Intergenerational Mobility and Subjective Well-Being

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Abstract

Using information on 45,000 individuals from 20 OECD countries from the World Values Survey, this paper analyzes the relationship between Subjective Well-Being and the intergenerational transmission of inequality as measured by intergenerational earnings and educational elasticities. The existing literature shows that cross-sectional measures of earnings inequality in the OECD are not correlated with well-being. In contrast this study reports a negative relationship between indicators of the degree to which inequality is transmitted across generations and Subjective Well-Being.

Introduction

The use of Gross Domestic Product as an aggregate measure of social welfare has been increasingly questioned. A number of alternative measures of welfare have been proposed, and in particular the idea of measuring happiness has gained a certain currency. When this is done researchers have found happiness is not strongly related to income per capita, at least in the case of the relatively rich countries. The happiness of rich countries has grown post World War II, and the rich have generally appeared to be happier than the poor but happiness of rich countries has not grown in proportion to their income growth. According to Layard (2003, p17), "...once a country has over $15,000 per head, its level of happiness appears to be independent of its income per head." An alternative to the concept of happiness as a measure of societal well-being is offered by Bentham's utilitarian approach, which interprets well being to be the sum of individual utilities. The weakness in his proposed theory is that utility cannot be objectively measured. Utilities can only be aggregated across all individuals if a given level of consumption produces the same level of utility for everyone. Even if the welfare of the society was measured by a utilitarian approach, the distributional inequalities in the happiness of individuals are still left unaccounted.

Individuals have a tendency to unconsciously associate income with their satisfaction levels. There is also an instinctive desire to compare income across a reference or peer groups comprised of people who are close in terms of socio-economic status. From this perspective individuals are more concerned about their relative rather than their absolute income. This is a type of psychological behaviour that is essential to understanding the relationship between economics and well-being of people. Contemporary studies have used different terms like 'life satisfaction', 'happiness' or 'subjective well-being' to explore and understand peoples'

evaluation of their lives at a single point in time. The focus has shifted from the assessment of ideal and impersonal values and norms to personal features, needs, interests, desires as well as experiences. Most of the studies on this subject have been undertaken over the past two decades and this approach is gradually making its way into the policy makers' agenda.

Society, personality, and individual experience and circumstances are some of the important components of well-being. While personality has been shown to vary genetically, the differences between personalities have also been shown to cause variations in well-being, *ceteris paribus* (Inglehart and Klingemann, 2000). Personality and genetic traits cause differences in individual well-being, while cultural and societal practices and norms are determinants of well-being at a group level. Although most of the existing literature is comprehensive with regards to the determinants of well-being at the individual level, it lacks an indicator at the aggregate level comparable to something like GDP per capita. Social trust, governance indicators, and perceptions of equality have been examined as proxies for social comparisons and their relationship with well-being has been studied. Social comparisons in the form of equality have been analyzed in the happiness literature by Alesina *et al.* (2004) as 'perceived social mobility', Bjornskov *et al.* (2008) as 'procedural utility' and by Senik (2006) with a reference income approach. However, all these approaches to the study of inequality have been indirect, and have led to mixed results. To understand and establish a clear relationship between inequalities, this paper will look at a direct approach based on the intergenerational transmission of inequality across generations.

Intergenerational transmission of inequality refers to the relationship between the earnings or education of parents and those of their children. This relationship describes the degree to which an income profile or status is transmitted from one generation to another. This

measure offers an alternative for making social comparisons of equality as it shows whether a society offers any kind of advantage or disadvantage to individuals by virtue of their family background. A mobile society will tend to not transmit inequality intergenerationally developing and rewarding ability and hard work. A society that is less generationally mobile will see children occupying the same relative position in the income hierarchy as their parents. The traditional approach to measuring the intergenerational earnings mobility involves estimating a relationship between the long run earnings of the parent and the child. The measurement of the intergenerational relationship in earnings and incomes is a challenge, reflecting the need to correct for potential measurement errors. Therefore, to establish framework set of comparable estimates for cross country comparisons the paper takes into account the different methodologies used in computing the estimates.

