also associated with it. They suggest that people are often

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[8] I thank both Justin Wolfers and Charles Kenny for thoughtful conversations on this point.

more content in low growth equilibrium than in a process of change which results in gains but instability and unequal rewards at the same time.

The within country income and happiness story reflects this paradox as well. I have described the micro-level version as the "paradox of happy peasants and frustrated achievers. It is typically not the poorest people that are most frustrated or unhappy with their conditions or the services that they have access to. Stefano Pettinato and I, based on research in Peru and Russia, found that a majority of our very poor and destitute respondents report high or relatively high levels of well-being, while much wealthier ones with more mobility and opportunities report much greater frustration with their economic and other situations (Graham and Pettinato 2002). The paradox may be because the poor respondents have a higher natural level of cheerfulness or because they have adapted their expectations downwards. The upwardly mobile respondents, meanwhile, have constantly rising expectations (or are naturally more curmudgeon-like). And a third explanation is also possible: that more driven and frustrated people are more likely to seek to escape situations of static poverty (via channels such as migration), but even when they achieve a better situation, they remain more driven and frustrated than the average. Some combination of all three explanations could indeed be at play.

The poor, some of whom rely on subsistence agriculture rather than earnings, have little to lose and have likely adapted to constant insecurity. Recent research on job satisfaction shows that reported job insecurity is actually higher among formal sector workers with more stable jobs than it is among informal sector workers. The latter have either adapted to higher levels of income and employment insecurity (and/or have selected into jobs with less stability but more freedom) (Graham and Lora 2009).

Other studies find analogous results in China, where urban migrants are materially better off than they were in their pre-migration stage, yet report higher levels of frustration with their material situation. Upon migrating, their reference norm quickly shifted to other urban residents rather than their previous peers in rural areas (Knight and Gunatilaka 2007; Whyte and Hun 2006). Very poor rural migrants, meanwhile, are much more likely to use their situation the year before as a reference point than they are comparisons with their neighbors, not least because they have less of an informational base upon which to make those comparisons (Davey, Chen, and Lau 2009).

Individuals seem to adapt much more to income gains than to status gains (DiTella and MacCulloch 2006). In the context of the frustrated achievers in very volatile emerging markets contexts, where currencies are often shifting in value and where the rewards to particular skill and education sets are in flux, as are social welfare systems, income gains may seem particularly ephemeral.[9]

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[9] A related body of research examines the effects of inequality and relative income differences on well-being, and how inequality mediates the happiness-income relationship. At some level, individuals probably adapt to inequality as they do to other things (and are less good at adapting to changes in inequality). I do not cover the topic here; it merits an entire paper on its own. (Graham and Felton 2006, Luttmer 2005).

Crises bring about both significant losses and uncertainty, and their unhappiness effects dwarf those of unhappy growth. Not surprisingly, they result in movements in happiness of an unusual magnitude. While national average happiness levels typically do not move much, they surely do at times of crisis - although they eventually adapt back. Our research on crises in Russia, Argentina, and the United States suggests that the unhappiness effects of crises are as much due to the *uncertainty* they generate as they are to the actual drops in income levels that they cause (as people have a much harder time adapting to uncertainty than to one time shocks). (Graham and Chattopadhyay 2008a; Graham, Chattopadhyay, and Picon 2010a; Graham and Sukhtankar 2004).

The Adaptation Conundrum

Although my research and that of others has established that the standard determinants of happiness demonstrate fairly stable patterns world-wide, the same research throws a monkey wrench into the equation. While there are stable patterns in the determinants of happiness world-wide, there is also a remarkable human capacity to adapt to both prosperity and adversity. Thus many people living in conditions of prosperity report to be miserable, while many others living in contexts of remarkable adversity report to be very happy (Graham, forthcoming).

People in Afghanistan are as happy as Latin Americans (and report to smile as often as well) - above the world average - and Kenyans are as satisfied with their health care as Americans. My research with Eduardo Lora finds that cross-country patterns in health satisfaction are better explained by cultural norms of health than they are by objective indicators such as life expectancy or infant mortality. Within Latin America, Guatemalans are more satisfied with their health care than are Chileans, even though objective health standards in the former are near Sub-Saharan African levels, while they are on par with OECD standards in the latter.

Crime makes people unhappy, but it matters less to happiness when there is more of it; the same goes for both corruption and obesity. Soumya Chattopadhyay and I find that crime and corruption have negative effects on reported happiness across Latin America, but those effects are mitigated by how common those phenomena are.

In each case, we created a variable for each respondents' unexplained probability of being a victim of crime or corruption victim – e.g. the probability that was not explained by the usual variables such as age, income, gender, and rural versus urban. We found that this unexplained probability – a proxy for higher crime and corruption norms – mitigated the negative well being effects of crime and corruption victimization. [Table 3] In places where they are common occurrences, the well being effects are lower, most likely because people have come to expect these phenomena and there is less stigma associated with being victimized. Our findings also hold for Africa and Afghanistan (Graham 2010).

