



# **Poor but Happy?**

## **Understanding Happiness in Bangladesh**

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***Badrun Nessa Ahmed***

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Members of the Examining Committee:

Prof. Dr. Arjun Bedi

Dr. Lorenzo Pellegrini

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***Inquiries:***

**Postal address:**

Institute of Social Studies  
P.O. Box 29776  
2502 LT The Hague  
The Netherlands

**Location:**

Kortenaerkade 12  
2518 AX The Hague  
The Netherlands

Telephone: +31 70 426 0460

Fax: +31 70 426 0799

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## List of Acronyms

GNP	Gross National Product
WVS	World Value Survey
HPI	Happy Planet Index
WHS	The World happiness survey
GDP	Gross Domestic Product
HDI	Human Development Index
OLS	Ordinary Least Squares
VIF	Variance Inflation Factor
OAA	Old Age Allowance

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## **Abstract**

Bangladesh is considered as one of the poorest countries in the world. However, so far research identifies that people in Bangladesh enjoy higher level of happiness despite of their low income compared to many other countries in the world with high per-capita income. This paper explores the phenomenon by identifying the correlates of happiness through analyzing quantitative data from World Value Survey. We employ both cross section and pseudo panel analysis to identify the effects and changes over time in happiness. The results from our empirical model based on cross section and pseudo panel, suggest that income is one of the core determinants of happiness. Individuals do care about their social class and relative social position in the area they live. Besides, the effects from variables such as: freedom of choice and health status are strong variables to influence individuals happiness at point in time and over time.

Therefore, it is supported by our analysis that money can buy happiness in a country where fulfillment of basic needs of majority of population is a major cause of concern. The case of ability to meet the basic needs significantly improves individuals' level of happiness. This conclusion, apparently gives the answer of paradox of rising happiness in Bangladesh in the era of economic growth and prosperity.

## **Relevance to Development Studies**

Over the past decades, understanding the new science of happiness has increasingly become an area of concern for policy makers. Concern develops for the fact of allowing individuals to identify the factors that matter for their wellbeing who are experiencing rather than allowing expert to identify wellbeing of individuals from their perspective. Taking it into account, this paper investigates the correlates of happiness in Bangladesh based on survey asking individuals to evaluate their own happiness level. Findings suggest that individuals' happiness depends on both income and non-income factors such as: income class, social class, relative social position, health and freedom of choice.

Hence, well-being does not entirely depend only on income. Thereby, greater flexibility in the choice of development targets is needed that would focus on improvement in both economic and non-economic factors to shape individuals happiness. Consequently, giving the opportunity to people to fulfil their basic needs and helping them better achieve their preferences on those things that would make them happy.

## **Keywords**

Bangladesh, Poor, Happiness.



# Chapter 1

## Introduction

The primary focus of modern economic policy-making is the attainment of material well-being. Consequently, development progress of any country is largely defined by its rate of economic growth and its level of income. While increased material wealth does allow individuals to enjoy a higher standard of living, it is increasingly being acknowledged that it is not a panacea for improving well-being; for the very process of economic growth engenders problems such as food insecurity, environmental degradation, socio-political conflict, so and so forth. Therefore, as Sachs (2012:3) argues, the well-being of a society cannot be addressed in terms of financial or material gains alone.

As an example, the world's most powerful country, United States of America, has succeeded in achieving rapid economic growth with the help of advanced technological progress. But it fails to show similar progress in the level of happiness of its citizens. The reported level of happiness dropped over the last quarter of a century because of high inequality, low social trust, uncertainty, discriminatory policy for females and racial groups and lower level of confidence in governments (Blanchflower and Oswald 2004: 1381). These realities slower down the potential rising tendency of happiness with rise in Gross National Product (GNP). Similarly, in United Kingdom, the average happiness score has remained stable over time despite the increase in material prosperity. In early 1970's, one third of British people defined themselves as very happy while in late 1990s the number remains stable due to large rise in unemployment and fall in marital rate (Blanchflower and Oswald 2004: 1369). This understanding of overall well-being as a societal goal that transcends material wellness poses questions on whether certain factors can systematically influence happiness of different individuals, and if they do, whether there is a role for public policy to favourably effect these factors.

The significance accorded to material gains may vary depending on the situation of the economy. In case of indigent societies, lack of adequate food, shelter, health care, access to water, sanitation, education etc. necessarily imply that material gains are valued highly. Any increase in income from a very low level will improve its well-being by contributing to the improvement of these basic amenities. Hence, it is not a surprise if poor people living in such a society report higher level of satisfaction with rising income.

The story is different for the opposite end of income distribution where there is availability of enough food, shelter and basic facilities beyond the threshold of basic needs. Having more money to meet any kind of needs such as house, brand new car etc. can make individuals feel happy for a short time. But as soon as the desire of having more things increases, they need to buy some more to become happy again. Over time, 'the conditions of affluences have created their own set of traps' (Sachs 2012:4). Therefore, higher income does not necessarily leads to higher well-being after a certain threshold of income is crossed. This is known as the global happiness puzzle called the *Easterlin Paradox*. Easterlin (1974) noticed that rich people are usually happier than poor people. But once economy starts growing its level of happiness does not grow concurrently because of rise in comparison and aspiration among indi-

viduals. Comparison effect can be defined as an individual comparing his or her income with others to evaluate his or her relative position in the society and thereby, using this as basic for defining his or her level of happiness. While making a judgement about the relative position, how much individual makes compared to others matters more than his absolute level of income (Easterlin 1974: 93). On the other way, increase in income simultaneously raises material aspiration that works against happiness to offset its initial rise for high and lower income individual. The negative effect from aspiration undercuts the positive effect from income (Easterlin 2001: 481). There by, weakening the relationship between happiness and income over time.

Surprisingly, Bangladesh, one of the poorest countries in the world<sup>1</sup>, is considered as one of the happiest countries in the world by most research. Worcester (1998), a pioneer in this sub-discipline examines survey evidence on happiness for 54 countries including Bangladesh using data from world value survey (WVS) of wave 1994-1999. Ranking of these countries based on the percentage of people reporting themselves as *happy/very happy* affirms the widely held belief that high income countries are happier, for 17 out of the top 20 happiest countries are the so-called rich countries. Bangladesh does fairly well on this ranking list at 22, but what is most surprising that once the author actually control for income, Britain, which was earlier ranked at 9, actually slips to the 34th place and Bangladesh along with Azerbaijan, Nigeria and Filipino emerges among the happiest countries (Worcester 1998: 30).

The World Happiness Survey (WHS) also compares the distribution of happy people in a country with its per capita income. They also report that Bangladeshis derive far more happiness from their small incomes than any other people in the world.<sup>2</sup> At the same time, they acknowledge the importance of income for people in poor country rather than in rich country. As income is important to lift poor away from absolute poverty, the effect on happiness would be higher in the poorest countries rather than in richest countries (Layard 2005: 33).

According to Happy Planet Index (HPI: 2012), Bangladesh is the 11<sup>th</sup> happiest country out of 151 countries in the world based on the index consist of three criteria namely life-expectancy, well-being and ecological footprint<sup>3</sup>. Although Bangladesh ranked among the top 20 countries in the world, the

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<sup>1</sup> Per-capita GDP of US\$ 1700 (PPP) in 2011 along with a Head Count poverty rate of 31.5 percent at national level, among which 17.6 percent are extreme poor (Bangladesh Bureau of Statistics 2010: 61).

<sup>2</sup> London School of Economics and D. Richard Layard together did a survey in 2005 for the research titled as 'Happiness: Lessons from a New Science' which is called The World happiness survey (WHS). The study revealed that although Bangladesh is considered as one of the poorest countries in the world, her people derive far more happiness from their small incomes than any other people in the world having relatively large bank balances (i.e. United Kingdom listed 32nd).

<sup>3</sup> The Happy Planet Index (HPI) is a measure of efficiency which captures the degree to which long and happy lives are achieved per unit of environmental impact. The Index is based on number of Happy Life Years achieved per unit of resource use. This is approximated by dividing Happy Life Years by Ecological Footprint. Happy life year is the combination of life expectation and experienced well-being where well-being is assessed using a 'ladder of life' where 0 is the worst possible life to 10 as the best possible life (HPI 2012: 7).

progress is not satisfactory in the criterion of reported well-being. The expected well-being is recorded as 5.0 in a ladder of 10 which is lower than world's expected average well-being of 5.3 (HPI 2012: 25). The well-being score of 5.0 implies that majority of the individuals placed them in the middle of the ladder of happy life (Appendix A- Map: 1).

Therefore, when the low income of Bangladesh is compared with its level of happiness, Bangladesh scores relatively high in happiness ranking compared to high income countries. This gives an indication that poor people may be happier with having other non-material things such as family, freedom, personal values, creative activities which they value (Layard 2005). These factors may be playing an important role for individual happiness even in a society where basic needs for a secure life are rarely met. On the other hand, when only happiness level is compared, the ranking of Bangladesh is not satisfactory compared to other countries.

As the sources and evaluation techniques are different, it may not be possible to assess overall trends in happiness by juxtaposing different studies. There are not many rigorous studies. If we evaluate the estimation techniques, most follow exploratory data analysis by using descriptive statistics and graphical tools, etc. Worcester (1998), ranks selected countries based on comparing percentage of happy people, Human Development Index (HDI) and Gross Domestic Product (GDP) while HPI (2012) is based on three index criteria namely life-expectancy, well-being and ecological footprint. Layard (2005) makes a cross country analysis on average of percent of 'happy' and percent 'satisfied' people with per capita income.

The results reflecting Bangladesh as a happiest country, seems counter intuitive considering its socio-economic and political situation. Along with low income, it is a country with highest corruption level (Appendix Map-2)<sup>4</sup>, where corruption prevails not only in public sector but also in social sectors (Nabi et al. 1999) to make public service systems such as health and education under the major cause of concern of the government. Besides, discrimination against women is widespread and systematic phenomenon in whole Bangladesh through different kinds of violence from 'wife abuse to rape, dowry killings, acid throwing, sexual harassment and sexual slavery through international trafficking' (Zaman 1999: 1)<sup>5</sup>. At the same, political instability, price hike and growing unemployed population (Appendix Table B-1) are also considered as its general fate. As a country's socio-economic context matters for its happiness (Frey 2008:12), these realities should also affect the happiness level of Bangladesh.

Bearing these points in mind, this paper attempts to find out the correlates of happiness in Bangladesh that encourage people to lead a happy and satisfied life even after facing the hardship in daily life. While a bulk of literature argues that income is a key determinant of happiness, especially in impoverished soci-

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<sup>4</sup> According to the report of Transparency International Bangladesh (2012), Bangladesh is the most corrupt country in the world. The ranking is continuing from the last five years and it still maintaining the same top position. Source: [www.transparency.org/cpi2012/results](http://www.transparency.org/cpi2012/results).

<sup>5</sup> It is well established by the literature that Women's are the target of everyday discrimination, exploitation and violence. See also Arens and van Beurden 1997, Jahan 1994, White 1992 and Zaman 1996.

eties, Bangladesh's relatively greater level of happiness poses a challenge to this widely held belief. Having said that, the role of income in determining happiness cannot be ignored completely, for per capita income, an indicator which mostly characterizes Bangladesh's happiness puzzle, which masks changes in happiness at individuals' actual income level. Therefore, we examine income and non-income correlates of happiness in this study.

In order to capture the impact of changes in income on happiness, we use two years of data (1996 and 2002) from World Value Survey (WVS) collected in Bangladesh. We begin the analysis by conceptualizing happiness followed by a review of the sources and techniques used so far to measure happiness within country or in cross country studies in chapter 2. We extend our analysis by providing a review of the research done so far on happiness in Bangladesh. Based on this review, we establish an empirical framework and specification in chapter 3 for analysing the correlates of happiness in Bangladesh. After that, we present a brief data over view and discuss measurement related issues in chapter 4. We hypothesize how happiness may be explained by different traits. We proceed to the results of the econometric analysis in section 5 and then conclude in chapter 6.

## Chapter 2

# Background and Theoretical Framework

Pursuit of happiness is the ultimate goal of human behavior. It is a crucial issue not only for understanding human behavior but also for understanding social interactions and aggregate social outcomes (Wolbring, *et al.* 2013: 86). Hence, many researchers have been studying this issue over the last two decades to discover the determinants of happiness. This chapter starts with conceptualizing the idea of happiness followed by a discussion on how happiness is measured so far by the researchers using different techniques and data.

### 2.1 Happiness: Origin and Evolution of the Concept

The concept “Happiness” was traced first in the discussion of Aristotle in *eudemonia*<sup>6</sup> where he opposed the general belief that happiness is the outcome of pleasure derived from individual’s body and material possession. According to Aristotle, the constituent parts of happiness are: ‘good birth, plenty of friends, good friends, wealth, good children, a happy old age and also such bodily excellences as health, beauty, strength, large stature, athletic powers, together with fame, honour, good luck and excellence’ (Aristotle, Rhetoric 1360b: 14-23 as cited in Helliwell 2003: 332). He accentuated long term virtuous activity that increases lifelong satisfaction of the individual and which requires adequate supply of material goods to sustain (*ibid*: 332).

Recent studies perceive happiness as positive self-reflection of an individual through evaluation of his or her own life. When asked to evaluate the level of happiness, he or she needs to apply a greater sense of judgment on all pleasant and unpleasant experiences from the recent past. Then make an overall evaluation of his or her level of happiness (Fordyce 1972: 227). Layard (2005: 12) provides a simple definition of happiness: happiness means ‘feeling good, enjoying life and wanting that feeling to be maintained.’

While this definition renders happiness as a temporary feeling, Diener *et al.* (2009: 8) take a long-term view: “happiness is a state of contented pleasantness and is one of many specific emotions that people can feel in response to life events and daily experiences.” Other authors also define happiness across the lifecycle: Brule and Veenhoven (2012: 203) and Veenhoven (1984) define happiness as a measure by which people evaluate their overall quality of present life as a whole positively. Sen (2003) defines happiness as ‘human flourishing’, which originates from implementation of abilities and opportunities, which enable individuals to meet his or her basic necessities.

Therefore, happiness is not just the result of recent, transient experiences. It is a reflection of ‘circumstance, aspirations, comparisons with others and individual’s base line happiness or dispositions’ (Warr 1980 as cited in Gardner

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<sup>6</sup> Stanford Encyclopaedia of Philosophy (2010) ‘Aristotle’s Ethics’. Accessed 10 September 2013 <<http://plato.stanford.edu/entries/aristotle-ethics/>>.

and Oswald 2001: 2), which is strongly influenced by his or her long term experiences and perceptions about his or her own quality of life. The happiness that we are referring in this paper is closely related to life satisfaction which is individual's own assessment about his well-being and collective expression of his or her quality of life that is not domain-specific.

## 2.2 Measurement Scales, Methods and Related Problems

Over the last few decades, happiness research has been in the lime light due to increase interest shown by psychologists, sociologist and more recently by economists. Psychologists measure happiness from the response of individuals' feelings that come through the process of physiological assessment done by the trained clinicians (Diener 1994). The measurement is based on some popular scales such as: Affect Balance Scale by Bradburn (1969), Satisfaction with Life Scale by Diener et al. (1985), Delighted-Terrible Scale by Andrews and Withey (1986) (Lyubomirsky and Lepper 1999: 139). Sociologists, on the other hand, mainly rely on qualitative data based on open ended questionnaires about individual's feeling and his or her subjective experience on other domains (Bartram 2012 : 646). Although, some of the researchers have been started using quantitative data (e.g. R. Veenhoven), still the analysis is based on exploratory data techniques such as: descriptive statistics, graphical presentation, correlation matrix etc. Economists' interest lies mostly on how to measure individual happiness and what factors (especially money) drives it (e.g. Diener and Biswas-Diener 2002). Although in some cases quantitative responses are considered, the measurement is done on quantitative data using rigorous econometric techniques.

Individual happiness in economics research is usually based on survey information, which measures happiness on a discrete scale ranging from "not at all happy" to "Very happy" with a value of 4 to 10 classes, depending on the survey methodology (Maggino and Schifini D'Andrea 2003). Respondents' are asked to answer the question: 'taking everything into consideration, how happy do they feel with their life as a whole?'. Researchers sometimes capture the overall well-being of the individual either through happiness reported on a single or on several domains, like: income, work, health, education, leisure and so on (Kohler et al. 2005). But common practice is to get information on several domains, where each domain is considered separately and is linked with overall happiness of the individual (e.g. Van Praag et al. 2002, Nieboer et al. 2005).