The relationship between well-being effects and intergenerational mobility has yet to be analyzed in happiness literature. Although a positive relationship between social mobility and well-being has been established, the empirical evidence is indirect. This paper aims to fill that gap by testing the relationship between well-being and two intergenerational mobility measures, intergenerational earnings and education elasticity, which are more direct and suitable estimates of the degree of mobility in society.

Societal measures of well being are studied using data from the World Values Survey over the period 1990 to 2001. Subjective Well-Being is measured using the life satisfaction question, which asks, "All things considered how satisfied you with your life are as whole these days?", and rates answers on a 10-point scale, ranging from "completely dissatisfied" to

"completely satisfied". Two sets of results are offered: a country level analysis, and an individual analysis using the micro data.

In the tradition of previous empirical studies, cross country differences have been analyzed at the by using aggregate variables of the intergenerational earnings elasticity, Gini coefficient and income growth. The individual level analysis involves combining information on the well being and characteristics of individual respondents to the World Values Survey with measures of the degree of intergenerational mobility for the country in which they reside. In this case Subjective Well-Being is measured as a binary variable as measured by the top three categories of the life satisfaction question.

The country level analysis shows a statistically significant relationship between well being and both the intergenerational earnings and education mobility. In contrast, the Gini coefficient measuring cross sectional inequality is not found to be related to well being among the set of OECD countries that are part of the analysis. This is consistent with the findings of previous research. The results show that the well-being of countries is more strongly correlated with the intergenerational elasticity in years of schooling than it is with the intergenerational earnings elasticity. This correlation does not change even when differences in per capita income are accounted.

The analysis also distinguishes the well being of different age cohorts. It is hypothesized that the relationship between well being and the degree of intergenerational mobility will be stronger among younger cohorts as they have a greater stake in the educational and economic mobility of society compared to those who are established or at the end of their careers. This hypothesis is found to be true as the well-being correlation with social mobility decreased across

older age cohorts when earnings elasticity is used as an explanatory variable. Hypothesizing along the same line, the well-being effects for individuals with children were found to be stronger than the ones without any children.

Emphasis has been placed in previous inequality studies on perceptions of fairness, opinions on income distribution and qualitative indicators of governance. Some studies have proposed that perceived inequality might be beneficial if it creates a scope for economic gain. The perceived notions of inequality were found to be superior alternatives to cross sectional measures of actual inequality in the form of the Gini coefficient. Alesina *et al.* (2004) even went so far as to suggest that it is perceived rather than actual social mobility in society which has a strong relationship with ones subjective well-being as such opinions are manifested in the government's fiscal policy regarding taxation and welfare distribution. To test such a claim, intergenerational earnings elasticity is employed as an explanatory variable alongside perceived mobility in a micro level model. The question used to collate information on perceived mobility reflects individuals' opinion on 'the need to eliminate inequality' on a five point scale where one is the signal for a great need and five is the signal for very little need. Individuals in the top two categories are selected to have a low perceived mobility. The results obtained from the micro-level analysis show that perceived mobility has weak relationship with well-being. The correlation of well being with intergenerational earnings elasticity in the same model was not only robust but also had a noteworthy magnitude suggesting that such as a measure should done be ignored when studying inequality in the happiness literature.

The paper is organized as follows: Section 1 discusses the concept of happiness by outlining the different definitions, its origins and evolution. This section will also critique alternative approaches like the utilitarian and the aggregate income method. Section 2 of this

paper will briefly discuss how well-being can be used as a tool to effectively track and maintain information on social indicators and quality of life. Section 3 will examine the six most important indicators of well-being based on their usage and significance in some of the prominent studies on this subject. Section 4 will provide a detailed discussion on two measures of intergenerational earnings and education elasticity, their methods of estimation and a framework for cross country comparison. Section 5 will discuss the data, key variables and the estimation techniques used in the analysis. Section 6 will analyze the different empirical models of well-being and will examine the strength of the different relationships between actual mobility in the form a Gini Coefficient, intergenerational mobility in terms of earnings and educational elasticity and perceived mobility. Section 7 concludes and summarizes.