Andrew Felton and I find that the obese in the United States are less happy than the average, but the effects are much stronger in low obesity, high skilled professional

cohorts than they are in high obesity, low skilled cohorts or in regions where obesity is the norm (Graham 2008). [Figure 2] Again, some combination of reduced stigma and adaptation are likely at play. In contrast, in Russia, where obesity is still seen as a sign of prosperity, the obese are, on average, happier than the non-obese, despite the associated health consequences. Similarly, several studies of the unemployed find that the unhappiness effects associated with the condition are mitigated by higher levels of unemployment (and therefore less stigma). (Clark and Oswald 1994; Stutzer and Lalive 2001; Eggers, Gaddy, and Graham 2006). An extreme analogue of al of these findings is recent work showing that suicide rates are higher in happier states in the United States, suggesting that there is stigma associated with being unhappy when the norm is to be happy (Daly et al. 2010).

Freedom and democracy, meanwhile, make people happy, but they matter less when these goods are less common. Cross country research by John Helliwell and colleagues finds that the coefficient on freedom (on happiness) is higher in those countries that have higher average levels of freedom, while the coefficient on corruption is lower in those countries that have more corruption. The bottom line is that people can adapt to tremendous adversity and retain their natural cheerfulness, while they can also have virtually everything – including good health – and be miserable.

One thing that people have a hard time adapting to is uncertainty. For example, my newest research – with Soumya Chattopadhyay and Mario Picon and based on a new Gallup survey of approximately 1000 Americans per day from January 2008 to the present – shows that average happiness in the U.S. declined significantly as the Dow fell with the onset of the crisis. It fell 11% from 6.94 (on an 11 point scale) prior to the onset of the crisis, to a low of 6.19 on November 16, 2008. Yet when the market stopped bottoming out and some semblance of stability was restored in late March 2009, average happiness recovered much faster than the Dow. By June 2009 it was higher than its pre-crisis level: 7.15 on June 21 - even though living standards and reported satisfaction with those standards remained markedly lower than they were prior to the crisis, and levels remained that high at least through 2009. Once the period of uncertainty ended, people seemed to be able to return to previous happiness levels, while making do with less income or wealth (Graham, Chattopadhyay, and Picon 2010a). [See Figure 3]

There are analogous findings in the health arena. Eduardo Lora, Lucas Higuera, and I compared the life and health satisfaction effects of various health conditions, based on Gallup data for Latin America for 2007, a data set which also included respondents' scores on an indicator of self reported health, the Euro-Quality Five Dimensions Index (EQ5D), which correlates very closely with objective indicators of health. We found that problems with mobility and with self care had very small if any lasting effects on life and health satisfaction, while those associated with uncertainty, such as pain and anxiety, had much stronger effects. [Table 4] While direction of causality likely plays a role (more anxious people are more likely to report unhappiness), our findings suggest that respondents are, again, better able to adapt to the unpleasant certainty of mobility and other physical conditions than they are to the uncertainty surrounding unpredictable pain

and anxiety. Our research is supported by that of others on conditions such as uncontrolled epilepsy (Graham, Higuera, and Lora 2009).

In general, people seem to be better at adapting to unpleasant certainty than they are to uncertainty. It is surely a good thing that most Americans have been able to adapt to the economic costs of the crisis and return to their natural happiness levels. And even better that the average person in Afghanistan can maintain cheerfulness and hope despite the situation they live in. While this capacity to adapt may be a good thing from the perspective of individual psychological welfare, it may also result in collective tolerance for conditions that would be unacceptable by most people's standards. This may help explain why different societies tolerate such different norms of health, crime, and governance, both within and across countries. And without understanding these norm differences, it is very difficult to craft policies to improve health, living conditions, and governance structures.

Yet this capacity to adapt – and the mediating role of norms and expectations – poses all sorts of measurement and comparison challenges – particularly in the study of the relationship between happiness and income. Can we really compare the happiness levels of a poor peasant in India, who reports to be very happy due to low expectations and/or due to a naturally cheery character, with those of a successful and very wealthy CEO, who reports to be miserable - due to his/her relative rankings compared to other CEO's, or to a naturally curmudgeonly character?

At one level it suggests that happiness is all relative. At another it suggests that some unhappiness may be necessary to achieve economic and other sorts of progress. The examples of migrants who leave their home countries – and families – to provide better futures for their children, or revolutionaries who sacrifice their lives for the broader public good, come to mind, among others. This also begs more difficult questions. One is whether outside observers – such as development practitioners - should tell the poor peasant in India how miserable he/she is according to objective income measures in order to encourage that peasant to seek a "better" life. A related question is whether we should worry more about addressing the millionaire's misery or increasing the peasant's happiness.