So far, economists have usually linked individual happiness with objective indicators like: income, consumption, economic growth etc. in an attempt to understand how these variables relate to happiness in a cross country or within country perspective. Among these indicators, income and economic growth are the two indicators that are commonly examined by researchers using data from different countries and different sources. For example, Easterlin (1995, 2001) and Blanchower and Oswald (2004) use data of General Social Survey (GSS) of United States, Di Tella, MacCulloch and Oswald (2001) use data of Euro-Barometer Survey Series of EU member countries and Frey and Stutzer (2000) use data from Switzerland collected by Leu et al. (1997).

The techniques used by these papers are also different from each other. Blanchower and Oswald (2004) estimate a happiness function using ordered

logit specification with appropriate control of individual characteristics such as gender, marital status, education, race etc. with time dummies. Di Tella, MacCulloch and Oswald (2001) use a two-step methodology to estimate a life satisfaction equation. In the first stage they estimate a life satisfaction equation using OLS for each country and in the second stage, they use the residual (unexplained component of life satisfaction) obtained from the first stage as a dependent variable to calculate the effect of unemployment and inflation on life satisfaction. Frey and Stutzer (2000) use a weighted ordered probit model to estimate the effect of demographic, economic and institutional factors on happiness. They use individual income scale as a main explanatory variable with controlling individual's age, gender, education, marital status and employment status. Although the techniques are different, these papers draw the same conclusion. At a given point in time, on average richer countries are happier than poorer countries. It makes sense intuitively as with higher income people can avail more opportunities in life.

Easterlin (2001) finds a highly significant correlation between income and happiness though small in magnitude i.e. only 0.20, which further weakened controlling after socio-demographic characteristics. The low correlation might mean that other factors are important for individual happiness more than income. The impact of other factors on happiness rather than just income alone is also found by Frey and Stutzer (2002). This other factor includes better health care, assurance of basic human rights and stable democracies that creates the opportunity for the people to leave a healthy and happy life.

Inglehart et al. (2000) use the two year data of 51 countries from the World Values Survey to elucidate the relationship between income per capita and happiness. They find that people in the country of high per capita income reported high level of happiness compared to that of low per capita income, which further suggest rich countries are happier than poor countries

Although there is a consensus of a positive correlation between income and happiness among most researchers, correlation doesn't necessarily mean causation. It is quite possible people who are happier can earn more rather than people who earn more experiencing increased happiness. The direction of causality is examined by some researchers: Smith and Razzell (1975) and Gardner and Oswald (2001). They use longitudinal data from British Household and Panel Survey (PHPS) to determine the effect of monetary windfalls from winning on football betting (Smith and Razzell 1975) or from lottery wins and inheritance gains (Gardner and Oswald 2001). Although Smith and Razzell's study only use one cross section, Gardner and Oswald take the advantage of the whole panel by using a first difference well-being model controlling for time and personal characteristics such as gender, race, religion, education etc. All of their study results support the direction of causation from income to happiness.

It must be borne in mind that the growth in absolute income need not lead to proportional growth in happiness over time. In fact, absolute income has diminishing marginal utility. Using the data of Europe from the Eurobarometer Survey, Di Tella et al. (1999) show that rise in income equally improves the level of happiness for the poor people while the equal amount of increase in absolute income has relatively small effect on the level of happiness for the rich. Diminishing returns set in once basic needs are met, that is, after crossing the threshold of basic needs, additional income contributes marginally

or does not contribute at all to increase in happiness level (Venhoveen 1992). Even movement in the distribution of income from lower to higher decile increases happiness by a smaller amount (Helliwell 2001). Inglehart (2000) says that the effect of income on happiness depends on a country's development stage. If a country is at early stage of development, a small change in income results in a large improvement in happiness. But once that country crosses a certain threshold of income, the demand for better quality of life hampers the further increase of happiness (Clark, Frijters and Shields 2008).

Although, some of the research supports this non-linear relationship, Easterlin (1995) challenges it taking the example of Japan. Japan was in the list of one of the poor countries in 1958. Thereafter, its economy starts growing from low income levels without influencing its level of subjective well-being. Again, this issue has been analyzed carefully by Easterlin (2004). His main conclusion is in case of diminishing marginal utility of income, cross sectional relationship is not a reliable way to guide the temporal relationship or even not reliable to make any kind of inference about policy.

However, the positive impact of income on happiness is commonly accepted by most economists, evidence from longitudinal data doesn't seem to support the same results.<sup>7</sup> Evidence shows that over the last decades there is a sharp rise in per capita income in many of the countries like: United States, United Kingdom, Belgium, and Japan. But compared to the growth of per capita income, average happiness level does not change much at all. In some countries, the response remains constant over time.

Among studies that analyze panel data, Ferrer-i-Carbonell (2005) works with the largest panel of six years from the German panel data of 1992 to 1997. He argues that although income has little effect on happiness compared to other objective variables, it is significant. The marginal effect of income is larger in East Germany compared to West Germany, which makes sense intuitively as the former is poorer than latter. Two interesting conclusions can be highlighted from the study: one is for poor, happiness is negatively influenced by the fact that they have low income compared to their reference group<sup>8</sup>. Comparison against perceived reference group matters in the sense that if income increases compared to those in the reference group, increases the happiness level of the individual. Other is for rich; they are not getting happier from having above-average income.

This is called 'happiness paradox' mentioned earlier. Why do we observe this paradox? Very often, individual make judgments about their life based on their past and their expected future. Their evaluation could be based on comparing their present with the past, or by comparing themselves against others, or a combination of the two. Although people usually derive utility by comparing themselves against neighbors, such relative comparisons negatively affect happiness by forming higher level of expectation, raising the level of aspiration and thereby, producing a process of adaptation (Easterlin 1974). Expectation

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<sup>7</sup> For example see: Easterlin (1974, 1995), Lane (1998), Kenny (1999), Blanchower and Oswald (2000), Diener and Oishi (2000).

<sup>8</sup> Reference group is defined as the individuals live in the same region (i.e. East or West) having same age and similar educational standard (Ferrer-i-Carbonell 2005:1015).



usually grows proportionately with income, while aspiration mediates the effect of income. There by, the net effect becomes much stronger at the lower end of income scale where both expectation and aspiration are low (Veenhoven 1991). For the upper end, the net effect is found weaker, which is explained by the researcher as wealth effect, formulated through greed or change in preferences over time (Argyle 1999).

Besides income, cross country studies have also been conducted on happiness using indicators like unemployment and inflation (Di Tella, Macculloh, and Oswald, 2001). Using panel data from the Eurobarometer, they measure the effect of unemployment and inflation on predicted happiness level. The construction is based on the value of residuals obtained from regression on micro data to calculate proportion of happiness that is not related to individual characteristics. A similar technique has been used by Guo and Hu (2011) for identifying the determinants of happiness from the US general social survey (GSS). Unlike previous studies, they use two step methods where in the first step individual happiness is regressed on socio-economic and demographic characteristics to measure the average national happiness. In the second step, using the intercept value from the first regression, they regress the average happiness on national economic indicators to capture the role of economy on happiness.

Along income, other material factors e.g. wealth and consumption effect on happiness have also been examined by Headey, Muffels and Wooden (2004). They use data from national household panels from five countries namely: Australia, Britain, Germany, Hungary and Netherlands. The result from the fixed effect model indicates that changes in income, wealth and consumption significantly effects changes in happiness level. Although the marginal effects from the three variables are not large enough, the effect of wealth on happiness is stronger than income.

Although in recent years much research has done on happiness by economists, they are usually skeptical about the use of subjective measures for reason of ordinality, scaling, and omitted-dispositions (Seghieri, et.al. 2006: 458). The problem of ordinality and scaling relates to the issue that individuals may use different mental scales to reflect their level of happiness. It is possible that rate of 4 of one person may correspond closely to rate of 5 of another person. In that case, it is difficult to carry out the comparison between these two persons happiness level properly. Omitted-disposition is a problem, which relates to the unreliability of people's expression of their feelings of happiness, due to innate personalities (or predispositions) and native cultures (Cantril 1965). These dispositions may play a vital role behind the state of mind of each individual which make difference in the response of how they feel and the way they reveal their feelings. As an example, a pessimistic person can express himself as a less happy person compared to an optimistic one due to the way they view their life even if objective situations are same for both persons.

Therefore, some sort of individual heterogeneity may possibly correlate with the observed variables, which can create bias in the results of any analysis. It is difficult to get any data set that eliminates the problem of individual heterogeneity or at least minimizes the problem like Danish twins used by Kohler

et al. (2005)<sup>9</sup>. But in all other cases, the common approach to overcome these kinds of heterogeneity problems is to consider happiness as an ordinal variable and use longitudinal data to control for unobserved individual heterogeneity (Seghieri et al. 2006:459).

## 2.3 Happiness Research in Bangladesh

There has been limited research on individual experience of happiness using representative data in Bangladesh. Existing research concentrate on different groups of people: Mahbub and Roy (1997) use data from a village in Matlab thana<sup>10</sup> with a sample of 50 respondents (25 males and 25 females); Mahmuda (2003) use data of only residents of Dhaka, the country's capital city and Asadullah and Chaudhury (2012) use data of 12 districts from six divisions limiting their analysis to rural areas.

Mahmuda (2003) studies the effect of three indicators- economic solvency, education, and health on happiness. Her study also confirmed that social class and gender differences influence the experience of individual happiness in capital city, Dhaka. She also concludes that poor people identify happiness through basic needs like: food, subsistence income and housing while non-poor identified personal security, savings, peace of mind, and social status as their source of happiness.

Asadullah and Chaudhury (2012) estimate a happiness function using the data from a multi-purpose household survey fielded by World Bank. Using an ordered probit specification with individual (i.e. age, gender, education, marital status etc.), household (i.e. wealth) and village controls, they find significant role of relative wealth and relative income for shaping individuals happiness. Acknowledging the role of absolute income for poor, they say that the crucial role is also played by relative income. People whose wealth is higher than others in the same village show higher level of happiness compared to those having less wealth.

Mahbub and Roy (1997) aim to identify some indicators that reveal individual happiness through a participatory rapid appraisal approach. Respondents mentioned 'money, fixed income, three meals a day, children and their education, small family, health, access to medical service and peaceful life as essential indicators of happiness', although gender difference is prominent in the perception of happiness, they reported (ibid: 7).

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<sup>9</sup> Kohler et al. (2005: 408) use data of monozygotic (i.e. identical) twins from Denmark to identify contribution of partnership and fertility to happiness. They are confident about controlling unobserved effect of 'preferences and capabilities due to genetic dispositions, family background and neighborhood' that affect marriage and fertility behavior and happiness as these characteristics are common for both twins where they grew up.

<sup>10</sup> *Matlab* is in Chandpur District of Camilla Division (one of highest administrative units) in Bangladesh.

Therefore, the indicators that are highlighted commonly by the researchers are social class and gender along with income and individual's relative position although income matters more for poor people is well-established.

In this paper, we are going to use country representative sample randomly drawn from 6 districts (highest administrative units) of Bangladesh. As highlighted by review, we will examine happiness as a function of income, social class and relative positions to see how much they matter for shaping individual's happiness.

Whereas previous work done so far in Bangladesh use only on cross sectional data, this paper focuses on how happiness has varied across time within a single country using pseudo panel data. Nonetheless, as discussed earlier one of the problems related to happiness research is the omitted inherent longitudinal situations that are constant over time. We will control the influence of those factors in our model by observing different cohorts and using appropriate techniques to control cohorts' specific fixed effect that are not constant over time. This will provide a better insight into the relationship between the independent variables and happiness.

Now we proceed with our methodological frame work in the next section.

## Chapter 3

# Methodological Framework

This chapter explains the methodological framework used to examine the correlates of happiness. We first start with individual cross section data to identify whether there is any link between difference in income and other traits and happiness. Later pseudo panel analysis is introduced to capture changes over time in happiness.

### 3.1 Specification for Cross Section

The dependent variable in the model is ‘feelings of happiness’, which takes multiple qualitative values with ordinal or ranked outcomes. It would be more appropriate to use ordered response models (i.e. ordered probit or logit) for analysing this kind of data. Greene (2003: 664) explains this discrete choice framework as follows:

$$\text{Probability (an event } j \text{ occurs)} = \text{Prob}(Y = j) F[\text{relevant Effects, Parameters}]$$

Where, F = Cumulative distribution function for the variable of interest.

In our model, happiness ( $HP^*$ ) is the variable of interest and we want to know what is the probability that a given value of independent variables allow individual more likely to report a specific level of happiness. But the outcome that is observed is the reflection of an unobserved variable which is called ‘latent variable’<sup>11</sup>,  $HP^*$ .  $HP^*$  is unobserved but it can be thought as an outcome of an observed phenomenon. Now, assuming the error ( $\varepsilon$ ) follows a certain symmetric distribution with zero mean and constant variance as the normal distribution, the underlying latent regression model can be constructed using an ordered probit specification as:

$$HP^* = \beta Y' + \gamma C' + \varepsilon \quad (1)$$

Where,  $HP^*$  = Exact measure of happiness, which is unobserved

$Y'$  = Vector of individual level variables

$C'$  = Vector of social and cultural variables

$\beta, \gamma$  = Vectors of estimated parameters

$\varepsilon$  = Error term

In equation (1), instead of observing  $HP^*$ , we observe HP for happiness which is the realization of  $HP^*$  in the form:

$$HP = \begin{cases} 1 & \text{if } HP^* \leq 0 \\ 2 & \text{if } 0 < HP^* \leq \mu_1 \\ 3 & \text{if } \mu_1 < HP^* \leq \mu_2 \\ 4 & \text{if } \mu_3 < HP^* \end{cases}$$

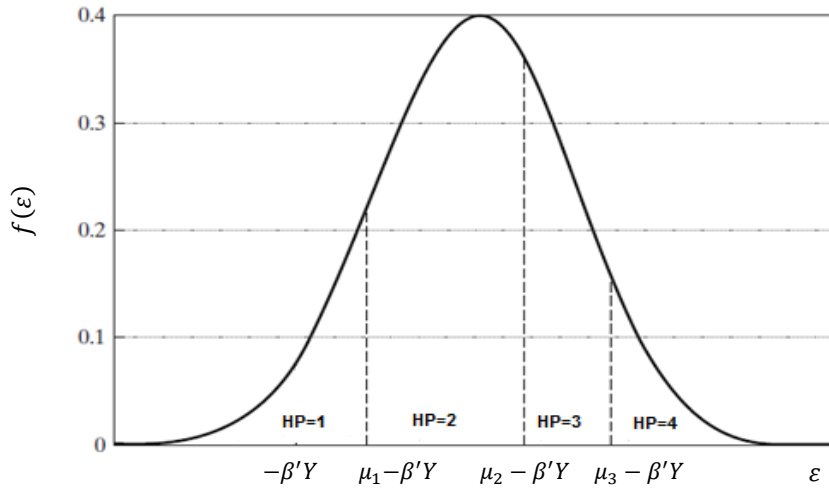
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<sup>11</sup> Latent variables are those variables that cannot be observed directly but can be inferred based on observed characteristics. In our model, happiness is the latent variable, which is unobserved but what we observe is the number individual assign to express his level of happiness.

Where,  $\mu_i$  = for  $i= 1, 2, 3$  are unknown parameters to be estimated as cut-off points.

For estimating equation (1), we need to estimate the coefficients ( $\beta'$  s) and the cut-off points ( $\mu_i$ ) along with the other vector of parameters. Note that, the estimated cut-off points in the above four choices of happiness level need not be equal like the OLS model. The observed variable (i.e. .happiness) works as a form of censoring in this model (Greene 2003: 736). The respondents have their own measure of feelings, which depends on certain measurable observed factors ( $Y'$ ) and certain unobservable factors( $\varepsilon$ ) (Greene 2003: 736). Hence, each respondent responds to the question based on his own measure of  $HP^*$ . Given the four choices in happiness questionnaire, respondent would choose the cell that most closely reveals his own feelings (Figure: 3.1).

Figure 3-1: Probabilities in Ordered Probit Model



Source: Green (2003:737)

In order to estimate the probabilities from an ordered probit model, we assume the cut-off points; parameters and values of the independent variables follow a standard normal distribution. So, the probabilities of reporting a specific value of happiness for a given value of dependent variables can be defined as:

$$\begin{aligned} \text{Prob}(HP = 1|Y) &= \phi(-Y'\beta) \\ \text{Prob}(HP = 2|Y) &= \phi(\mu_1 - Y'\beta) - \phi(-Y'\beta) \\ \text{Prob}(HP = 3|Y) &= \phi(\mu_2 - Y'\beta) - \phi(\mu_1 - Y'\beta) \\ \text{Prob}(HP = 4|Y) &= 1 - \phi(\mu_3 - Y'\beta) \end{aligned}$$

Here,  $\phi$  = standard normal distribution function and all probabilities sum to one.