Section 1: Well-being – Theory and Background

Helliwell *et al.* (2009) suggest that "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." Layard (2005) has put forth a similar definition of happiness. According to him happiness is "feeling good, enjoying life and wanting that feeling to be maintained." He studied the World Values Surveys and found that the response rates for the happiness question were very high, .showing that people are in touch with their feelings of happiness and are able to express them. [1] However, in their book Helliwell *et al.* use the term 'well-being' even though they believe that it is not different from the term happiness. They do this to avoid confusion between the broad and the narrow connotations of happiness. For instance, in health related studies, happiness with the quality of life would be defined as being healthy. In the economic realm, happiness would be often defined as being wealthy. Even though the terms life satisfaction and happiness are used inter-changeably, Deaton (2008) believes that the term 'life satisfaction' is actually closer to well-being than happiness. When individuals report their life satisfaction, they make an overall evaluation of their lives. Well-being refers to general life satisfaction; an overall evaluation of an individual's life rather than one specific area. In this paper, however, the terms happiness and life satisfaction will be used interchangeably keeping the original construct in mind.

[1] There were only about 1.1% 'Don't Know' responses to the happiness question in Wave 3 (1999-2002) of the World Values Survey. The 'Don't Know' option was subsequently eliminated from the Wave 4(2005-2006)

1.1: Origins of the Concept of Happiness

The origins of the study of happiness can be traced to Aristotle and his famous discussion on *eudaimonia*.[2] Aristotle was of the view that happiness was the search for pleasure from a person's body and material possessions. He saw good birth accompanied by a lifetime of good friends, good children, health, wealth and a content old age all contributing to an individual's happiness. He emphasized the importance of a lifetime of virtuous activity which in turn required sufficient supply of material goods to sustain it. He was, however, very clear that material goods were a means and not an end, and that wealth accumulation is not the goal towards happiness in the long term.

In the late 19th century economists thought that economics was about happiness. They thought of a person's happiness as in principle measurable, like temperature which could be compared with another person's happiness. They also assumed that extra income brought less and less extra happiness as a person got richer. According to Marshall, "... the influence exerted on a person's character by the amount of his income is hardly less, if it is less, than that exerted by the way in which it is earned. It may make little difference to the fullness of life of a family whether its yearly income is £1000 or £5000; but it makes a very great difference whether the income is £30 or £150: for with £150 the family has, with £30 it has not, the material conditions of a complete life." (Marshall 1890, p. 2)

Aristotle's ideas were later revived by John Stuart Mill who believed that experiences of happiness can vary both in quantity and quality. The basic idea of Mill's philosophy was right

[2] http://www.seop.leeds.ac.uk/entries/aristotle-ethics/. Stanford Encyclopedia of Philosophy.

but there were flaws in this framework which were explored by Ryff *et al.* (2005) and Keyes (2002). Their work has shown that a psychological index comprised of purposeful enjoyment, positive self-regard, positional relationships and personal growth is positively correlated with reported measures of happiness. Therefore, they refuted Mill's argument that some forms of happiness are intrinsically better than others and showed that quality of well-being can be ignored (Layard, 2005).

Psychologists began to test the theories of happiness in the 1920s. Their approach was seemingly based on the belief that measuring social and psychological states of individuals in society is the key to understanding the social change and the quality of their life. The era of Behaviorism took hold in the 1930s as classic free-market economists began to believe that individuals are rational, or at least act rationally: thus free decisions in a free market deliver optimal economic results. This brought the scientific study of feelings of happiness to an end as emphasis was increasingly placed on income and wealth as key components of happiness. The scientific study of the feelings of happiness re-emerged in 1960s. Wilson (1967) surveyed the real components of happiness with very limited evidence. His list of indicators influencing happiness was similar to the one proposed by Aristotle; he attributed happiness to the young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious married person with high self-esteem, job morale, and modest aspirations, of either sex or a wide range of intelligence. Wilson's determinants of happiness defined an objective form of well-being, based on ideal situations and norms. These determinants would later act as a foundation for the most atomistic form of well-being which in contemporary literature is known as subjective well-being.

1.2: Subjective and Objective Well-being

The distinction between subjective and objective well-being depends on the perspective from which lives are being evaluated. Objective well-being requires an objective point of view that is independent of an individual's own subjective values and norms. Evaluation would include features that would be considered ideal rather than personal. In contrast, subjective well-being is a reference to an individual's own interests, needs, preferences or desires. It captures both rich and adverse life experiences. Just like health has positive elements beyond disease the absence of disease or disability, subjective well-being has both negative and positive component (Eisdorfer 1981).