Challenges for Policy

Happiness surveys have provided us with a new and powerful tool to study and better understand the determinants of human welfare and well being across and within countries, and across time as countries undergo the at times unsettling process of economic development. The findings therein are surely relevant to a host of questions that policymakers care about, and can, at one level, inform better policy decisions. And the consistency in the relationship of the key variables that correlate with happiness across countries of all different levels of development allows us to test for variance in the effects of all sorts of contextual variables, which range from macroeconomic and institutional regimes to the environment to changes in policy regimes.

Accepting that happiness surveys and their results provide us with a great many opportunities to broaden our understanding of human welfare and therefore to craft policies to enhance it, there are a number of unanswered questions that must be resolved – or at least further discussed – before we can think about happiness as a benchmark for progress or as an objective of development policy. Among these are the adaptation conundrum, the definition of happiness, inter-temporal trade-offs, and cardinality versus ordinality.

The adaptation conundrum, in my view, may be the most difficult question of all to resolve. On the one hand, it is a marvelous thing that individuals can adapt to all sorts of adversity and maintain their natural cheerfulness and psychological welfare. On the other, as noted above, it may result in collective tolerance for bad equilibrium. The seeming variance in this tolerance across societies, meanwhile, suggests that happiness is all relative. If that is the case, how can we use it as a benchmark of progress? The within country findings, meanwhile, suggest that it is not all relative: there are clear patterns across income, age, and employment cohorts, among others. We do not yet have a complete answer to this question.

One issue, of course, is whether the happy peasants are better or less able to change their situation. Are our frustrated achievers unhappy because the process of change is painful, or were they unhappy and more likely to seek out change in the first place? Are migrants that report to be unhappy today unhappy because their expectations have gone up and their reference norms for income have changed, or because they have left their family behind find longer term fulfillment – and happiness – in providing their children with an opportunity to lead better lives? While we cannot answer these questions at this juncture, they must be addressed, both because they can help resolve the question of how best to utilize happiness research in the policy arena, and because they are fundamental to development more generally.

This happy peasant and frustrated achiever (or miserable millionaire) paradox raises the related question of the appropriate definition of happiness. What makes happiness surveys such a useful research tool is their open ended nature. The definition of happiness is left up to the respondent, and we do not impose a U.S. conception of happiness on Chinese respondents, or a Chinese definition on Chilean ones. The open ended nature of the definition results in the consistent patterns in the basic explanatory variables across respondents world-wide, in turn allowing us to control for those variables and explore variance in the effects of all sorts of other things on happiness, ranging from crime rates to commuting time to the nature of governing regimes.

At the same time, as we think about happiness as a measure of welfare with relevance to policy – something that is increasingly in the public debate - then the definition does matter. Are we thinking of happiness as contentment in the Benthamite sense, or as a fulfilling life in the Aristotelian sense? There is still much room for debate. My studies suggest that respondents' conceptions of happiness vary according to their norms, expectations, and ability to adapt, among other things. Our priors as economists and policymakers likely suggest that some conceptions of happiness – such as the

opportunity to lead a fulfilling life - are worth pursuing as policy objectives, while others – such as contentment alone - are not. Yet that choice entails normative judgments and a debate which we have not had. The answer to that question, meanwhile, is likely to vary across societies. Some societies, like the United States, seem to place more value on the ability of individuals to pursue opportunities, while others place more value on guaranteeing at least some level of collective welfare. Those normative differences could well influence varying conceptualizations of happiness across societies.

Another related question is how to measure inter-temporal trade-offs in happiness. Do we care more about happiness today or happiness tomorrow? Surely there are objectives that are worth pursuing – such as reducing fiscal deficits, reforming malfunctioning public sectors, and overthrowing despots, among others – that are likely to increase unhappiness today to increase happiness in the future. Perhaps answering this is as simple as the income accounting framework suggests: individuals vary in their ability to trade-off income today for income tomorrow and have different discount rates. The same might apply to happiness: some people value contentment today more than fulfillment tomorrow, while others are more vested in the future. And, as in the case of discount rates, people's capacity to make these tradeoffs depends to some extent on their prospects of upward mobility (or to have a vision of the future more broadly).

On the other hand, there may be additional complexities when trading off happiness today for happiness tomorrow. Trading off a dollar today for two tomorrow, for example, is distinct from making a sacrifice today - such as working very hard in graduate school - for an outcome that you expect will make you happier in the future - such as better status and more freedom in your future career, because the prospect of the future may make you less unhappy about your current sacrifice or state.[10] Again, while this question is not un-resolvable, it is one that still needs to be addressed.

Finally, there is the question of cardinality versus ordinality. Responses to happiness surveys are categorical and ordinal in nature; respondents place themselves in categories that range from very unhappy to very happy, but these categories do not have cardinal weights. Yet a policy framework would require choices, not least as resources are limited. Do we care more about reducing the unhappiness of the miserable rather than increasing the happiness of the already happy? From a development perspective, do we care as much about the misery of a miserable millionaire who lives in a country with very high average levels of income and widely accessible public goods as that of a person living in a very poor context who reports to be unhappy? Again, it is surely possible to imagine both a theoretical framework and an empirical base upon which to test these questions, but we have not yet done so.