For the ordered probit model, marginal effects cannot be explained from the estimated coefficients directly as they are not uniquely defined as ordinary least squares (OLS) estimates. We need the values of the independent variables to calculate the marginal effects as described below:

$$\frac{\delta \text{Prob}(HP = 1|Y)}{\delta Y} = \phi(-Y'\beta)\beta$$

$$\frac{\delta \text{Prob}(HP = 2|Y)}{\delta Y} = [\phi(\mu_1 - Y'\beta) - \phi(-Y'\beta)]\beta$$

$$\frac{\delta \text{Prob}(HP = 3|Y)}{\delta Y} = [\phi(\mu_2 - Y'\beta) - \phi(\mu_1 - Y'\beta)]\beta$$

$$\frac{\delta \text{Prob}(HP = 4|Y)}{\delta Y} = \phi(\mu_3 - Y'\beta)\beta$$

Here,  $\phi$  is defined as the standard normal distribution density function.

The coefficients from the above equations would give us the direction and magnitude of marginal effects for each and every category of happiness. As the underlying assumption behind probability is, it must sum to one, the marginal effects constructed based on the probabilities should also sum up to zero.

Two different kinds of variables are incorporated in equation (1), i.e. dummy and continuous. For continuous variables, marginal effects are calculated by a small change in the dependent variable due to a small change in independent variable which can cause the distribution function to shift. On the other hand, for dummy variables, marginal effects are approximated by taking the difference in the predicted probability of reporting a specific level of happiness for the two groups (Liao 1994:47). The marginal effects are the most important part in our analysis as it explain whether changes in key explanatory variables increases the probability of reporting different level of happiness. This gives us the opportunity to determine which factors need to be given more emphasis to improve the overall level of happiness among Bangladeshis.

### 3.2 Specification for Pseudo Panel

The model analyzed so far will identify the correlates of happiness from cross section of two years. But we need to know how much of this cross section variation in income and other traits contributed to changes in happiness over time.

For doing this kind of exercise we felt the need of a panel data set. The data set we have it came through the survey of different individual in each survey year. So, we missed the opportunity to observe the same individuals over time. But still the possibility remains to observe groups of individual from one survey year to another. Hence, we constructed a pseudo panel data set by tracking groups of individual called cohorts<sup>12</sup> from repeated cross sectional survey to build a substitute data set for true panel data set.

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<sup>12</sup> A cohort is a 'group with fixed membership, individual of which can be identified as they show up in the surveys' (Deaton 1985: 109). Most commonly used cohorts are: birth cohorts, birth-gender cohorts, birth- education cohorts etc.

The benefit of using cohort data over cross section is twofold. First, it tells about the average happiness for various cohorts over time and secondly, how happiness changes over time within the cohort. Apart from these, using cohort data makes possible to control the unobservable fixed effects like true panel data set (Deaton 1997: 104).

We unified equation (1) with fixed effect at the level of individual in the form as:

$$HP_{it} = \alpha + \beta Y_{it} + \gamma_{it} C + \mu_t + \theta_i + \varepsilon_{it} \quad (2)$$

Where,  $\mu_t$  are year dummies and  $\theta_i$  are individual fixed effects.

For generating cohorts to estimate equation (2), we pool the cross section data from two years. While pooling we ensure the comparability of each variable by checking whether response came from similar questions in each year in a similar manner. The cohort is defined using age, gender and education level that are time invariant. The age cohort is formed based on year of birth of individual. As people born in same cohort grow up with same culture, technology and socio-economic circumstances, tracking them over time will ended up with a true picture of the whole population. At the same time, combining gender and educational attainment of individual with age allow us to restrict individual movement within the cohort in a pseudo panel. Hence, we end up with 24 cohorts combining three fixed characteristics i.e. age, gender and education level (Appendix Table: C-1).

After generating the cohorts, we format the variables to construct the pseudo panel. Formation is done based on type of variable used to represent a given characteristics. For continuous variables (e.g. age, number of children etc.), we consider the mean for each individual in each cell (cohort). While proportion is taken (a value equal to the proportion of individual in the cohort with that characteristic) for those variables which indicate the presence or absence of specific characteristic in each person. As cohorts are not uniform regarding some characteristics such as marital status, social class, relative position etc. taking proportion exhibit that non- uniformity among the cohorts (Russell and Fraas 2005:5). In case of ordered variables such as: happiness and freedom of choice, we first generate a dichotomous dependant variable by collapsing the orders<sup>13</sup> and then take the proportion of that variable in a cohort. Dummy variables are generated only for the three characteristics i.e. age, gender and education status as for these characteristics a certain cell possess everyone in the cell holds that characteristics or not.

In the final stage, we take average of all individual belong to each cohort in each years. This procedure produces 24 cells representing 24 cohorts. The cohorts of 24 repeated over two years give us 48 cells ( $24*2=48$ ) of cohort mean data (we discuss the details about the construction of pseudo panel in

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<sup>13</sup> For making happiness as proportional we generate the dichotomous dependant variable by collapsing the dependant variable into happy and unhappy. The generated variable is coded as 1 if the original variable is *quite happy* and *very happy* (coded as 3 or 4) and 0 otherwise (*not at all happy* and *not very happy*). Then we count the proportion of people happy in each cohort. On the other hand, for the variable freedom of choice, we make a dichotomous variable by collapsing the order above 5 in to one (enjoying freedom) and below 5 in to zero (no freedom) and then make a proportional variable from it.

Appendix C). In such a way, the pseudo data set is prepared for the estimation of equation (2).

After taking average of all individuals belonging to each cohort, individual fixed effect in equation (2) is replaced by cohort fixed effects. When averages are taken to form the pseudo panel, the resulting fixed effect ( $\theta_i$ ) is the average fixed effects of individuals from both the years. Hence, the individual fixed effects are no longer fixed in equation (2). So, the cohort version of equation (2) can be reformulated as:

$$\overline{HP}_{ct} = \alpha + \beta \overline{Y}_{ct} + \overline{\gamma}_{it} C + \mu_t + \overline{\theta}_c + \overline{\varepsilon}_{ct} \quad (3)$$

Where,  $c$  is the individual mean in each cohort at time period  $t$  and  $\overline{\theta}_c$  are the cohort fixed effects.

Equation (3) becomes the most important equation for our analysis as it captures the cohort effects on happiness over time. It detects the effect of changes in income and other traits on changes in happiness level, which is the novelty of pseudo panel analysis.

Note that, if cohort specific fixed effects are uncorrelated with the error term, random effect model would give us a more efficient and consistent estimate of the parameters in equation (3). But if it is not, then fixed effect model would be the better predictor of equation (3). However, the result from the Hausman test ( $p > \chi^2 = 0.00$ , implies that the hypothesis of non-systematic difference between the coefficients of the two models is rejected; Appendix D explains briefly about this results) suggests that cohort specific fixed characteristics (e.g. gender, age, education) are sufficiently different among 24 cohorts. As a result, after controlling for all fixed characteristics, fixed effect model gives us a significant improve fit of the regression results. Hence, to accommodate the cohort specific fixed effects, we use fixed effect estimation technique to estimate equation (3).

Although fixed effect estimation will control for the cohort specific fixed effect in the model, some problems remain due to errors-in-variables in equation (3). The error occurs during the replacement of cohort mean which we observe instead of unobservable change in true population cohort means. This replacement inflates the variances and covariances of the sample cohort means by the variances and covariances of the sampling errors (Deaton 1997:105). To overcome this problem of errors-in-measurement, we use bootstrapped standard errors with fixed effect estimation technique as suggested by Deaton (1997). This combination can minimize the errors from inflated variances and covariances of the sample cohort means together with controlling cohort fixed effect (ibid: 105). Thus, with this we obtain consistent estimators from equation (3).



### 3.3 Key Variables for the Models

The variables set up for the model are based on the idea that happiness is affected not only by income but also by individual (i.e. health status, employment condition, age, gender, education etc.), societal (i.e. social class) and cultural factors (freedom of choice). Hence, instead of relying on one dimension we encompass broader dimensions (i.e. individual level, societal and cultural factors) that cover several aspects of human life. The aim is to estimate the influences of each variable on happiness. Besides we include a set of district level dummies to control for area specific unobserved fixed effects influencing the outcome variables (Wooldridge 2009: 456).

For selecting the variables, we mostly rely on past literature to find out the potential determinants of individual happiness. At the same time, we also incorporate country specific context (i.e. religion, freedom of choice) which can potentially weaken the happiness-income relationship (Easterlin 1974). The detailed list of the selected variables is given by Appendix Table: E-1.

Income class is the major variable of interest in our model. Higher income expands individuals' opportunity to buy goods and services and thereby, ensures better living condition through the fulfilment of basic necessities. Hence, once income starts increasing we could expect happiness level to also increase. Thus, a positive effect of income on happiness is expected in a society like Bangladesh where basic necessities are not met for a majority of the population. But once basic needs are fulfilled, income plays little or no role in determining the happiness of an individual (Wolbring et al. 2013: 88). In such a case, changes in happiness may not be proportional to the changes in income. Therefore, we assume the possibility of decreasing marginal effect of income on happiness.

In addition to income it is useful to control for individual wealth. Although our data set lacks precise wealth information, we include social classes<sup>14</sup> as the best available proxy. Class stratification mostly depends on economic differences among groups reflected by difference in income and wealth, possession of material goods, profession and life chances. One of the indicators of wealth is land and among the social classes, upper class holds maximum amount of land in the country (Siddiqui et al. 1990: 23)<sup>15</sup>. We expect a positive correlation between an individual being in a high social class and his level of happiness.

Considering the definition of how social classes are formed, we must consider the possibility that income classes and social classes are correlated. But the extent of correlation depends on whether a family acquired or inherited

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<sup>14</sup> Bangladeshi society is divided into three broad classes namely: upper class, middle class and working class or lower class.

<sup>15</sup> Siddeki et al. (1990) find upper class (i.e. upper and upper middle class) that constitutes 30 percent of the total population, own around 80 percent of the total land of Dhaka city while middle class (i.e. middle and lower middle class) that are formed of 30 percent of the population own 20 percent of land and the working class (40 percent of population) do not hold any land asset.

wealth and have multiple earning members. Social class will be higher than individual income class if a family owns inherited assets and if there are more than one income earning member in a family. It is also quite possible that these two variables have no correlation due to expenditure structure of the family. If high-income households also have high expenditures, then the net income may lower the household's overall wealth status. Nevertheless, we test for existence of multi-collinearity among all selected variables. We find no evidence of multicollinearity among income classes and social classes. The Variance Inflation Factor (VIF) is less than 10 for these all, hence we include both income and social classes in our model (details about the test are in Appendix F).

Individuals are embedded into a social environment and hence can be expected to value their relative social position in the society (Podolny 2005). If individuals are unhappy with their well-being as compared to their peers, it naturally affects their state of happiness. Hence, we assume happiness to be influenced by relative position of an individual. We capture this dimension through two variables, i.e. relative income position and relative social position<sup>16</sup>. It is generally accepted that people who perceive their household socio-economic condition much higher compared to others in the community are more likely to report themselves as happier than others. So, we could expect both the coefficients from relative income position or relative social position to be positive if individual position is above the average position of that locality.

Among the individual characteristics, age is included to examine changes in happiness with age. Some authors argue that early age is the best period for survival, as age increases people gain or lose several things that can affect happiness level (Harris 1975). Others argue that, in the life cycle of an individual, happiness level fluctuates over time. There are some times when happiness level is high and in some other time it is low. Hence, there is a possibility of U-shaped relationship between age and happiness (Blanchflower and Oswald 2000). We include age squared as an explanatory variable in order to test this U-shaped relationship.

The variable religion is also included in the model to see whether belonging to a particular religion yields a higher level of happiness after controlling for other characteristics. Bangladesh is considered as a conservative country, with a strong sense of attachment to traditional culture and customs, familial and religious values. The majority of population is Muslim and this gives minorities a sense of exclusion and deprivation (Inglehart and Klingemann 2000: 166). So, it is important to detect whether minorities describe themselves as unhappy or dissatisfied about their life in a country which is considered as one of the happiest in the world.

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<sup>16</sup> Relative income position is created by considering individual income class with average income class in the locality (district where individual's household is located). It is a dummy that takes a value one if individual income class is above the average income in the locality and zero if it is lower than the average. On the other hand, relative social position comes from comparing individual social class with average social class in the locality. It is also a dummy representing individual social position below or above the average social position in the locality.

Health is one of the core determinants of happiness that encourages individuals to participate in different kinds of life activities (Doyal and Gough 1991). Good health enables individuals to work hard and assure themselves of better income and living condition. Research shows that very few household in Bangladesh report about facing no health related problems. If any of household member falls sick, the out-of-pocket expenditure constitute a big expenditure for that household. In the rural areas, on average 18 percent of total household income was spent on health related expenditure such as: medicine, doctor's fee, travel expenses, accommodation in hospital etc. (Davis 2005: 165). Thus, a positive relationship between health status and happiness is expected.

Number of children in a family is another variable that can play a crucial role for shaping individual's happiness. With strong belief in familial values, people seek happiness in building a family, especially as higher number of children, particularly boys, is seen as old age security (Camfield et al. 2006<sup>17</sup>; Mahbub and Roy 1997). Though children in a family matters for happiness, the big family size is also a concern for happiness. Hence, we are expecting a positive relationship between number of children and happiness up to a certain number of children.

Gender, marital status and education level of the individual are added as control variables in our model. Gender is most important variable in the sense that it will reveal whether women are experiencing higher or lower level of happiness than men. It will capture the typical characteristics of patriarchic society where females are disadvantaged, discriminated and subject to violence within household, society or even in workplace (Farouk 2005:2).

Education is another important variable that may directly affect individual's level of happiness. Evidence says that possibility remains for getting either positive or negative effect from education on happiness. Education would generate positive effect when through education individual can achieve his/her desired goal or education helps the individuals to adapt the changes around them (Tenaglia 2007:10). Negative effect would come through the raise in the level of expectations together with fulfillment of desired goal (Clark and Oswald 1994). Hence, we expect either positive or negative effect from education on happiness.

Marital status is included to capture the effect of interpersonal relationships between men and women on happiness. Interpersonal relationships are extremely important for leading a happy life (Tenaglia 2007), where a stable and enduring relationship is one of the expectations. There by, married women and men may be happier than unmarried individuals if their relationship is stable and supportive. If marital respondents report higher level of happiness than unmarried ones (Denier et al. 2000), we can expect positive correlation between happiness and marital status. In Bangladesh, marital status can be a

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<sup>17</sup> Children are one of the major sources of happiness. Good parenthood is viewed as a significant accomplishment in Bangladeshi society. It is a matter of reputation for parents when their children have good upbringing in life. At the same time, they feel proud when their children are doing better than other children in the locality or neighborhood (Camfield, et. al. 2006: 20).

potential variable for influencing individual happiness level especially for the women. Widowed women are often among the vulnerable groups in the society. Thus, presence of husband can be an indicator of better living (Mahbub and Roy 1997).

According to Sen (1993), happiness not only depends on material goods or possessions but also on notable rights and positive freedoms, which are generally ignored from the happiness equation. We include freedom of choice variable in our model, which is an ordinal variable rate on a scale of 10<sup>18</sup>. The underlying idea is that if people are free to make their own choice without any obligation and are capable of making their own decisions, they are likely to feel happy (Veenhoven 2000: 258). So, we expect a positive relationship between happiness and the variable freedom of choice.

Individual employment status is another key variable to consider. Research shows that unemployment is one of the major sources behind individual stress (De Tella et al. 2001). But some people may voluntarily agree to become unemployed because of unattractive salary structure compared to a sound social security system. Hence, it is possible that unemployment does not include stress among all unemployed people. In Bangladesh, as there is no provision of social security system for unemployed people, we expect to have a negative effect of unemployment on individual level of happiness.

Savings is another variable that reflect future sense of security of an individual and worth considering in our model. Our data does not have sufficient information regarding individual's or household's savings. The information we have is that whether a particular family had saved during the past year. It is a dichotomous variable of one if a household saved during the last year and zero otherwise. We use this variable to see the difference in happiness level between household that saved last year and that does not. Therefore, we expect if individual has saved enough in the last year, he will feel secured and happy.