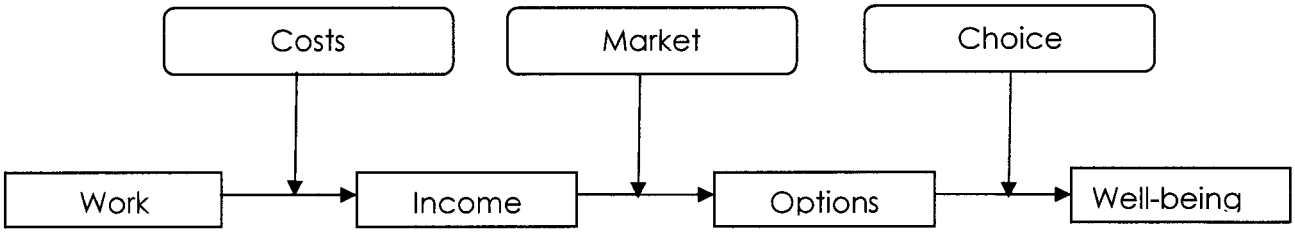
It is also possible for subjective definitions to include objective indicators. For example, a subjective definition of well-being could specify that the availability of food, water and shelter is essential for well-being. This definition would be subjective if it specified that these objective indicators influence well-being because they effect individuals' evaluation of their lives. Thus, well-being definitions that focus on the satisfaction of basic needs are inherently subjective in nature—they imply that objective factors like food and water are components of well-being because everyone evaluates them as desirable.

A subjective definition of well-being is essentially identical to the concept of utility. Utility is the satisfaction derived from the consumption of goods. Just like subjective well-being, utility is defined exclusively from the perspective of an individual. Economic theory tends to rely on the amount of money a person is willing to spend on a good as a useful measure of utility that he or she derives from that good. Having a lot of money is not well-being. Standard economic theory assumes that well-being is achieved by spending money, not by accumulating it, and that

people spend their money in exchange for market goods to realize their preferences (Osberg 1985).

Another assumption is that individuals are rational and their choices maximize well-being. If option A is chosen over option B then option A gives more well-being. Individuals therefore have the maximum level of well-being that is afforded by the options available to them. This does not mean all individuals have the same level of well-being.

Figure 1.1



Source: Helliwell *et al.* (2009), page 2

The existence of a marketplace increases the range of options in proportion to a person's wealth and income. The wealthier an individual the more options he or she will have for preference realization and vice versa. The economic vision of well-being is shown in Figure1.1. The link between options and well-being in this schema assumes that well-being is equivalent to preference realization. However, the preference realization is not an easy task and the availability of a range of options does not make it easier. Satisfaction of every need or want monetarily does not equate to optimal allocation of income as people cannot be completely rational. Rationality

implies choosing a best option among the ones that are available, which is practically not possible (Helliwell *et al.*. 2009, p. 2).

The link between income and the range of options is also weak because not all preferences can be realized in the market place. Another problem is that markets are not completely efficient. Some people may require different amounts of money to realize the same preferences. For example, an individual with a physical disability would require more money for mobility than person without a disability. According to Sen (1999 p. 62), it is important for any measure of well-being to account for intrinsic claims to the rights and freedom of people, something the utilitarian approach does not take into account due to its informational base. This will be discussed further in the next sub-section.

Lastly, the link between work and income is flawed because often the assumption is made that the only aspect of work that matters is the amount of income it generated. However, people have preferences about other aspects of their jobs. Autonomy in a job is a key source of satisfaction. Uncertainty about these links creates uncertainty about wealth as an indicator of well-being (Helliwell *et al.*., 2009).