While we cannot resolve all of these questions at this juncture, the discussion raises issues that are important to development policy. These conundrums will give economists fodder for debate – about happiness and income, and beyond - for several years to come. Despite the difficulty that happiness as a concept poses for both method and economic philosophy, it forces us to think deeply about what measures of human

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[10] I thank an anonymous reviewer for raising this excellent point.

well being are the most accurate benchmarks of economic progress and human development. We may reach a point in the future where we are comparing happiness across and within countries in the same way that we now utilize income measures. To date, however, there are still many unanswered questions that both researchers and broader publics more generally must address.

References

Blanchflower, D. and Oswald, A. 2004. "Well-being over time in Britain and the USA." *Journal of Public Economics* 88, 1359–87.

Clark, Andrew and Andrew Oswald. 1994. "Unhappiness and Unemployment." *Economic Journal* 104, 648–59.

Clark, Andrew and Orsolya Lelkes. 2009. "Let Us Pray: Religious Interactions in Life Satisfaction." Mimeo, Paris School of Economics, January.

Daly, Mary C., Andrew Oswald, Daniel Wilson, and Stephen Wu. 2010. "The Happiness-Suicide Paradox". *Working Paper*. Department of Economics, University of Warwick, United Kingdom.

Davey, Gareth, Zhenghui Chen, and Anna Lau. 2009. "`Peace in a Thatched Hut – that is Happiness': Subjective Wellbeing Among Peasants in Rural China". *Journal of Happiness Studies*, Vol. 10: 239-252.

Deaton, Angus. 2008. "Income, Health, and Well-Being around the World: Evidence from the Gallup World Poll." *Journal of Economic Perspectives*, Vol. 22, No.2, Spring.

Diener, Edward, et al., "Money Can Buy at least one kind of Happiness", *Journal of Personality and Social Psychology*, July 2010

Diener, Ed and Martin Seligman. 2004. "Beyond money: toward an economy of well-being." *Psychological Science in the Public Interest* 5 (1), 1–31.

DiTella, Rafael and Robert MacCulloch. 2006. "Happiness and Adaptation to Income and Status: Evidence from an Individual Panel." Mimeo, Harvard University.

Easterlin, Richard. 1974. "Does economic growth improve the human lot? Some empirical evidence." P. David and M. Reder, eds. *Nations and Households in Economic Growth*. New York: Academic Press.

Eggers, Andrew, Clifford Gaddy, and Carol Graham. 2006. "Well-being and Unemployment in Russia in the 1990's: Can Society's Suffering be Individuals' Solace?" *Journal of Socioeconomics*, January.

Frey, Bruno and Alois Stutzer. 2002. *Happiness and Economics*. Princeton: Princeton University Press.

Graham, Carol. Forthcoming. "Adaptation to Prosperity and Adversity: Insights from Happiness Studies from Around the World." *World Bank Research Observer*.

Graham, Carol. 2008. "Happiness and Health: Lessons – and Questions – for Policy". *Health Affairs*, Vol. 27, No. 1, January-February.

Graham, Carol. 2010. *Happiness around the World: The Paradox of Happy Peasants and Miserable Millionaires*. Oxford: Oxford University Press.

Graham, Carol and Soumya Chattopadhyay. 2008a. Gross National Happiness and the Economy. *The Globalist*. October 24.

Graham, Carol and Soumya Chattopadhyay. 2008b. "Public Opinion Trends in Latin America (and the U.S.): How Strong is Support for Markets, Democracy, and Regional Integration?", Paper prepared for the Brookings Partnership for the Americas Commission, Washington, D.C., June.

Graham, Carol, Soumya Chattopadhyay, and Mario Picon. 2010a. "Adapting to Adversity: Happiness and the 2009 Economic Crisis in the United States." *Social Research: An International Quarterly*, Vol. 77, No. 2.

Graham, Carol, Soumya Chattopadhyay, and Mario Picon. 2010b. "The Easterlin Paradox Re-visited: Why Both Sides of the Debate May be Correct." In Ed Diener, John Helliwell, and Daniel Kahneman, eds., *International Differences in Well-Being*. Oxford: Oxford University Press.

Graham, Carol and Andrew Felton. 2006. "Does Inequality Matter to Individual Welfare: An Exploration Based on Happiness Surveys in Latin America." *Journal of Economic Inequality*, 4, 107-122.

Graham, Carol and Eduardo Lora, eds. 2009. *Paradox and Perception: Measuring Quality of Life in Latin America*. Washington, D.C.: The Brookings Institution Press.

Graham, Carol, Lucas Higuera, and Eduardo Lora. 2009. "Valuing Health Conditions: Insights from Happiness Surveys Across Countries and Cultures." *IDB Research Working Paper Series*, No. 100, Washington, D.C.: Inter-American Development Bank.