Now, we proceed with the preliminary analysis of the data.

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<sup>18</sup> Freedom of choice is rated on a scale of 10, where 1 means 'no freedom' and 10 means 'a great deal of freedom'. This variable came through asking the question 'How much freedom of choice and control individual has while main decisions?'. It is true that some people may feel completely free to choose and have proper control over their lives while taking decision, depending on the extent individual will rank his position over a scale 0 to 10.

## Chapter 4

# The Data and its Exploration

In this chapter we present a preliminary analysis on the data we used for our analysis. We explore the data set to see changes over the years in happiness and other different traits. At the same time a brief discussion is presented on the source, sample selection process and measurement issues related to data.

### 4.1 Sources of Data

We use the secondary data from World Value surveys (WVS)<sup>19</sup>. For Bangladesh, two waves of data sets are available. First wave (1994-1999) is collected in 1996 and the second wave (1999-2004) is in 2002 with a sample size of 3025 (wave one= 1500; wave two=1525). The data is individually self-reported and subjective that came through the process of stratified multistage random sampling of representative national samples. Samples were drawn from the entire population of 18 years and older with only one individual selected from each household.

It is a most comprehensive data set with a range of information on respondent's family and work, socio, economic and demographic characteristics, perception about life, politics and society, religion and morale, level of happiness etc.

The level of happiness of individual is the variable in concern, which came through the answer of the question: 'All things considered, how happy are you with your life?', with 4-response categories from very happy to not happy at all.<sup>20</sup> The formation of question remains same over time in WVS. So, it is easy to compare the response from the question over time. The wording of the question makes it very similar to the question asked in General Social Survey (GSS)<sup>21</sup>. This type of questionnaire captures both the feeling of happiness along with its intensity and forced individual make a judgment on his overall quality of life (Kahneman and Krueger 2006). Hence, from the same happiness question we will get an overview of individual's state of happiness along with information about his/her overall quality of life.

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<sup>19</sup> 'The World Value Surveys grew out of a study launched by the European Values Survey group (EVS) under the leadership of Jan Kerkhofs and Ruud de Moor' (Inglehart et al. 2004: 10).

<sup>20</sup> Exact categories are ordered as: 1=not at all happy, 2=not very happy, 3=quite happy and 4=very happy.

<sup>21</sup> In GSS, the question that is asked about happiness is "Taken all together, how would you say things are these days—would you say that you are very happy, pretty happy, or not too happy?"

## 4.2 Sample Selection Criteria

The administrative structure of Bangladesh is divided into 6 divisions (Appendix J Map-3). Each division divides into districts, each district into Upazila, each Upazila into Unions and each union into wards/villages.

The sample was predetermined and distributed between urban and rural areas on the basis of their population. The distribution of sample is 64 % and 36 % for rural and urban respectively. For rural, the sample is distributed among 60 districts (4 were excluded for inaccessibility). One Upazila was chosen from each district randomly and then two unions from those Upazilas and two villages from those Unions. The respondents were then randomly picked from those villages among the voting age men and women. For urban, the sample was distributed to various urban areas according to population and, then, the respondents were randomly selected from there. The distribution of gender is 45 and 55 percent for females and males respectively.

Thus, a total of 1525 and 1500 individuals were selected from 66 sample villages in 1996 and 2002 respectively. The number of sample districts, upazilas, unions are shown in the following table.

Table 4-1: Distribution of Sample by Division

Divisions	Districts	Upazila	Unions	Villages	No of Respondent	
					1996	2002
Dhaka	6	6	12	24	466	564
Chittagong	5	5	10	2	439	368
Khulna	2	2	4	8	155	63
Barisal	1	1	2	4	78	105
Sylhet	2	2	4	8	156	130
Rajshahi	5	5	10	20	231	270
Total	21	21	42	66	1525	1500

Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

### 4.3 Measurement Issues related to Data

In the WVS income measure is administered in the form that survey respondents are provided with show card of ten income brackets, each labeled with a letter.<sup>22</sup> Individuals are then asked in which group his income falls, counting all wages, pensions and other incomes before taxes and other deduction.

The brackets are defined by the country's principal investigators, and are intended to represent the deciles of income distribution. This approach was followed and the values of the bracket cut points are available for 152 of the 245 country waves included in the WVS (Donnelly and Pol-Eleches 2012)<sup>23</sup>. Another fifty-eight country waves were asked in this manner but are not accompanied by documentation of the bracket values. Same story prevails for Bangladesh. The income brackets are not documented in the main data set. The information about the income brackets are collected from the institute of Bangladesh Unnayan Parishad (BUP)<sup>24</sup> that did the fieldwork for world value survey. The collected income brackets are used for our analysis.

### 4.4 Exploration of Data

Under this section, we are going to describe the characteristics of the main variables used in the estimation process and explain how the measure of happiness are related with different aspects of life.

Figure 4.1 confirms that Bangladeshis enjoy a high level of happiness in 1996, when majority of the respondents from representative sample (around 85 percent, combining quite happy and very happy) report themselves as happy. But the percentage declines to 77 in 2002. A decline of 9 per cent has been recorded in the report of percentage of happy people across years. A joint decrease of *very happy* and *quite happy* by 17.64 and 6.22 per cent and a joint increase of *not at all happy* and *not very happy* by 54.78 and 4.76 percentage points (Figure: 4.1) are responsible for this decline. Hence, average happiness declines by 3.65 per cent in 2002 compared to 1996 (Appendix Table G-1). Note that, these changes may not be statistically different from each other as the proportions are not that different.

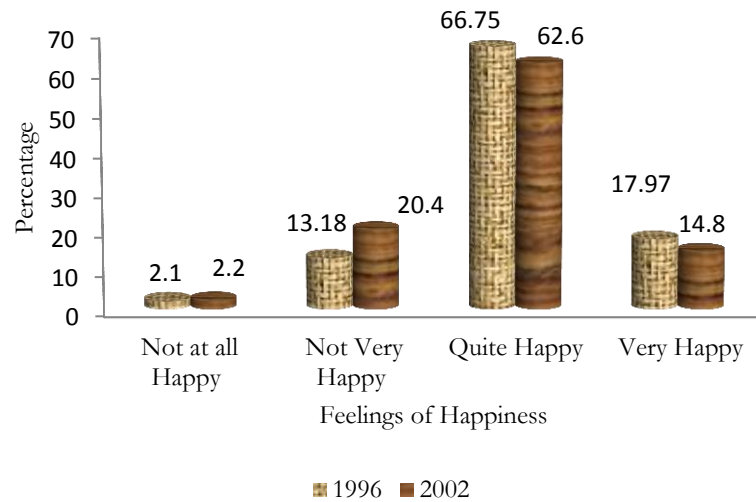
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<sup>22</sup> The letters are not in alphabetical order, allowing respondents to feel at least some sense of privacy though; the enumerators are likely to have seen the cards anyway.

<sup>23</sup> Seminar Presentation on The Questionable Validity of Income Measures in the World Values Survey, Prepared for the Princeton University Political Methodology Seminar, March 16, 2012.

<sup>24</sup> The Bangladesh Unnayan Parishad (BUP) is a non-profit organization devoted to the promotion of basic as well as action research on socio-economic development and environment. It was established in 1980 and is registered with the Government of Bangladesh under the Societies Act 1860. See details in website: <http://www.bup-bd.org/>

Figure 4-1: Happiness across different years in Bangladesh



Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

Appendix Table G-1 represents the summary statistics of all the variables used in the estimation process; disaggregated by different time periods. Pearson's correlation coefficients are shown in the last column after each year to show how happiness correlates with socio-economic and demographic variables.

Relatively high positive correlations with happiness are found for high income classes, upper class people, relative income and social position, people who save, enjoy freedom, people with education level above secondary but below masters, having fair and good health status and marital status as single. On the other hand, negative association with happiness exists for poor health persons, uneducated, widows and working class of the society. Interestingly no religious variable has statistically significant association with happiness variable and being religious denomination Muslim has negative association although majorities are Muslim. The average level of happiness is 3.01 and 2.9 in 1996 and 2002 respectively in a scale of 4, which implies that average happiness is equal to the category of 3 that is *quite happy*.

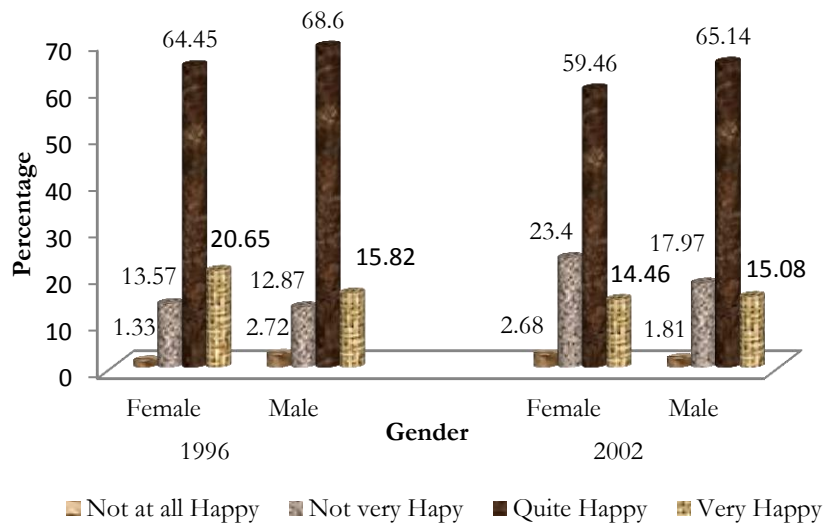
If we look at the gender disaggregation, across years, both men and women are experiencing decline in happiness, although men are reporting higher level of happiness than women (Figure: 4.2). By adding up percentage of people reporting very happy and quite happy, we observe that there is a decline of 13.14 percent (85.1 to 73.92 percent) in female reporting as happy compared to 4.98 percentage decline (84.42 to 80.22 percent) that of male.

The typical nature of falling happiness for women is a major cause of concern as Bangladeshi society is a patriarchy society where female turns to be dependent on male. Here women get more respect for their role in the household rather than as a person (Khan 1991: 4). And the role becomes crucial for her marital stability if she works outside home sphere. She needs to balance between her role in home and office. During this balancing, child rearing and up bringing is a major source of anxiety for them due to absence of child care facility in the working places and presence of reliable and efficient person or domestic maid in the household (Ilyas 1990). If the role in household together



with upbringing the children collide with her working role outside that contributes to stress, depression and creates conflict in family life (Khan 1991:4). Across the time periods, 65.19 percent increase in female labor force participation rate (from 15.8 percent in 1995-96 to 26.1 in 2002-03<sup>25</sup>) has been recorded nationally. Hence, there is a link between increased female labor force participation and decline in female happiness across the years.

Figure 4-2: Distribution of Gender and Happiness across years



Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

To see how happiness can be linked with the income domain, we plot the distribution of population by happiness category (Table: 4.2). There is a clear pattern in the percentage distribution of income, once income starts increasing from lowest class to upper class. If we observe both the years, when income starts increasing, percentage of people reporting *not at all happy* and *not very happy* start falling gradually and reaches to zero when highest income class is reached. Only exception is for income class Tk. 50001 to 10000 where the reporting increases. On the other hand, once income starts increasing people are more likely to report quite happy and very happy indicating income contributes to reduction in the unhappiness of the people. These give us an impression that happiness relates positively to income at a given point in time as acknowledged by Frey and Stutzer (2000) and Easterlin (2001). Interestingly, although the percentage increases for *quite happy* and *very happy*, it only increases up to a certain income level then starts falling. In 1996, highest reporting goes for income class Tk. 20001-25000 while in 2002 it goes for Tk. 15001 to 20000. Hence, some kind of non-linearity pattern is observed in happiness-income relationship.

<sup>25</sup> Bangladesh Bureau of Statistics (2002) 'Report on Labour Force Survey 2002-03', Ministry of Planning, Dhaka.

Table 4-2: Distribution of Population by Happiness at Different Income Levels

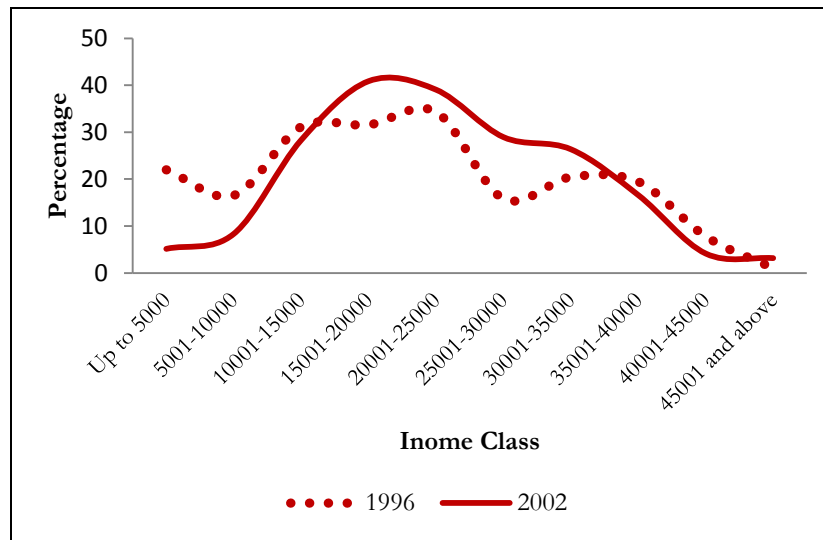
Individual Income (Taka)	Year 1996				Number
	Not at all Happy	Not very Happy	Quite Happy	Very Happy	
Income Group	2.10	13.18	66.75	18.03	1,525
Up to 5000	25.00	23.38	13.95	8.03	219
5001-10000	34.38	15.42	7.76	8.76	145
10001-15000	18.75	13.93	17.98	13.14	253
15001-20000	15.65	15.92	16.6	14.96	247
20001-25000	3.13	7.46	18.27	16.06	246
25001-30000	3.13	6.47	8.15	7.66	118
30001-35000	0.00	15.42	10.22	10.22	163
35001-40000	0.00	1.00	5.21	14.23	94
40001-45000	0.00	1.00	1.57	6.2	35
45001 and above	0.00	0.00	0.29	0.73	5
	Year 2002				
Income Group	2.2	20.4	62.6	14.8	1,500
Up to 5000	3.03	6.21	2.98	2.15	53
5001-10000	9.09	14.71	6.07	2.25	110
10001-15000	36.36	23.86	18.85	9.46	283
15001-20000	15.15	20.92	21.94	18.92	317
20001-25000	18.18	20.92	21.19	17.86	302
25001-30000	3.03	4.58	11.82	17.12	164
30001-35000	12.12	5.23	10.33	16.02	157
35001-40000	3.03	2.61	5.32	11.26	84
40001-45000	0.00	0.98	0.53	3.6	16
45001 and above	0.00	0.00	0.96	2.2	14

Note: Table represents column percentage

Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

To observe the pattern clearly through simple point of time relationship, we add two categories quite happy and very happy. Surprisingly, in year one, once income starts increasing we observe upward and downward inconsistent pattern of percentage of people reporting themselves as happy. The reporting reaches highest two times in year one at income class Tk. 10001-15000 (34.33 percent) and Tk. 20001-25000 (20.44 percent). A more clear pattern is observed in year two (2002), where percentage reporting increases once income starts increasing from the lowest class up to income class Tk. 15001-20000 (40.86 percent) and then it starts falling gradually until the last income class is reached. But we observe almost the common pattern of fall in percentage of people reporting happy after income class Tk. 35001-40000 in both years. This tends to support the argument of 'threshold theory', which claims that once certain threshold of basic needs have been fulfilled, returns from additional income in terms of improved quality of life start diminishing (Helliwell 2003; Layard 2005). Hence, people are unhappy in both end of the income class distribution (Figure 4-3).

Figure 4-3: Distribution of People Reporting Happy by Years



Source: Author's Computation based on WVS data of 1996 and 2002 for Bangladesh  
 Note: Happy is calculated by collapsing two categories of happiness i.e. very happy and quite happy.

One of the key differences in the experience of happiness is directly related to people's perceived social classes (Worcester 1998: 26). In both years, percentage of people belonging to upper class reports '*quite happy*' and '*very happy*' more than other social classes (92.54 and 89.61 percent in both the year respectively). In addition, people those claim to belong to middle class report higher percentage than working class (87.06 and 79.34 percent against 70.17 and 62.20 percent for middle and upper class in 1996 and 2002 respectively).