The role of income and wealth in well-being has been of particular interest to economists in the post-Behaviourism era. According to Layard (2005), GDP was never meant to measure happiness. He believes that people have a tendency to compare incomes across a reference group where an individual's reference group is comprised of people close to the individual in question in terms of income and status. Standard economics states that when a person's income rises and nobody's falls, things have improved (Pareto efficiency), ignoring any concerns individuals may have their relative. If individuals are driven by a desire to keep up with their reference group,

then social comparisons will be important.[3]. Layard refers to this as a "status race", and Frank (1985) has developed a model, echoing the work of Dusenberry (1949), showing how people's concerns for their relative position in the income hierarchy of an organization can lead to wage compression.

There is sufficient evidence showing that since World War II the rich have generally appeared to be happier than the poor. At the same time the happiness of rich countries has not grown in proportion to their income growth. Japan has achieved considerable income growth after World War II but the proportion of the people who report to be happy has gone down considerably (Deaton, 2008). This result is also consistent with micro level evidence from the German Socioeconomic Panel by Di Tella *et al.* (2007) who regressed life satisfaction on income and on several lags of income. They found that life satisfaction adapts to income within four years, and income growth provides only a temporary boost to life satisfaction.

1.3: Weakness of the Utilitarian Argument

Utilitarianism, as originally put forward by Bentham, considers the well-being of a society to be the sum of individual utilities. The development of microeconomic theory has been strongly influenced by this tradition. However, there are structural weaknesses in the utilitarian concept of measuring a society's welfare. If a given level of consumption produces the same level of utility for everyone, then utilities can be compared across individuals and aggregations can be made to arrive at a welfare estimate. However, individual utility cannot be measured in such an objective manner. There is no guarantee that two individuals derive the same level of

[3] Layard calls this a 'status race'

utility and satisfaction from the last dollar of consumption. Utility has an immeasurable component and one cannot be sure that it is related to the measurable component such as income and wealth. The origins of individual preferences (which help gauge utility) need to be explored as preferences may change according to circumstances. For instance, when income is low, human aspirations are also low. When incomes are high, new tastes emerge. Preferences are sometimes argued to be adaptive, and tastes may therefore be consciously manipulated (Osberg, 1985).

Sen (1999) also argues that due to its informational base, the utilitarian method tends to measure well-being without accounting for any distributional inequalities in happiness of individuals. He stresses the importance of accounting for the welfare of those at the lower economic strata of society. This group, according to him, is traditionally disadvantaged and will suffer the most from the utilitarian approach as it comes to accept 'deprivation' and lacks courage and resources to demand any sort of change. By adapting to conditions in society, the economically challenged do not provide accurate feedback of their well-being. This approach does not lay 'intrinsic importance' to other immeasurable components of utility such as individual freedom and rights. He lays particular emphasis on the well-being of these people and the need for it to be taken into account when formulating policy on basic health, education and employment. Therefore, there is a need to broaden the information base to take the limitations of the utilitarian approach into account and provide equality and opportunity for all (Sen 1999, p. 61-63)

Layard (2005) points towards the fact that psychologists have shown that peoples' mood varies from activity to activity, making happiness a continuous feeling. These feelings evolve in

a non-discrete manner throughout the life course. Moreover, feelings at a particular moment are influenced by memories of past experiences and anticipation of the future ones. This would refute the standard assumptions in traditional economics stating that wants are given. If feelings are continuous and fluctuate rapidly and constantly, affected by media such as the television, advertisements and education, then preferences will be affected in a similar manner and wants cannot be taken as a given.

In his contribution to welfare economics, Lerner (Frisch, 1971) argued that income redistribution can increase utility for most individuals in society, raising societal welfare. His views imply that people in societies with highly skewed income distributions will (all other things held constant) in general be less happy than ones living in societies with relatively equal income distributions. A study conducted by Bjornskov *et al.* (2008) suggests that the skewness of the income distribution in a country does not in general affect individual happiness. Most of the literature on happiness as well as standard theoretical treatment of utility in the economics literature has focused on outcomes. Bjornskov *et al.* (2008) believe that besides deriving satisfaction from outcomes, individuals enjoy 'procedural utility', whereby relative income position is assessed differently when its generation is perceived to be fair and just. The authors have empirically proven this notion by showing democracy is conducive to individual happiness and welfare. They show that it is peoples' perceptions about a system, and their conditions as affected by that system, rather than inequality itself, that drives the well-being of individuals in a society. This is in direct contrast to Lerner's argument where redistribution leads to increase in life satisfaction. Going by the utilitarian approach, the economic well-being of a society can be maximized given a total level of income by redistributing it until all incomes are equal. However, since preferences vary across individuals, the satisfaction derived from the last unit of

consumption for any two individuals may not be the same. Utility therefore contains an immeasurable component of satisfaction which cannot be measured like income or wealth.