Graham, Carol and Stefano Pettinato. 2002. *Happiness and Hardship: Opportunity and Insecurity in New Market Economies*. Washington, D.C.: The Brookings Institution Press.

Graham, Carol and Sandip Sukhtankar. 2004. "Does economic crisis reduce support for markets and democracy in Latin America? Some evidence from surveys of public opinion and well-being." *Journal of Latin American Studies* 36, 349–77.

Helliwell, John, A. Harris, and Haifang Huang. 2008. "International Differences in the Determinants of Life Satisfaction." Mimeo, University of British Columbia.

Kahneman, Daniel, and Angus Deaton, "Does Money Buy Happiness….Or Just a Better Life", Mimeo, Princeton University, June 2010

Knight, J. and R. Gunatilaka. 2007. "Great Expectations? The Subjective Well-being of Rural-Urban Migrants in China", *Discussion Paper Series* No. 322, Department of Economics, University of Oxford, April.

Lora, Eduardo. 2008. *Beyond Facts: Understanding Quality of Life in Latin America*. Washington, D.C.: Inter-American Development Bank.

Luttmer, Erzo. 2005. "Neighbors as Negatives: Relative Earnings and Well-being." *Quarterly Journal of Economics,* Vol. 120, No. 3, August.

Sacks, D., Stevenson, B., and Wolfers, J. 2010. "Subjective Well-Being, Income, Economic Development, and Growth", Paper Presented to the Annual Bank Conference on Development Economics, Stockholm, Sweden, June.

Stevenson, Betsey and Justin Wolfers. 2008. "Economic Growth and Subjective Well-Being: Re-assessing the Easterlin Paradox." *Brookings Panel on Economic Activity*, April.

Stutzer, Alois and Rafael Lalive. 2004. "The Role of Social Work Norms in Job Searching and Subjective Well-being." *Journal of the European Economic Association* 2, 696–719.

Van Praag, Bernard and Ada Ferrer-i-Carbonell. 2004. *Happiness Quantified: A Satisfaction Calculus Approach*. Oxford: Oxford University Press.

Whyte, M., and C. Hun. 2006. "Subjective Well-being and Mobility Attitudes in China", Mimeo, Harvard University

Figure 1: Happiness and Income Per Capita, 1990s
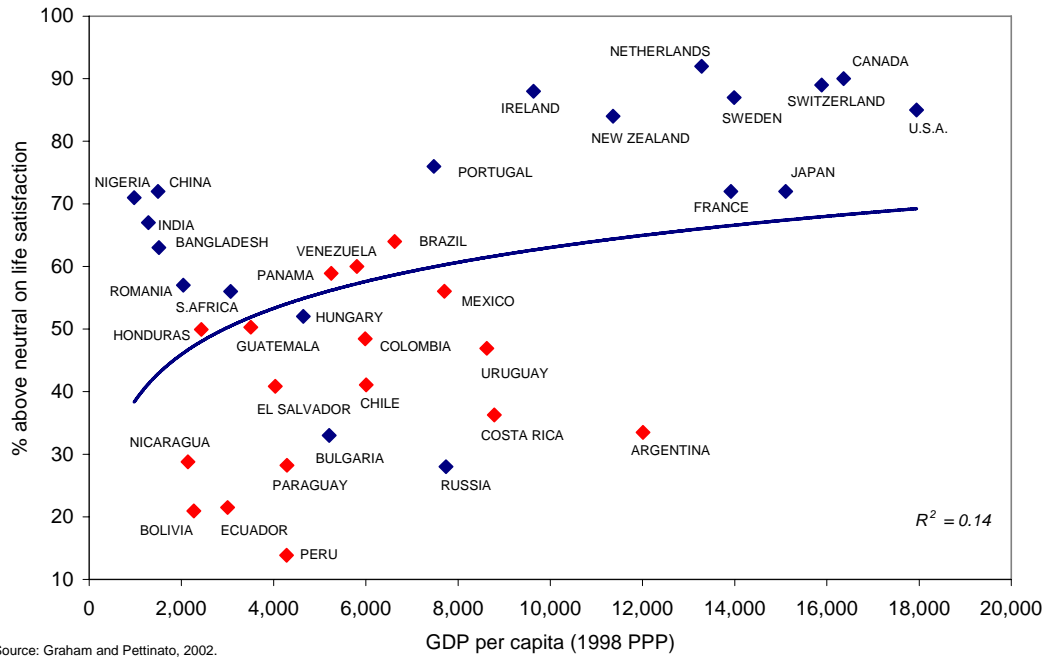
Source: Graham and Pettinato, 2002.