We also observe a declining pattern of percentage of people reporting themselves as happy. Across years, all social classes experience decline in happiness. The percentage decline is highest for working class (11.35 percent) compared to middle and upper classes (8.86 and 3.17 percent) (Table 4.3).

If we look at the macro economic situation of Bangladesh especially inflation scenario of that particular time period (1994 to 2004 as shown in appendix Figure G-1), we notice a rising trend of food and non-food price during 2002 compared to 1996. Lower class people usually belong to the occupation categories of rickshaw puller, servant, driver, fisher man, weavers etc. those who are the first victim of price hike (Shakib 2012<sup>26</sup>). As they have fixed earning, it would be difficult for them to cope easily with the rising price of food and non-food items. Hence, can be a cause behind the decline in reported happiness for lower class.

<sup>26</sup> Shakib (2012: 5) studied the impact of price hike over lower and middle class. Due to price hike essential daily commodities to transportation, educational, medical and other expenses all are increasing. Around 98 percent of the lower class people in Dhaka city and in other parts of the country report difficulty in coping with the situation.

Table 4-3: Distribution of Population by Happiness and Social Class

Social Class	Not At all happy	Not Very Happy	Quite Happy	Very Happy
1996				
Working Class	4.68	25.15	63.74	6.43
Middle Class	1.79	11.14	70.29	16.77
Upper Class	0.50	6.97	62.44	30.10
2002				
Working Class	5.02	32.78	56.46	5.74
Middle Class	1.05	19.61	66.47	12.87
Upper Class	1.21	9.18	62.56	27.05

Note: Table represents row percentage

Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

The other important variables are relative positions. Relative social position variable shows that 91.48 percent of individual whose social class is above the average social class in the locality report themselves as happy (combining quite and very happy) while the reporting is 79.61 percent for people below the average. Across years, it falls down to 85.37 and 69.91 percent for relative position above and below the average respectively (Table: 4.4).

Table 4-4: Distribution of Population by Happiness and Relative Position

Relative Position	1996			
	Not at all Happy	Not very Happy	Quite Happy	Very Happy
Below	3.46	16.94	67.28	12.33
Above	0.30	8.22	66.06	25.42
2002				
Below	3.24	26.86	59.65	10.26
Above	1.21	13.42	65.91	19.46

Note: Table represents row percentage

Source: Author's Computation based on WVS data of 1996 and 2002.

In case of relative income position, around 93 percent of surveyed individual report themselves as happy in 1996 if their income position is higher than average income position of the locality. It falls down to around 84 percent in 2002 for the people whose income position is above the average income position (Table 4.5).

Table 4-5: Distribution of Population by Happiness and Relative Income Position

Relative Income Position	1996			
	Not at all Happy	Not very Happy	Quite Happy	Very Happy
Below	3.31	18.44	65.84	12.41
Above	0.59	6.63	67.89	24.89
Relative Income Position	2002			
	Below	2.84	25.71	60.94
Above	1.45	14.18	64.54	19.83

Note: Table represents row percentage

Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

Average happiness as a function of age exhibits the U-shape pattern found in many previous studies (Frijters and Beaton 2008<sup>27</sup>, Blanchard and Oswald 2002). The pattern is not much clear in 1996 but in 2002, we observed a U-shape relationship between average happiness and age group (Figure 4.4). The fall in average happiness level up to age group 35 to 44 is similar in both years. After crossing age 35 to 44, different trends are visible once age starts increasing. Mean happiness falls drastically in year one while starts increasing gradually in year two after crossing age group 55-64.

The age for retirement<sup>28</sup> belongs to this age group when people need social security from state. In Bangladesh there is no provision of social security system like the case in many developing countries in the world. But due to large population size, resource scarcity, poverty, poor public health care services and absence of social security aging people become a social concern in Bangladesh. Although public servant's retirement act of 1974<sup>29</sup>, allows a pension system for the government and semi-government officials, still a vast number of aged people engaged in non-public sectors like: agriculture, industry and services (private) which are not under the coverage of this pension system. As a result, for the sudden change in occupation status can be a crucial factor behind the tremendous fall in happiness after this age has been crossed. But in year two this does not happen. Literature says, by the middle of age most people release the lifelong aspiration and thereby start enjoying their life more than earlier time (Blanchard and Oswald 2002: 1375). Since most workers retired in their early sixties in Bangladesh, we inspect the age-happiness pattern and find that the increase in life and leisure satisfaction is well visible in the first part of the 60s in year two. In 1998, government introduced an Old Age Allowance

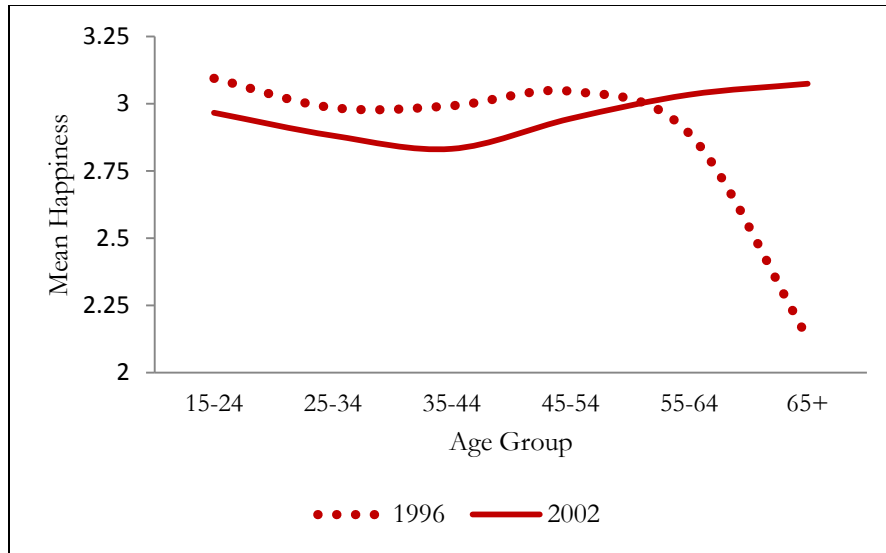
<sup>27</sup> Summarized in: Frijters, P. and T. Beaton (2008) 'The mystery of the U-shaped relationship between happiness and age', National Centre for Econometric Research Working Paper Series No. 26.

<sup>28</sup> According to the Public Servants Retirement Act 1974 and Rules 1975, the retirement age in public service is 57 years, which is extended to 59 years by placing an ordinance of public servants (Retirement) act in 2011. For details see: [http://www.rhd.gov.bd/RulesAndRegulations/View\\_Overview.asp?Ref=A](http://www.rhd.gov.bd/RulesAndRegulations/View_Overview.asp?Ref=A)

<sup>29</sup> The act says the pension amount is equal to the last pay drawn by the individual rather than 12 months average pay. The maximum pension amount is 60% of the last pay (Miyan 2005).

Programme (ODA)<sup>30</sup> to cover its majority of people who worked for non-public sector. It can be possible that program do have an impact on the respondents' above the age group 55-64<sup>31</sup> in year two when average happiness shows a sharp rising trend after the retirement age has been passed.

Figure 4-4: Mean Happiness by age group



Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

Bangladesh is a Muslim majority country. Sometimes religion becomes the issue of internal conflict among different religion if minorities are less happy than the majority (Graham et al. 2004: 327). Only a small minority of Hindu and Christian report themselves as unhappy (less than 18 percent). However, the percentage of happy people remains stable irrespective of any religion (Table 4-6). It explains that religion makes relatively little difference for happiness in Bangladesh.

<sup>30</sup> This scheme is implemented first only in the rural areas covering all upazilas and wards of 64 districts with elderly persons incapable of physical work and the destitute women are receiving Tk. 100 per month as allowance from the government on monthly basis. Now the amount increased to Tk. 150 per month. Although it still fails to cover the whole aged people, government is trying to increase the budget each and every year to cover as many people as possible. In the years 1997-98 it covered more than four lac three thousand (exactly 403110) elderly people while during 2002-03 increases to around five lac (exactly equal to 499662) old aged persons. In 2003-2004 and 2004-05, the coverage increased to one million and over one million and three lack (equal to 1315000) old aged persons respectively (Miyan 2005).

<sup>31</sup> BRAC did an impact evaluation in 2008 on old age and widow allowance in Bangladesh. They found that beneficiaries were not only able to contribute economically to their household but also invested the amount for different income generating activities to become self-reliant. This also strengthens the position of receiver in his household especially increasing the bargaining power of old woman in the household.

Table 4-6: Distribution of Population by Religious

Objective Condition	Not At all happy	Not Very Happy	Quite Happy	Very Happy
		1996		
Muslim	2.14	12.94	66.69	18.22
Hindu	2.05	15.38	66.15	16.41
Christian	0.00	13.33	66.67	20.00
Buddhist	0.00	0.00	66.67	33.33
		2002		
Muslim	2.18	20.46	63.28	14.08
Hindu	1.87	20.56	56.07	21.50
Christian	0.00	16.67	50.00	33.33
Buddhist	0.00	14.29	57.14	28.57

Note: Row percentage.

Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

Therefore, some common pattern has been observed in the relationship between income, socio-economic variables and happiness across different time periods. Thus, it would be interesting to see whether the same pattern and relationship holds when we conduct various econometric analyses.

## Chapter 5

# Empirical Results and Interpretation

We run the model based on our full specification including individual variables, household and district level controls. Hence, the ordered probit specification contains individual, household and region specific variables.

As the exact measure of happiness is unobserved, from the ordered *probit* estimates it is difficult to explain which variable effect the latent outcome happiness. That's why we calculate the effect on the response probability [i.e.  $\partial Pr(HP_i = 1; 2; 3; 4)/\partial X_i$  ]; i.e. the probability of reporting specific values happiness: the marginal effects.

### 5.1 Cross Sectional Analysis

The marginal effects from ordered probit model are presented in Appendix Table H-3. Column 1 to 4 and 5 to 8, represent marginal estimates of the probability of a person *being not at all happy, not very happy, quite happy* and *very happy* from two different time years.

#### *Income Classes*

As seen from column (1), after controlling for individual and household characteristics, higher income significantly increases the probability of *being very happy* and decreases the probability of *not at all happy* and *not very happy*. As compared to base income category of Tk. 5000 or lower, graduation from income class of Tk. 30001 to TK. 35000 to a upper category, significantly reduces the probability of being *not at all happy* and *not very happy* by 2.3 and 7.8 percentage points respectively and increases the probability of being *very happy* by 11.6 percentage points. The marginal effects of income class on the probability of reported happiness become stronger in magnitude once income level starts increasing beyond the threshold of Tk. 30001 to 35000. In year 2002 (column 5-8) we get similar picture from income variables. But the significant effect of income on happiness starts from relatively lower level income level (Tk. 25001 to 30000) compared to previous year.

Hence, evidence suggests that income matters for happiness. But it seems that to influence the level of happiness of an individual, income must cross a sufficient threshold. As a result, probability of those with higher income are more happy with their life is high. This evidence contrasts Graham et.al (2004:334), who argue that relative importance of income is higher at very low income level where basic needs are unmet but at higher level of income, other factors gain relative importance. Similarly, Wolbring et al. (2013:92) show a strong positive effect on happiness below a certain level of income<sup>32</sup>; contrary to our results. But the analysis is based on two highly developed countries in

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<sup>32</sup> Wolbring et al. (2003) find that income and happiness are strongly correlated at the lower income range and weekly correlated above a certain income range and he certain threshold value located within the range of € 800 per month disposable income (ibid: 93)



the world (i.e. Germany and Russia by Wolbring et al. 2013 and Graham et al. 2004 respectively<sup>2</sup>) with a GDP far greater than Bangladesh. Hence, the conclusion may not be applicable to developing country context.

Often, it is believed that the relationship between happiness and income is curvilinear (Veenhoven 1991:11) i.e. happiness function follows a concave pattern over income classes. To check for this possibility we run a bi-variate cross sectional ordered probit regression. As the ordered probit model utilized the four scale of happiness question, the marginal probability effects of income were plotted for each level of happiness (Appendix Figure: H-1).

The graphs are based on the predictive margins with 95 percent confident intervals. In these graphs, we don't observe any clear patterns of concavity in the happiness-income relationship. But the effect of income on predicted probabilities of any level of happiness is large for income ranges from Tk. 30001 – Tk. 35000 to Tk. 450000, that is, more towards the right tail of the income distribution.

We also fail to see evidence of concavity in the happiness-income relationship in second year (Appendix Figure: H-2). It can be seen that marginal effects become stronger in magnitude as income level starts increasing from a lower level. In year two, we assume greater importance at lower levels of income.

### **Social Classes**

We anticipated that one's social status can potentially influence happiness along with income. Theoretically, higher social class implies higher level of happiness. The negative effect of *not at all happy* and *not very happy* and positive effect of *very happy* for both middle and upper classes confirm this argument. Column 1 to 4 (Appendix Table H-3) explains that the marginal effect of one unit graduation in the household class from middle to upper class compared to working class in the society decreases the probability of stating not at all happy and not very happy by 1.9 and 6.5 percentage points respectively. On the other hand, it increases the likelihood of a person stating very happy by 9.7 percentage points for the first year of analysis. Interestingly, the marginal effects for middle and upper class are almost similar.

The second year exhibits changes in determinants of happiness: being an upper class individual, while marginal effects of being an upper class individual remain the same, they are no longer statistically significant. Although being middle class exerts significant effect on almost all level of happiness, the magnitude of marginal effect is lower as compared to year one.

### **Relative Position**

An individual's relative social position in the society is another influential determinant of happiness for which we expect a high positive association if relative social position is above the average social position. It turns out to be highly significant for all levels of happiness except for the level *quite happy*, showing the association between social position and happiness in both years. Results show that individual whose social position is above the average social position are less likely to report *not at all happy* and *not very happy* but more likely to report *very happy* compared to people whose social class is below the average social class.

On the other hand, relative income position is insignificant in both the years showing no explanatory power in the happiness equation. One possible explanation is related to the fulfilment of basic needs. Until basic needs are fulfilled, relative difference in income doesn't matter for individual happiness (Graham 2011:234). Therefore, absolute income captures all the pecuniary effects on happiness.

### **Individual and Socio-economic Controls**

Among the control variables, men are more likely to report *not at all happy* and *not very happy* but less likely to report *very happy* than women in year one. Being a male, increases the probability of reporting being not at all happy and not very happy by 0.9 and 3.2 percentage points while decreases the probability of stating very happy by 4.8 percentage points. But in the next year, these results are insignificant showing the declining power of gender in the happiness function.

Married people are happier than single or never been married. Specifically, getting married increases a person's likelihood of stating that they are very happy with their life by 5.4 percentage points in the year one though is insignificant in year two.

As expected good health has a stronger effect on people's level of happiness in both the years. Bad health condition of any of the member in household is a cause of crises. It is also a factor in 'reproducing pattern of poverty (Camfield et, al. 2006:12) as it increases the household's sudden expenditure on health care. Improvement in the status of health from poor to fair reduces the probability of stating being *not at all happy* by 1.8 percentage points and 34ongitudes the probability of stating being *very happy* by 9.1 percentage points. Similarly, change in health status from poor to good has much more stronger effect (18.3 percentage points) on a person's reporting being *very happy*. This implies that better health status leads to higher level of happiness. The marginal effects on happiness are stronger in year two. Hence, health turns to be a core determinant of happiness for Bangladeshis.

Unemployment is a major source of human suffering (Di Tella et al. 2001). Unemployed people are more likely to report themselves as not at all happy and not very happy compared to employed people. Moving from unemployment to employment increases the probability of an individual stating being very happy by 10.3 percentage points. But the effect also depends on the quality of public services. Social protection schemes are very weak in Bangladesh and for the unemployed person there is no statutory benefit from state.<sup>33</sup> So, being unemployed is expected to have a stronger negative effect on level of happiness.

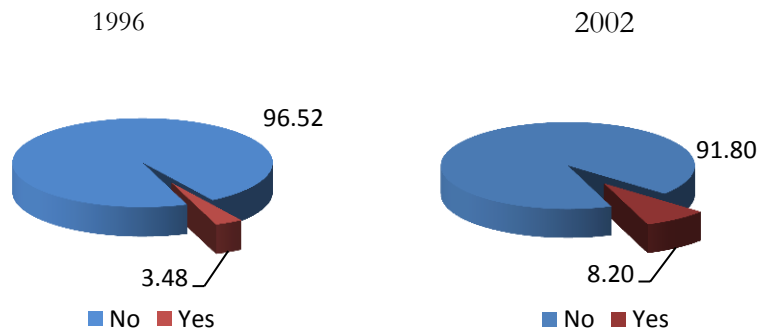
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<sup>33</sup> According to labour law of 2006, only workers in commerce and industry are supposed to receive a termination benefit, a retrenchment and layoff benefit, and a benefit for discharge from service for any kind of health related issue. For permanent employees benefit is equivalent to a monthly salary equal to half of the average basic wage for 120 days (plus a lump-sum payment of 1 month of salary for each year of service) whereas casual workers benefit will go for 60 days (plus a lump-sum payment of 14 days of wages for each year of service) and temporary workers for 30 days.