Figure 2: Obesity and Unhappiness
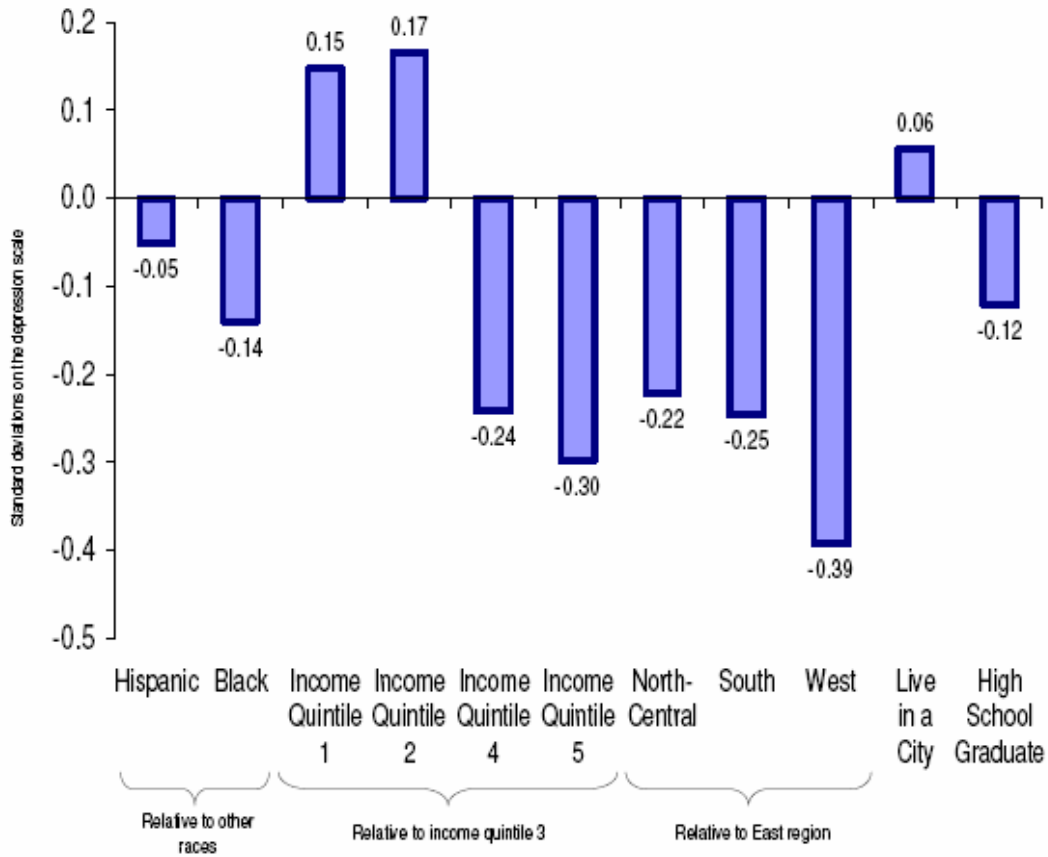
Source: Graham 2008

Figure 3: Happiness and Crisis in the United States
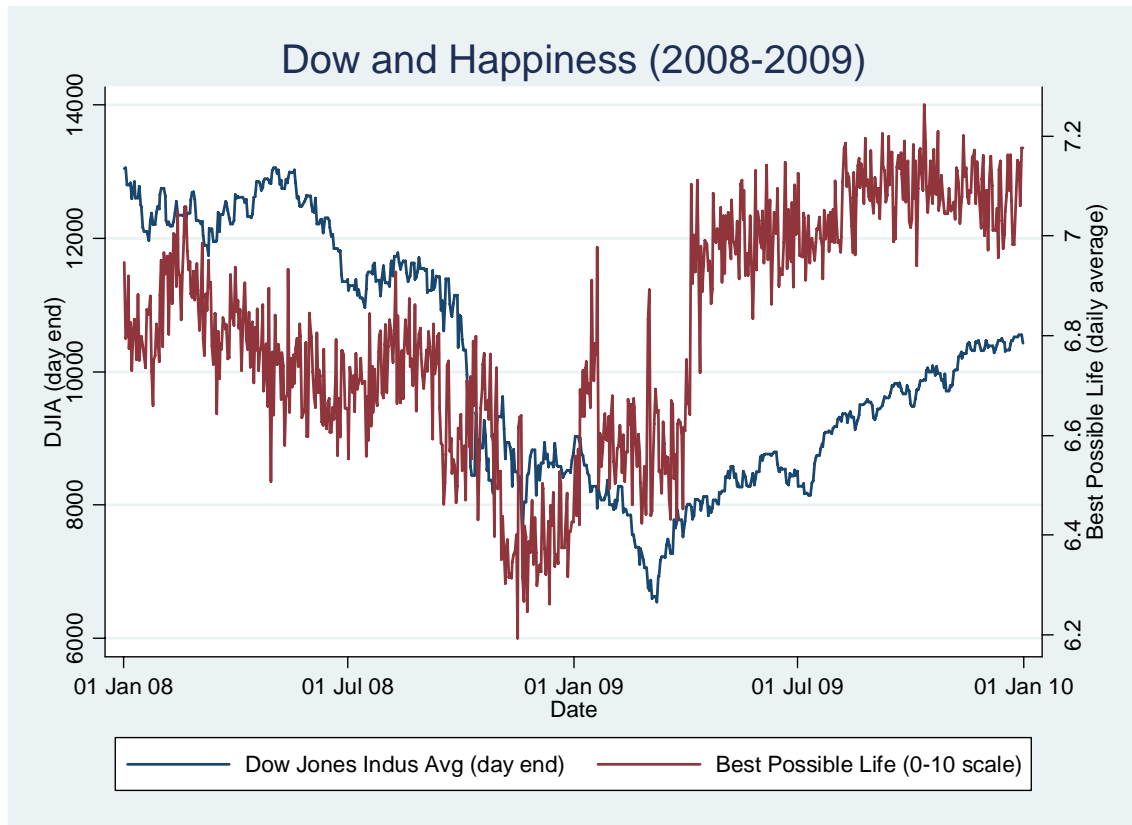
Source: Graham, Chattopadhyay, and Picon. 2010. Based on data from Gallup Daily Poll.