Source: <http://www.ssa.gov/policy/docs/progdesc/ssptw/2010-2011/asia/bangladesh.html>

Unemployed variable shows opposite effects in the two years. In the first year, all coefficients are statistically significant and have the expected sign. On the contrary, in the second year, coefficients are not only lower, but also statistically insignificant. Additionally, they also show the opposite sign. The lack of significance may depend on the incidence of unemployment in the two years. So, we plotted the percentage distribution of unemployed people between two years (Figure: 5.1) to see if this is indeed the case.

Figure 5-1: Number of Unemployed people in different years (Percentage)



Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

From the figure, it is clear that the incidence of unemployment is higher in year two than in year one (8.20 percent of the sample against 3.48 percent of the sample). If we look at national statistics for unemployment rate, during the survey period 1995/96, 1999-2000 and 2002-03, the unemployment rate was 2.5, 3.29 and 4.30 percent respectively (BBS 2005; 2010). So, there is a trend of increasing rate of unemployment. Our sample does not reflect the same pattern. Hence, between two time periods this variable changes its pattern in our data and impact on level of happiness.

We include religious denomination variables to capture the probable impact of religion on happiness. As around 90 percent of populations in Bangladesh are Muslim<sup>34</sup>, religious denomination may not reflect the true picture of happiness-religion relationship. But to see the variation in happiness across different religion we controlled for religion in our model. Among all religion variables, only Christian turns to be significant throughout different level of happiness in both years. Being a Christian decreases the probability of stating not at all happy and not very happy and increases the probability of stating being very happy compared to Muslims. That means belonging to a particular religion does not generate significant effect on happiness across the two years.

For variable freedom of choice, the marginal effects are somewhat similar in both years. A one scale improvement in freedom of choice lowers the probability of being not at all happy by 0.2 percentage points and increases the probability of stating being very happy by 1.4 percentage points in year two.

<sup>34</sup> According to Bangladesh Demographics Profile (2013) the religious distribution is Muslim 89.5%, Hindu 9.6%, other 0.9% (2004). Accessed 11 September 2013 <[http://www.indexmundi.com/bangladesh/demographics\\_profile.html](http://www.indexmundi.com/bangladesh/demographics_profile.html)>.

The most important change observed between years is through the variables age and age squared. The negative marginal effects of age and positive effects of age squared become statistically significant across the happiness scale in two years. Therefore, if we compare from the descriptive statistics (Figure 4.6), we can say, happiness is high for young people, declines at middle age (reaches the minimum at age 35 to 44) and then increases again at an older age consistent with other studies (e.g. Kahneman and Krueger 2006).<sup>35</sup>

We found some weak evidence of higher education exerting lower level of happiness for the individuals in year two. Compared to uneducated people, higher education significantly lowers the probability of being *very happy* by 6.9 percentage points. But the marginal effects are significant only at 10 percent level. This variable is positive but insignificant in the first year. Some literature explains the co-variation of education with income and occupational status as responsible factor behind this weak relationship (Cambell 1981: 69, Witter et al. 1984). Hence, when income is controlled, the effects of education turn to be insignificant or even negative on happiness (Campbell et al. 1976: 137, Diener et al. 1992). Our finding supports this statement of negative effect of education on happiness.

## 5.2 Pseudo Panel analysis

In fixed effect model, income class coefficients are highly significant except for income class Tk. 35501 to 45000, suggesting that over time graduation in income class increases the proportion of happy people within cohorts. Thus, individual income class has stronger positive effect on the level of happiness over time within cohort contrary to the findings from cross section, which supports only for the effect from high income class (Appendix Table I-1).

The tests of adjacent coefficient of social class and relative positive were positive and statistically significant which suggest that proportion of happy people increases with improvement in social class and individual relative position.

We included four marital status variables to control changes in cohort's proportion of married people. These variables measured the proportion of people in a cohort having specific marital status. We are expecting negative association of all three marital statuses such as: widowed, Divorced/separated and living together with proportion of happy people and positive association with married variable.

As expected the coefficients of divorces and living together as married are negative suggesting a negative relationship between proportions of happy people with these variables. Divorced/separated, makes people unhappy (Graham et a. 2004), so the probability that proportion of happy people would fall if there is an increase in divorced/separated people in a cohort. For the living together variable we got negative effect on proportion of happy people. In a

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<sup>35</sup> Kahneman and Krueger (2006) found that younger people are generally happy. The happiness level is lowest for the teenagers but thereafter it starts improving.

conservative society like Bangladesh, living together is not socially accepted and people usually bear some negative concept about this kind of relationship. Religion is the influencing factor here as according to Muslim law, without legal marriage male and female are not allowed to live together. It is also not well accepted in the society also. But it is practiced and accepted only in some upper class families in Dhaka city, the capital of country (Zahid 2007). From that perspective, the negative effect on happiness is expected.

Health status and freedom of choice variables are positive in pseudo panel also. As we have seen from the cross sectional analysis across the years, these variables have highly significant marginal effect on happiness. Over time, across the cohorts they maintain the same positive and significant trend.

The age and unemployment variables bear the expected negative effect on proportion of happy people in a cohort. In the life cycle pattern of Bangladeshis, proportion of happy people declines as age increase. Although in cross section model age fails to generate significant effect on happiness but over time proportion of happy people falls in each cohort if cohort's average age increases. Similarly, the unstable variable unemployment has stronger negative effect on the proportion of happy people.

Therefore, our findings show that within a cohort moving from low income to a high income class significantly associated with an increase in the proportion of happy people, it supports the statement that income matters for happiness within the cohort. Over time changes in variables such as: social class, relative position, marital status (divorced/separated and living together as married), health status, age and unemployment affect the proportion of happy people within a cohort. Therefore, they are responsible for over changes in happiness over.

## Chapter 6

### Conclusion

The primary focus of this study has been to identify the determinants of individuals' happiness in Bangladesh. The motivation for delving further into this topic stems from counter-intuitive reports of high level of happiness in an unarguably low income country such as Bangladesh. There has been ample number of arguments about the correlates of happiness in poor countries. Some argue that income and wealth are weak determinants of happiness in a poor country (e.g. Schyn, 2003) while others insist that income is a better predictor of happiness in a poor country as compared to a rich country (Veenhoven, 1991, Oishi et al, 1999). Moreover, some studies suggest that other factors such as: health, family, education, security etc. play an equally important role in determining individuals happiness like income (see for example: Diener and Diener, 1995:96). This paper is attempted to analyze which of these contrary arguments rings true in the case of Bangladesh using data from WVS to assess the correlates of happiness.

Our results from the descriptive statistics show that around 85 percent and 77 percent of the respondents from Bangladesh report themselves as happy in 1996 and 2002 respectively. Compared to other developing countries (e.g. Brazil, Ghana, Argentina, Chile, Nigeria etc.<sup>36</sup>), this reported level is much higher. It is even higher than other South Asian countries (e.g. India, Nepal and Pakistan<sup>37</sup>) with comparable levels of GDP per capita. We also observe two interesting phenomena in the descriptive statistics. First is the declining effect of increased women's labour force participation on individuals' happiness. Second, the positive effect of government's 'Old Age Allowance Program' that can be linked with the increase of average level of happiness for people aged over 55 to 64.

Our econometric results support the argument made by most literature in the area that income plays a key role in determining the happiness of impoverished societies. After controlling for other factors, we still find a positive and highly significant effect of income on happiness in both years. Importantly, social status of individuals' also influences happiness along with income. Similar positive effect has also been found from relative social position. Individual whose social position is above the average social position are more likely to report *very happy* compared to people whose social class is below the average. The results also show statistically significant effects of other variables such as health status and freedom of choice, on individual happiness. An increase in individuals' freedom by one point on the rating scale raises the probability of *very happy* life by 1.2 and 1.4 percentage points in year 1996 and 2002 respec-

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<sup>36</sup> According to the ranking of percentage of happy people by Worcester (1998:24) using WVS data, Bangladesh ranks 22, Argentina ranks 27, Brazil ranks 28, Chile ranks 31, Nigeria ranks 37, Ghana ranks 39 and India is in 40<sup>th</sup> position.

<sup>37</sup> For Nepal and Pakistan the happiness ranking is available only in the report of Happy Planet Index. They report Bangladesh is in 11<sup>th</sup> position of the ranking while Nepal and Pakistan are in 58<sup>th</sup> and 16<sup>th</sup> position respectively (2010: 26).

tively, which is consistent with our hypothesis. Hence, single point in time relationship confirms that income classes, social classes, relative social position, freedom of choice and health status of the individuals are the core determinates of happiness.

However, our cross section study is based on two years of data from WVS, which came through the interview of different individuals in different time period. Panel data on happiness is rare in developing countries as compared to developed countries. Unavailability of panel data is also a concern for doing research on happiness<sup>38</sup>. To the extent that unobserved individual heterogeneity influences happiness, our results from cross section analysis are biased, in an unknown direction. Additionally, this also implies that we are unable to attribute changes in happiness over time to any variable at the individual level. To partially offset this limitation, we form a pseudo panel based on appropriate cohorts from the two periods capturing the people of same gender, age and having same level of education. We observe the changes in proportion of happy people within each cohort for a change in any of the explanatory variable. The pseudo panel results also support the results from cross section analysis. Changes in the five determinants from cross section analysis produce the similar effect on change in happiness. The positive effect from income classes explains that graduation within income classes increases the proportion of happy people within a cohort. The effects become stronger once income start increasing, a finding which concurs with results from cross sectional analysis. Among other variables, social classes, relative social position, health status and freedom show the similar pattern of effect on changes in happiness over time.

In conclusion, we can say that while data from happiness polls seem to suggest the existence of happiness paradox in Bangladesh, our analysis reveals that dangers of linking happiness to countries rather than individuals. Our evidence indeed concurs with conventional arguments made by several authors that income is indeed a significant factor in determining individual's happiness, from a closer examination of the income gradient shows that higher levels of country-level happiness are being driven by relatively higher income categories. This study also reinforces the importance of complementary conditions such as good health, freedom of choice in determining happiness levels.

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<sup>38</sup> For doing this research, we get only two years of data of WVS collected from Bangladesh where so far six years have been executed from 1981 to 2013 for the developed country (WVS: 2012).

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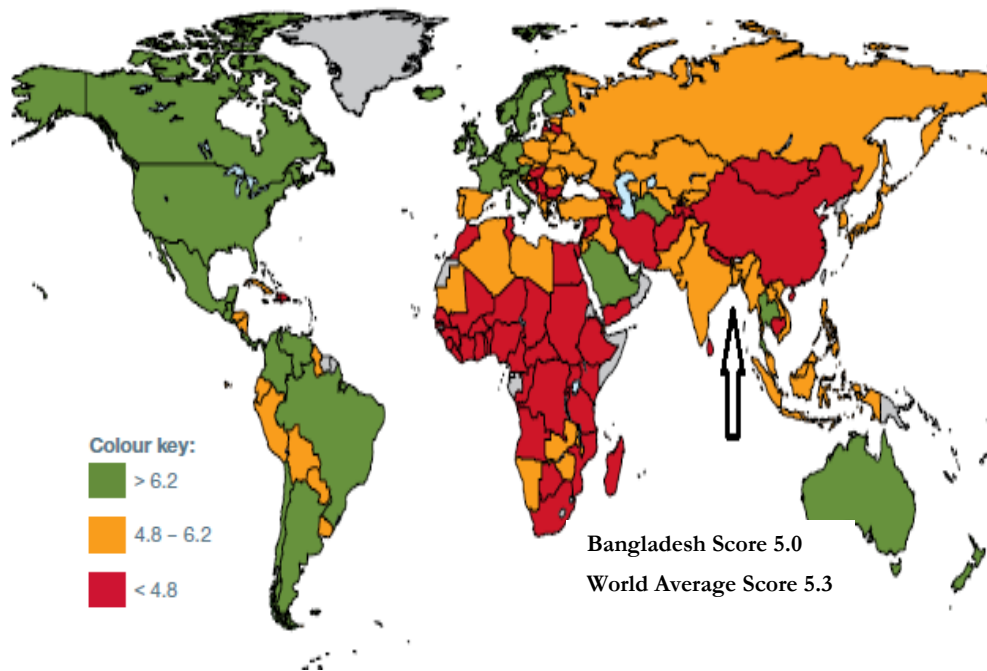
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# Appendices

## Appendix A : Experienced Well-being Worldwide

Map 1: Map of Experienced Well-being Worldwide



Source: HPI 2012: 11

## Appendix B: Some Silent Features of Bangladesh

### *Unemployed Population*

This table shows that over time number of unemployed population in Bangladesh are increasing. It has increased from 1.3 million in 1995-96 to 2.7 million in 2009. In case of male, the annual average increase is 0.06 million while for female it is 0.05 million from 1995-96 to 2009.

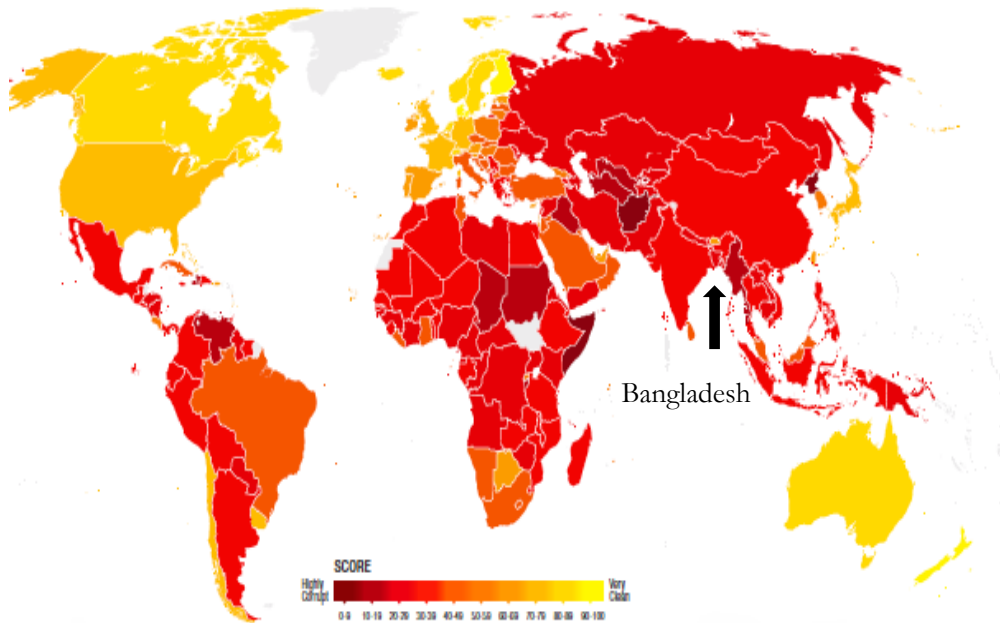
Table B-1: Unemployed Population by Gender (Millions)

Year	Total	Male	Female
1995-1996	1.3	0.9	0.4
1999-2000	1.8	1.1	0.7
2002-2003	2.0	1.5	0.5
2005-2006	2.1	1.2	0.9
2009	2.7	1.7	1.0

Source: Data compiled from Bangladesh Bureau of Statistics of Different Years.

### *Corruption Scenario*

Map 2: Corruption Perceptions Index 2012



Source: Transparency International Bangladesh (2012: 3)



## Appendix C: Construct of Pseudo Panel

Table C-1: Number of Individual in each Cohort by Years

Cohorts	Survey Year		N <sub>1</sub>	Survey Year		N <sub>2</sub>
	1996	2002		1996	2002	
<b>Male with No Education Born:</b>						
1909-1934	1	1	2	7	1	8
1935-1960	1	1	2	33	26	59
1961-1986	1	1	2	43	94	137
<b>Male with Higher Secondary level Education Born:</b>						
1909-1934	1	1	2	6	8	14
1935-1960	1	1	2	115	62	177
1961-1986	1	1	2	324	397	721
<b>Male with Bachelor Degree Born:</b>						
1909-1934	1	1	2	2	1	3
1935-1960	1	1	2	27	6	33
1961-1986	1	1	2	91	54	145
<b>Male with Masters Degree Born:</b>						
1909-1934	1	1	2	2	1	3
1935-1960	1	1	2	11	2	13
1961-1986	1	1	2	17	19	36
<b>Female with No Education Born:</b>						
1909-1934	1	1	2	14	4	18
1935-1960	1	1	2	36	41	77
1961-1986	1	1	2	24	38	62
<b>Female with Higher Secondary level Education Born:</b>						
1909-1934	1	1	2	19	12	31
1935-1960	1	1	2	250	177	427
1961-1986	1	1	2	228	348	576
<b>Female with Bachelor Degree Born:</b>						
1909-1934	1	1	2	2	2	4
1935-1960	1	1	2	90	24	114
1961-1986	1	1	2	112	113	225
<b>Female with Masters Degree Born:</b>						
1909-1934	1	1	2	2	3	5
1935-1960	1	1	2	28	19	47
1961-1986	1	1	2	42	48	90
Total	24	24	48	1525	1500	3025

Note: N<sub>1</sub>- Total Synthetic Individual; N<sub>2</sub>- Total Number of Individuals.

Source: Authors' Computation based on WVS data of 1996 and 2002 for Bangladesh.

## Construction of Cohorts

24 cuts are made for placing individual at least in one cohort in each year. The cuts are made to break down the sample based on age cohort defined by year of birth, gender cohort and education cohort. Construction of cohort follows the assignment of individual identification (Id) in each year by following classes:

We assign:

- Id=1 if individual is a male with no education and year of birth falls under the group of 1909-1934;
- Id=2 if individual is a male with no education and year of birth falls under the group of 1935-1960;
- Id=3 if individual is a male with no education and year of birth falls under the group of 1961-1986;
- Id=4, 5, 6.....12 continues for a male person of higher secondary, bachelor or masters level education with three different age groups.
- For the female, the same process continues from Id 13 to 24. Then we repeated the procedure for year two. After that we got 48 individual Id representing 48 cells of cohort mean data.

Each cohort is constructed in such a way that it includes all individuals of a specific age group, gender and education level in a specific cohort. Then we arrange the data in such a way that the first individual of the first line of year 1996 is the same individual in the first line of year 2002. Thus, the repeated time cross section data turns to be a panel data for different year in the same individual.

## Appendix D: Hausman Test

Hausman test is the common test used by the researcher to justify which model is appropriate in the presence of time varying explanatory variables. The common way is to run both random effect and fixed effect model and run the test. If the test failed to reject the null hypothesis, means both random and fixed effect models are close to each other but random effect model is more efficient than fixed effect. A rejection means time varying factor is not random and the random effect assumption is false. Hence, one should go for the fixed effect estimates (Wooldridge 2009: 493).

The results from Hausman test support that fixed effect is consistent for our analysis. The  $P$  value ( $p=0.000$ ) from the Hausman test statistics fails to accept the null hypothesis that cohort specific fixed effects are uncorrelated to the error term. There by, the test confirms fixed effect model is consistent for our analysis.

Table D-1: Results from Hausman Test

Variables	Coefficients			
	Fixed (b)	Random (B)	Difference (b-B)	S.E.
Tk. 5001 to 10000	0.442	-0.395	0.837	0.512
Tk. 10 001 to 15000	1.049	-0.270	1.319	0.254
Tk. 15001 to 20000	0.300	0.123	0.176	0.214
Tk. 20 001 to 25 500	0.247	0.166	0.081	0.107
Tk. 25 001 to 35000	0.708	0.344	0.363	0.291
Tk. 35 501 to 45 000	0.084	-0.135	0.220	0.268
Tk. 45 001 or more	0.962	0.901	0.062	0.965
Middle Class	0.316	0.077	0.239	0.129
Upper Class	0.503	0.081	0.422	0.286
Relative Social Position	0.361	-0.039	0.401	0.200
Relative Income Position	0.313	0.048	0.265	0.235
Widowed	-0.372	-0.272	-0.101	0.249
Divorced/Separated	-5.742	-0.272	-5.470	1.331
Living together as Married	-5.734	-0.967	-4.767	1.998
Married	-0.242	0.088	-0.330	0.129
Health Status: Fair	1.782	0.568	1.214	0.079
Health Status: Good	1.843	0.511	1.332	0.366
Age	-0.013	0.0003	-0.013	0.005
Freedom	1.367	0.251	1.116	0.059
Unemployed	-0.214	-0.025	-0.189	0.318

b = Consistent under Ho and Ha; obtained from xtreg  
B = Inconsistent under Ha, efficient under Ho; obtained from xtreg  
Test: Ho: difference in coefficients not systematic  

$$\chi^2(21) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 558.98$$
Prob>chi2 = 0.0000  
(V\_b-V\_B is not positive definite)

Note: SE= Standard Errors

Source: Author's Computation based on WVS data of 1996 and 2002 for Bangladesh.

## Appendix E List of Variables

Table E-1: Description of Variables Used in the Estimation Process

Name of Variables	Description
Happiness	Happiness: Taking all things into consideration in his life how happy individual feel? 1= Lowest; 4= Highest
Income Class	Household total income in scale (excluding taxes and transfers): 1= up to Tk. 5000, 2= Tk. 50001 to 10000, 3= Tk. 10001 to 15000, 4= Tk. 15001 to 20000, 5= Tk. 20001 to 25500, 6= Tk. 25001 to 30000, 7= Tk. 30001 to 35000, 8= Tk. 35501 to 40000, 9= Tk. 40001 to 45000, 10= Tk. 45001 or more
Social Class	Subjective perception of which social class respondent's household belongs to comparing others in the society. 1=working/lower class, 2=middle class, 3= upper class.
Relative Social Position	Individual social class compared to average social class in the locality: 1= Above; 0= Below
Relative Income Position	Individual Income class compared to average Income class in the locality: 1= Above; 0= Below
Age	Age
Age <sup>2</sup>	Age Squared
Children	No of Children
Marital Status	1= Single; 2= Widowed; 3= Separated; 4= Divorced, 5= living together; 6= Married
Education Status	1=never studied; 2= primary education; 3= secondary school (SSC); 4=higher secondary (HSC); 5= bachelor degree; 6= masters/similar other degree.
Health Status	Current state of health: 1=Poor; 2=Fair; 3= Good
Religious Denomination	1= Muslim; 2= Hindu; 3= Christian; 4= Buddhist
Freedom	Freedom of choice and Decision making: 1= Not at all; 10= A great deal
Unemployed	1= Unemployed, 0= Employed
Savings	Whether Household saved during the past year or not? 1= Saved last year, 0=otherwise

## **Appendix F: Multicollinearity and Variance Inflation Factor (VIF)**

As an indicator of multicollinearity in a multiple regression model, the variance inflation factor (VIF) is commonly used by the researchers. A low value of VIF, which is desired, indicates that the standard errors are not inflated by multicollinearity. A high value can affect the results of the model adversely, so dropping of one variable of the collinear variables is necessary for getting efficient estimates. The maximum value of 10 as acceptable value of VIF has mostly been recommended as a sign of severe or serious multi-collinearity (Kennedy 1992, O'brien 2007).

Hence, using this recommended value we find no severe multicollinearity among the independent variables except for age and age squared. As age squared is generated from squaring the age variable, it is expected that they are collinear. Therefore, taking this into consideration, we run our model with full specification including all variables.

Table F-1: Results from the Test of Multi-collinearity

Name of Variables	1996		2002	
	VIF	1/VIF	VIF	1/VIF
Tk. 5001 to 10000	1.740	0.576	3.340	0.300
Tk. 10 001 to 15000	2.490	0.402	6.370	0.157
Tk. 15001 to 20000	3.630	0.276	7.080	0.141
Tk. 20 001 to 25 500	4.620	0.216	8.860	0.113
Tk. 25 001 to 30000	4.090	0.244	7.470	0.134
Tk. 30001 to 35 000	5.530	0.181	7.430	0.135
Tk. 35 501 to 40 000	3.920	0.255	4.830	0.207
Tk. 40 001 to 45 000	2.250	0.444	1.780	0.563
Tk. 45 001 or more	1.150	0.868	1.680	0.595
Middle Class	4.700	0.213	4.900	0.204
Upper Class	8.020	0.125	11.560	0.087
Social Position (Above=1)	4.390	0.228	5.560	0.180
Income Position (Above=1)	5.950	0.168	5.550	0.180
Primary Education	2.580	0.388	2.720	0.368
Secondary School	3.600	0.278	3.500	0.286
Higher Secondary School	3.740	0.267	2.990	0.334
Bachelor/Honors	4.050	0.247	2.990	0.335
Masters/ Similar	2.270	0.440	2.120	0.472
Age	46.700	0.021	35.260	0.028
(Age) <sup>2</sup>	40.110	0.025	31.590	0.032
Widowed	1.600	0.625	1.260	0.796
Separated	1.070	0.933	1.100	0.913
Divorced	1.100	0.910	1.120	0.895
Living together as Married	2.410	0.415	1.060	0.939
Married			2.190	0.456
Gender (Male=1)	1.300	0.772	1.390	0.720
Fair	4.020	0.249	7.130	0.140
Good	4.330	0.231	7.280	0.137
No of Children	2.680	0.374	2.700	0.370
Saved in Last Year (yes=1)	1.380	0.724	1.440	0.693
Freedom of Choice	1.410	0.709	1.270	0.788
Hindu	1.090	0.920	1.080	0.924
Christian	1.090	0.915	1.050	0.953
Buddhist	1.040	0.961	1.050	0.956
Unemployed (=1)	1.100	0.908	1.270	0.789

Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

## Appendix G Descriptive Statistics

Table G-1: Descriptive Statistics for the Selected Variables

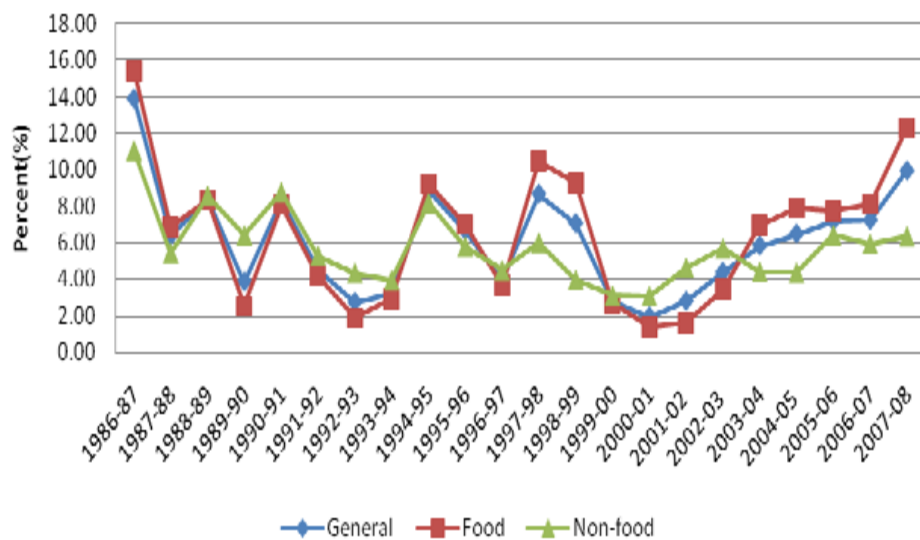
Variable	1996			2002		
	Mean	Std. Dev	Correlation	Mean	Std. Dev	Correlation
Happiness	3.01	0.629	1.00	2.9	0.656	1.00
Income of Individual						
1. Up to Tk. 5000	0.144	0.351	-0.126**	0.035	0.185	-0.059**
2. Tk. 5001 to 10000	0.095	0.293	-0.106**	0.073	0.261	-0.137**
3. Tk. 10 001 to 15000	0.166	0.372	-0.015	0.189	0.391	-0.124**
4. Tk. 15001 to 20000	0.162	0.369	-0.007	0.211	0.408	-0.0007
5. Tk. 20 001 to 25 500	0.161	0.368	0.072**	0.201	0.401	-0.033
6. Tk. 25 001 to 30000	0.077	0.267	0.021	0.109	0.312	0.125**
7. Tk. 30001 to 35 000	0.107	0.309	-0.013	0.105	0.306	0.105**
8. Tk. 35 501 to 40 000	0.062	0.241	0.158**	0.056	0.230	0.104**
9. Tk. 40 001 to 45 000	0.023	0.150	0.103**	0.011	0.103	0.065**
10. Tk. 45 001 or more	0.003	0.057	0.036	0.009	0.096	0.068**
Social Class						
1. Working Class	0.218	0.413	-0.258**	0.278	0.448	-0.261**
2. Middle Class	0.517	0.500	0.028	0.448	0.497	0.018
3. Upper Class	0.264	0.441	0.209**	0.274	0.446	0.242**
Relative Position						
Social Position (above=1)	0.431	0.495	0.221**	0.501	0.500	0.204**
Income Position (above=1)	0.445	0.497	0.235**	0.461	0.499	0.179**
Age	35.446	12.275	-0.049	33.774	10.923	0.013
(Age) <sup>2</sup>	1406.99	1020.21	-0.045	1259.92	899.80	0.033
No of Children	2.296	1.997	-0.058**	2.351	1.965	-0.023
Saved in Last Year (yes=1)	2.093	0.964	0.159**	1.903	0.776	0.163**
Freedom of Choice	6.255	2.382	0.178**	5.702	2.108	0.199**
Gender (Male=1)	0.555	0.497	-0.055**	0.553	0.497	0.059**
Unemployed (=1)	0.035	0.183	-0.104**	0.082	0.274	0.038
Marital Status						
1. Single	0.210	0.408	0.016	0.192	0.394	0.056**
2. Widowed	0.031	0.175	-0.085**	0.011	0.103	-0.063**
3. Separated	0.004	0.063	-0.017	0.004	0.063	0.010
4. Divorced	0.006	0.077	-0.109**	0.007	0.081	-0.038
5. Living together as Married	-	-	-	0.005	0.068	0.10
6. Married	0.748	0.434	0.042	0.782	0.413	-0.034
Education Level						
1. No Education	0.103	0.304	-0.165**	-0.135	0.342	-0.183**
2. Primary Education	0.179	0.384	-0.097**	0.247	0.431	-0.019
3. Secondary School	0.237	0.426	0.090**	0.270	0.444	0.054**
4. Higher Secondary School	0.203	0.403	0.081**	0.155	0.362	0.051**
5. Bachelor /Honours	0.211	0.408	0.018	0.132	0.339	0.075**
6. Masters/ Similar	0.066	0.248	0.035	0.061	0.239	0.013
Health Status						
1. Poor	0.083	0.275	-0.196**	0.047	0.212	-0.239**
2. Fair	0.449	0.498	-0.149**	0.370	0.483	-0.262**
3. Good	0.468	0.499	0.257**	0.583	0.493	0.359**
Religion						
1. Muslims	0.859	0.347	0.016	0.920	0.272	-0.041
2. Hindus	0.128	0.335	-0.022	0.071	0.258	0.030
3. Christians	0.010	0.099	0.010	0.004	0.063	0.026
4. Buddhist	0.002	0.044	0.023	0.005	0.068	0.025
<b>N</b>	<b>1525</b>			<b>1500</b>		

Note: \*\*significant at 5 percent level.

Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.