Table 1: The Paradox of Unhappy Growth

The relationship among satisfaction, income per capita and economic growth

	122 countries	
	GDP per capita	Economic growth
Life satisfaction	0.788 ***	-0.082 ***
Standard of living	0.108 ***	-0.018 ***
Health satisfaction	0.017 *	-0.017 ***
Job satisfaction	0.077 ***	-0.006
Housing satisfaction	0.084 ***	-0.006

Source: IDB - RES using Gallup World Poll 2006 - 2007 data.

Source: Lora 2008

Notes:

1. OLS regression; dependent variable is average life satisfaction per country, growth rates are averaged over the past five years. N=122
2. The coefficients on GDP per capita are marginal effects; how much does the satisfaction of two countries differ when one has two times the incomes of another. The coefficients on growth imply how much an additional percentage point of growth affects life satisfaction.
3. The life satisfaction variable is on a 0 to 10 scale; all others are the percentage of respondents that are satisfied.

Table 2: Happiness and Growth in Latin America

Dependent variable: happy				
age	-0.0240	-0.0230	-0.0230	-0.0220
	(4.40)**	(4.34)**	(4.23)**	(4.29)**
age2	0.0000	0.0000	0.0000	0.0000
	(3.53)**	(3.88)**	(3.72)**	(3.76)**
gender	0.0330	0.0070	0.0070	0.0070
	-1.5500	-0.4800	-0.5200	-0.4800
married	0.0790	0.0910	0.0940	0.0930
	-1.7800	(2.40)*	(2.56)*	(2.60)**
edu	-0.0410	-0.0260	-0.0280	-0.0260
	-1.5300	-1.1800	-1.2900	-1.2800
edu2	0.0010	0.0010	0.0010	0.0010
	-0.8800	-0.7000	-0.7900	-0.7600
socecon	0.2110	0.2160	0.2150	0.2170
	(5.22)**	(5.76)**	(5.77)**	(5.78)**
subinc	0.2900	0.2900	0.2940	0.2920
	(8.78)**	(8.02)**	(8.36)**	(8.41)**
ceconcur	0.2340	0.2260	0.2360	0.2370
	(9.04)**	(9.50)**	(7.66)**	(8.92)**
unemp	-0.1810	-0.1760	-0.1900	-0.1880
	(2.05)*	(3.45)**	(3.59)**	(3.69)**
poum	0.1800	0.1890	0.1830	0.1840
	(4.48)**	(5.42)**	(5.56)**	(5.59)**
domlang	0.5380	0.4810	0.4840	0.4810
	(2.73)**	(2.48)*	(2.48)*	(2.48)*
vcrime	-0.1160	-0.1060	-0.1060	-0.1080
	(2.30)*	(2.98)**	(2.89)**	(3.08)**
els	0.0900			
	(5.48)**			
growth_gdp	0.0170	-0.0090	-0.0040	-0.0060
	-0.5300	-1.1100	-0.6000	-0.7700
gini	-0.0170	-0.0270	-0.0240	-0.0240
	-0.7000	-1.2400	-1.1200	-1.1900
gdpgrl1			-0.0190	-0.0180
			-1.4000	-0.9900
gdpvol2				0.0030
				-0.1400
Observations	34808	67308	67308	67308
Absolute value of z statistics in parentheses				
* significant at 5%; ** significant at 1%				
Regressions clustered at a country level				

Source: Graham and Chattopadhyay 2008b.