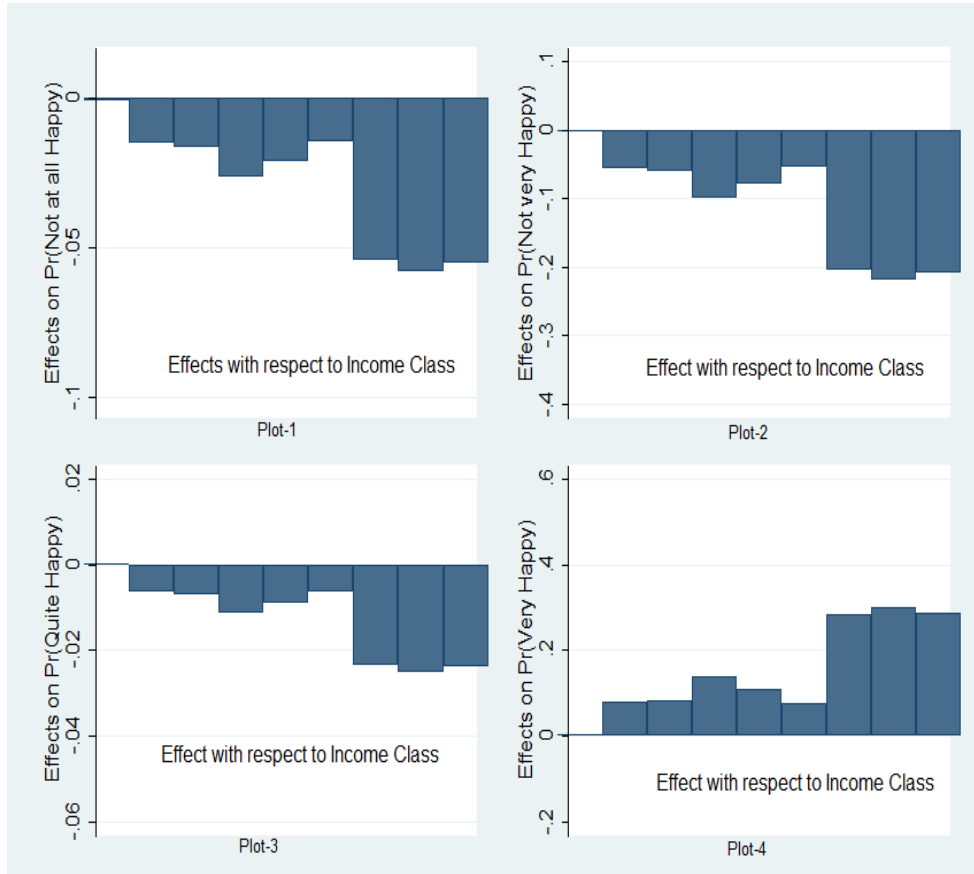
Figure G-1: Trend in Food and Non-food Inflation at National Level



Source: Ministry of Finance (2010)

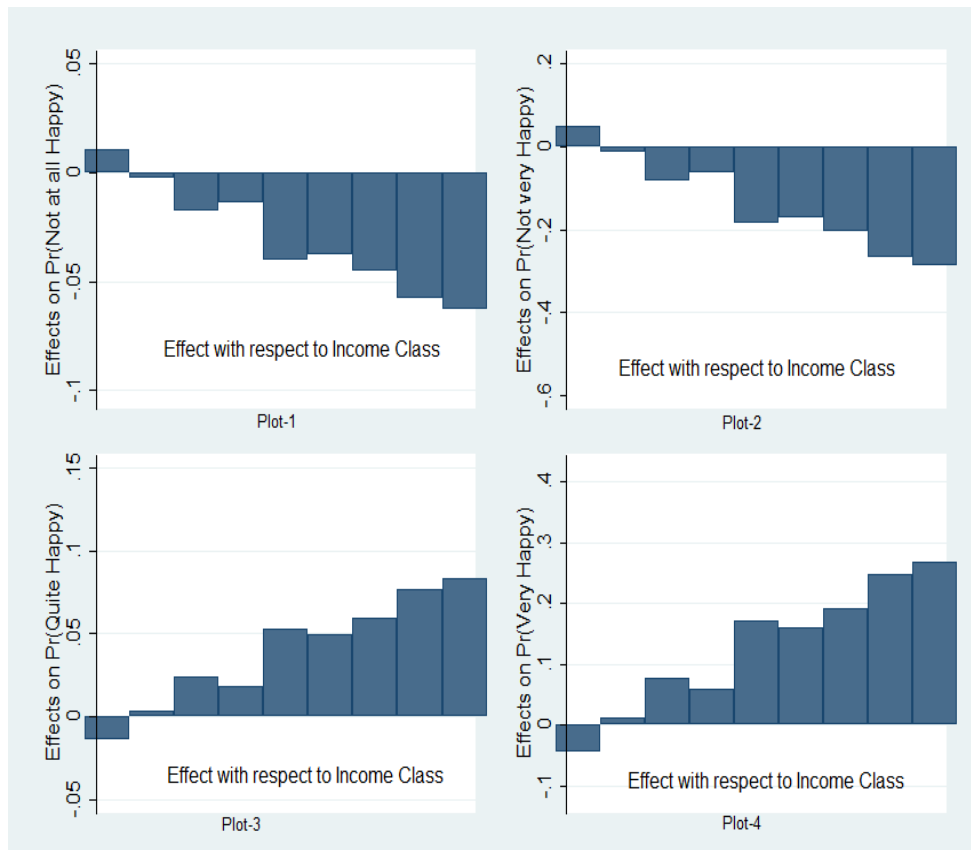
## Appendix H: Results from Cross Sectional Analysis

Figure H-1: Marginal Probability Effects of Income on Happiness in 1996



Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

Figure H-2: Marginal Probability Effects of Income on Happiness in 2002



Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

Table H-3: Marginal Effects on Happiness by Year: OProbit Estimates

Dependent Variable: Taking all things together, would you say you are happy? [1= Not at all happy; 2= Not very happy; 3= Quite happy; 4= Very happy]								
Variables	1996				2002			
	Not at all happy 1	Not very happy 2	Quite happy 3	Very happy 4	Not at all happy 5	Not very happy 6	Quite happy 7	Very happy 8
<u>Income Class (Ref. Tk. Up to 5000)</u>								
Tk. 5001 to 10000	-0.002 (0.006)	-0.008 (0.021)	-0.002 (0.005)	0.013 (0.031)	0.002 (0.007)	0.011 (0.037)	-0.002 (0.008)	-0.011 (0.036)
Tk. 10 001 to 15000	-0.007 (0.006)	-0.026 (0.020)	-0.005 (0.008)	0.038 (0.029)	-0.008 (0.007)	-0.041 (0.035)	0.009 (0.010)	0.040 (0.035)
Tk. 15001 to 20000	-0.008 (0.008)	-0.026 (0.025)	-0.005 (0.007)	0.039 (0.035)	-0.013 (0.008)	-0.064* (0.038)	0.013 (0.013)	0.063* (0.037)
Tk. 20 001 to 25 500	-0.012 (0.009)	-0.042 (0.028)	-0.008 (0.011)	0.062 (0.038)	-0.011 (0.009)	-0.055 (0.046)	0.012 (0.014)	0.054 (0.044)
Tk. 25 001 to 30000	-0.006 (0.010)	-0.020 (0.035)	-0.004 (0.007)	0.029 (0.050)	-0.027** (0.012)	-0.137** (0.053)	0.029 (0.025)	0.134*** (0.052)
Tk. 30001 to 35 000	-0.023** (0.012)	-0.078** (0.035)	-0.015 (0.021)	0.116** (0.049)	-0.018* (0.012)	-0.092 (0.056)	0.020 (0.019)	0.091* (0.054)
Tk. 35 501 to 40 000	-0.038** (0.015)	-0.132*** (0.041)	-0.025 (0.034)	0.196*** (0.054)	-0.025** (0.013)	-0.126** (0.058)	0.027 (0.024)	0.124** (0.057)
Tk. 40 001 to 45 000	-0.041** (0.018)	-0.142*** (0.052)	-0.027 (0.037)	0.211*** (0.070)	-0.044** (0.019)	-0.221*** (0.079)	0.047 (0.040)	0.218*** (0.076)
Tk. 45 001 or more	-0.045** (0.023)	-0.156** (0.073)	-0.030 (0.043)	0.231** (0.106)	-0.030* (0.016)	-0.150** (0.072)	0.032 (0.030)	0.148** (0.069)

		<u>Household Characteristics</u>						
<u>Social Class (Ref. working class)</u>								
Middle Class	-0.019*** (0.006)	-0.065*** (0.018)	-0.013 (0.019)	0.0967*** (0.033)	-0.011** (0.006)	-0.054** (0.027)	0.012 (0.011)	0.053** (0.026)
Upper Class	-0.019** (0.009)	-0.064** (0.030)	-0.012 (0.020)	0.096* (0.052)	-0.014 (0.011)	-0.068 (0.046)	0.015 (0.016)	0.067 (0.044)
<u>Relative Position</u>								
Social Position (Above=1)	-0.015** 0.006	-0.016** 0.009	-0.003 0.004	0.023** 0.010	-0.011** 0.006	-0.018* 0.011	0.001 0.007	0.038** 0.017
Income Position (Above=1)	-0.002 0.005	-0.0068 0.018	-0.001 0.004	0.10 0.027	0.004 0.006	0.021 0.028	-0.004 0.007	-0.020 0.028
No of Children	0.0010 (0.001)	0.003 (0.004)	0.001 (0.001)	-0.005 (0.006)	0.0001 (0.001)	-0.001 (0.005)	0.0001 (0.001)	0.0006 (0.005)
Saved in Last Year (yes=1)	-0.006* (0.004)	-0.021* (0.013)	-0.006 (0.008)	0.032 (0.020)	-0.002 (0.003)	-0.010 (0.016)	0.002 (0.004)	0.010 (0.016)
		<u>Individual Characteristics</u>						
Age	0.0003 (0.001)	0.0009 (0.003)	0.0002 (0.0006)	-0.0013 (0.004)	0.001** (0.0006)	0.006** (0.003)	-0.001 (0.001)	-0.006** (0.003)
(Age) <sup>2</sup>	0.000004 (0.000008)	-0.00001 (0.00003)	-0.000003 (0.000007)	0.00002 (0.00004)	-0.00002** (0.000007)	- 0.00009*** (0.00003)	0.00002 (0.00002)	0.00008** (0.00003)

Marital Status (Ref. Single)

Widowed	0.006 (0.010)	0.021 (0.033)	0.004 (0.008)	-0.032 (0.049)	0.004 (0.011)	0.022 (0.053)	-0.005 (0.012)	-0.022 (0.052)
Separated	-0.011 (0.019)	-0.037 (0.066)	-0.007 (0.015)	0.055 (0.097)	-0.017 (0.022)	-0.083 (0.108)	0.018 (0.028)	0.082 (0.106)
Divorced	0.029 (0.018)	0.100* (0.059)	0.019 (0.029)	-0.148* (0.089)	0.003 (0.016)	0.014 (0.081)	-0.003 (0.018)	-0.014 (0.080)
Living together as Married	(omitted)	(omitted)	(omitted)	(omitted)	-0.010 (0.020)	-0.049 (0.098)	0.011 (0.023)	0.049 (0.097)
Married	-0.011** (0.005)	-0.037** (0.017)	-0.007 (0.010)	0.054** (0.025)	-0.0005 (0.004)	-0.003 (0.021)	0.0006 (0.005)	0.003 (0.021)
Gender (Male=1)	0.009** (0.004)	0.032*** (0.011)	0.006 (0.008)	-0.048*** (0.016)	-0.003 (0.003)	-0.014 (0.014)	0.003 (0.004)	0.014 (0.014)

Education Level (Ref. No Education)

Primary Education	-0.002 (0.005)	-0.008 (0.019)	-0.001 (0.004)	0.011 (0.028)	-0.004 (0.005)	-0.022 (0.024)	0.005 (0.006)	0.022 (0.024)
Secondary School	-0.009 (0.006)	-0.032 (0.020)	-0.006 (0.010)	0.048 (0.030)	0.002 (0.005)	0.008 (0.028)	-0.002 (0.006)	-0.008 (0.027)
Higher Secondary School	-0.007 (0.007)	-0.025 (0.022)	-0.005 (0.008)	0.037 (0.033)	0.004 (0.006)	0.019 (0.030)	-0.004 (0.007)	-0.019 (0.030)
Bachelor /Honors	0.003 (0.007)	0.011 (0.023)	0.002 (0.005)	-0.017 (0.034)	-0.0003 (0.006)	-0.001 (0.032)	0.0003 (0.007)	0.001 (0.032)
Masters/ Similar	-0.002 (0.008)	-0.007 (0.027)	-0.001 (0.006)	0.011 (0.041)	0.014* (0.008)	0.070* (0.039)	-0.015 (0.013)	-0.069* (0.039)

<u>Health Status (Ref. Poor)</u>								
Fair	-0.018**	-0.061***	-0.012	0.091***	-0.027***	-0.135***	0.029	0.133***
	(0.007)	(0.020)	(0.016)	(0.030)	(0.010)	(0.038)	(0.023)	(0.040)
Good	-0.036***	-0.123***	-0.024	0.183***	-0.061***	-0.308***	0.066	0.303***
	(0.010)	(0.0245)	(0.032)	(0.032)	(0.016)	(0.041)	(0.049)	(0.046)
Freedom of Choice	-0.002***	-0.008***	-0.002	0.012***	-0.003***	-0.014***	0.003	0.014***
In ten scale	(0.001)	(0.002)	(0.002)	(0.004)	(0.001)	(0.003)	(0.002)	(0.004)
<u>Religious Denomination (Ref. Muslim)</u>								
Hindu	-0.001	-0.003	-0.0006	0.005	-0.008	-0.0410	0.009	0.040
	0.004	0.014	0.003	0.021	0.006	0.027	0.008	0.027
Christian	-0.025*	-0.085**	-0.016	0.125*	-0.027**	-0.134**	0.029	0.132**
	0.013	0.043	0.024	0.064	0.014	0.060	0.025	0.059
Buddhist	-0.033*	0.115**	-0.022	0.170**	-0.015	-0.073	0.016	0.072
	0.018	0.056	0.032	0.083	0.016	0.075	0.020	0.074
Unemployed (=1)	0.040*	0.100**	-0.036	-0.103***	-0.0004	-0.002	0.0004	0.0012
	(0.023)	(0.040)	(0.040)	(0.030)	(0.005)	(0.024)	(0.005)	(0.024)
Observations		1,484				1,465		
Pseudo R-squared		0.1647				0.199		
Log likelihood		-1153.94				-1149.6		

Note: Robust standard errors in parentheses;

District level dummies are included, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author's Computation based on WVS data of 1996 and 2002 from Bangladesh.

## Appendix I: Pseudo Panel Results

Table I-1: Happiness Model with Cohort Effects

VARIABLES	(1) Re Model	(2) FE Model
<b>Income Levels (Base: Tk. Up to 5000)</b>		
Tk. 5001 to 10000	-0.395 (0.653)	0.442*** (0.0952)
Tk. 10 001 to 15000	-0.270 (0.472)	1.049*** (0.147)
Tk. 15001 to 20000	0.123 (0.133)	0.300** (0.123)
Tk. 20 001 to 25 500	0.166 (0.150)	0.247*** (0.0472)
Tk. 25 001 to 35000	0.344 (0.313)	0.708*** (0.108)
Tk. 35 501 to 45 000	-0.135 (0.423)	0.0845 (0.167)
Tk. 45 001 or more	0.901 (0.768)	0.962*** (0.105)
<b>Social Class (Base: Lower/working Class)</b>		
Middle Class	0.0765 (0.113)	0.316*** (0.0350)
Upper Class	0.0813 (0.378)	0.503*** (0.121)
<b>Relative Position</b>		
Social Position	-0.0394 (0.193)	0.361*** (0.0613)
Income Position	0.0477 (0.285)	0.313*** (0.0606)
<b>Marital Status (Base: Single)</b>		
Widowed	-0.272 (0.421)	-0.372 (0.239)
Divorced/Separated	-0.272 (1.394)	-5.742*** (0.470)
Living together as Married	-0.967 (1.012)	-5.734*** (0.614)
Married	0.0881 (0.277)	-0.242 (0.159)
<b>Health Status (Base: Bad Health)</b>		
Fair	0.568 (0.400)	1.782*** (0.188)
Good	0.511 (0.390)	1.843*** (0.264)
Freedom of Choice	0.251* (0.145)	1.367*** (0.103)
Age	-0.000256* (0.00197)	-0.0129*** (0.00278)



Unemployed	-0.0249 (0.362)	-0.214** (0.0795)
Observations	48	48
Overall R-squared	0.783	0.998
Number of Cohorts	24	24

Note:

- Dependent variable: Proportion of happy people. Happiness is an ordered variable of four. For making it proportional we generated the dichotomous dependant variable by collapsing the dependant variable into happy and unhappy. The generated variable is coded as 1 if the original variable is coded 3 or 4 (quite happy and very happy) and 0 otherwise (not at all happy and not very happy). Then we counted the proportion of people happy in each cohort.
- Standard errors are in parentheses adjusted for heteroscedasticity and corrected for the clustered design of the sample.
- \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$
- Cohorts are based on two years of WVS data; year 1996 and 2002.
- Cohorts and year dummies are included.

## Appendix J: Maps of Sampled Divisions

Map 3: Map of Bangladesh with Sampled Divisions and Districts



Source: Adapted from <http://www.mapsofworld.com/bangladesh/bangladesh-political-map.html>, Accessed 3 November 2013.