Table 3: The Effects of Crime and Corruption on Happiness in Latin America

Explanatory variables	Dependent Variable: happy			
age	**-0.0230**	**-0.0200**	**-0.0210**	**-0.0180**
	(0.000)**	(0.000)**	(0.000)**	(0.005)**
age2	**0.0000**	**0.0000**	**0.0000**	**0.0000**
	(0.000)**	(0.000)**	(0.000)**	-0.051
gender	**0.0070**	**0.0210**	**0.0400**	**0.0240**
	-0.614	-0.201	(0.050)*	-0.199
married	**0.0850**	**0.0600**	**0.0630**	**0.0620**
	(0.000)**	(0.001)**	(0.004)**	-0.104
edu	**-0.0220**	**-0.0260**	**-0.0280**	**-0.0240**
	(0.000)**	(0.000)**	(0.000)**	-0.385
edu2	**0.0010**	**0.0010**	**0.0010**	**0.0010**
	-0.077	(0.038)*	(0.024)*	-0.451
socecon	**0.2110**	**0.2140**	**0.2280**	**0.2280**
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
subinc	**0.2870**	**0.3030**	**0.3060**	**0.3140**
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
ceconcur	**0.2190**	**0.1970**	**0.2350**	**0.2180**
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
unemp	**-0.1770**	**-0.2170**	**-0.1990**	**-0.2300**
	(0.000)**	(0.000)**	(0.000)**	(0.002)**
poum	**0.1750**	**0.1410**	**0.1470**	**0.1530**
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
domlang	**0.5950**	**0.6520**	**0.6360**	**0.5490**
	(0.000)**	(0.000)**	(0.000)**	(0.006)**
vcrime	**-0.0960**	**-0.5360**	**-1.0770**	**-0.8930**
	(0.000)**	(0.000)**	(0.000)**	-0.239
crresid		**0.4460**	**1.0170**	**0.8020**
		(0.000)**	(0.000)**	-0.286
els			**0.1000**	
			(0.000)**	
vcrimel1 (1 year lag)			**-1.4710**	-1.8190
			(10.77)**	-1.67
vcrimel2 (2 year lag)			**1.8550**	1.6760
			(15.52)**	-1.47
Control for gini	No	No	No	Yes
Control for GDP growth rate	No	No	No	Yes
Control for lagged GDP growth rates	No	No	No	Yes
Absolute value of z statistics in parentheses				
* significant at 5%; ** significant at 1%				

Explanatory variables	Dependent Variable: happy			
age	**-0.0230**	**-0.0210**	**-0.0230**	**-0.0190**
	(0.000)**	(0.000)**	(0.000)**	(0.003)**
age2	**0.0000**	**0.0000**	**0.0000**	**0.0000**
	(0.000)**	(0.000)**	(0.000)**	(0.035)*
gender	**0.0100**	**0.0410**	**0.0500**	**0.0470**
	-0.473	(0.014)*	(0.014)*	-0.075
married	**0.0840**	**0.0620**	**0.0710**	**0.0690**
	(0.000)**	(0.001)**	(0.001)**	(0.030)*
edu	**-0.0240**	**-0.0350**	**-0.0400**	**-0.0380**
	(0.000)**	(0.000)**	(0.000)**	-0.129
edu2	**0.0010**	**0.0010**	**0.0010**	**0.0020**
	-0.053	(0.002)**	(0.006)**	-0.263
socecon	**0.2120**	**0.2270**	**0.2360**	**0.2400**
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
subinc	**0.2910**	**0.3150**	**0.3120**	**0.3280**
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
ceconcur	**0.2170**	**0.1840**	**0.2310**	**0.2120**
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
unemp	**-0.1680**	**-0.2000**	**-0.1890**	**-0.2190**
	(0.000)**	(0.000)**	(0.000)**	(0.001)**
poum	**0.1760**	**0.1580**	**0.1690**	**0.1730**
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
domlang	**0.5970**	**0.6680**	**0.6450**	**0.5880**
	(0.000)**	(0.000)**	(0.000)**	(0.001)**
vcorr	**-0.1570**	**-0.9160**	**-0.9070**	**-1.1420**
	(0.000)**	(0.000)**	(0.000)**	(0.017)*
corrresid		**0.8090**	**0.8330**	**1.0340**
		(0.000)**	(0.000)**	(0.027)*
els			**0.0970**	
			(0.000)**	
Control for gini	No	No	No	Yes
Control for GDP growth rate	No	No	No	Yes
Control for lagged GDP growth rates	No	No	No	Yes

Source: Graham and Chattopadhyay 2008b.

Table 4: Life and Health Satisfaction Costs of Various Conditions

	Health satisfaction 0-10			Life satisfaction 0-10	
	(1)	(2)		(3)	(4)
EQ5D index	5.188***			1.436***	
Mobility moderate		-0.460***			0.086
Mobility extreme		-0.032			0.091
Self care moderate		-0.142			0.157
Self care extreme		-0.236			0.281
Usual activities moderate		-0.690***			-0.230*
Usual activities extreme		-1.136*			-0.498
Pain moderate		-1.016***			-0.135
Pain extreme		-2.143***			-0.477**
Anxiety moderate		-0.480***			-0.303***
Anxiety extreme		-0.883***			-0.786***
Observations	8249	8249		8250	8250
Countries	17	17		17	17

*** p<0.01, ** p<0.05, * p<0.1

Results presented in this Exhibit are excerpts from columns 3, 4, 7 and 8 in Appendix 1, where full regression results are presented.

Source: Graham, Higuera, and Lora 2009