1.4: Measurement Scales and Methods

Measures of subjective well-being are gauged mainly through surveys where people are asked to evaluate their lives or a particular aspect of it. Gauging well-being through surveys can be a very effective method in providing individual and aggregate happiness and can be important in forming policy to maintain the progress of a society. The information from these surveys is also easy to collect and is usually aggregated over various components of well-being such as economic status, work, security at work, community and friends, personal freedom and even political rights. However, since all of these surveys are conducted in the local language of a country, one could question whether the word 'happy' or 'satisfaction' mean the same thing in different languages. If this is the case using the same term in surveys across different countries will lead to measures of different concepts. However, countries can be rated separately on three different measures: their appreciation of life as a whole, their happiness, and satisfaction with life. As another check, responses to questions on happiness and satisfaction in two bi-lingual countries have been compared, and they do not show a linguistic bias (Veenhoven 2002 and Layard 2005).

The questions used surveys measuring life satisfaction are relatively straightforward and usually require simple answers.

"Taken all together, how would you say things are these days--would you say that you are:

1) Very happy 2) Pretty happy or 3) not too happy?"- US General Social Survey

"Taking all things together, would you say you are:

1) Very happy 2) Quite happy 3) Not very happy 4) Not at all happy 9) don't know" – World Values Survey

"All things considered, how satisfied are you with your life as a whole these days? Please use this card to help with your answer." (The respondents are asked to rank their satisfaction on a scale of 1 to 10 with 1 being the lowest 10 being the highest level of satisfaction with an additional option for 'Don't Know') – World Values Survey

"All things considered how satisfied are you with life as a whole these days? Use a 0-10 scale, where 0 is dissatisfied and 10 is satisfied." – Gallup World Poll

"Taking all things together, how would you say things are these days—would you say you're very happy, fairly happy, or not too happy these days?" – Eurobarometer

Social Scientists have used three main assumptions in the interpretation of the answers to the well-being questions[4]. The first is General Satisfaction (GS) or Well-being is a positive transformation of 'welfare' (W) and denoted by W (.): if $GS_{it} > GS_{is}$ then $W_{it} > W_{is}$. This assumption implies that emotional expressions and choice behaviour are truly related to the underlying metaphysical concept of welfare, and that general satisfaction or well-being can be used as a proxy for welfare at the individual level.

The second assumption is: General satisfaction is interpersonally ordinally comparable across individuals if $GS_i > GS_j$ then $W_i > W_j$

[4] Carbonell *et al.*(2002)

And the third assumption is General satisfaction is interpersonally cardinally comparable: $(W_i - W_j) = \delta (GS_i, GSj)$ with δ (.), a function which is known to be a multiplicative constant. Most normally, $\delta (GS_i, GSj)$ is taken to be $(GS_i - GS_j)$.

Economists unlike psychologists and sociologists have been reluctant to interpret the answers to the well-being as cardinal (Ng 1997).A difference between a score of 4 and 5 for any individual should not be interpreted as the same as between a score of 8 and 9. Most research has been centered on ordinal comparison of the responses where the relative difference between satisfaction answers is unknown, but all individuals share the same interpretation of each answer.[5]

[5] Most studies use the ordered probit when regressing well-being or life satisfaction. The ordered probit does not assume cardinality but it must be noted that Helliwell(2002) worked with the same method using the World Values Survey Data and showed that results would have been the same even if the linear method (which assumes cardinality) had been used.

Section 2: Policy Relevance

The public policy implications of well-being that are transmitted through productivity, income, redistribution and other channels are of particular importance. The main aim of a policy maker would be to separate those channels that have an overall positive impact from the channels that have an overall negative impact. The net effect of the usefulness of a policy can then be seen by measuring the relative size of each channel's effect. These channels are social indicators, information on which the government institutions must collect and monitor and maintain a data base over time so that social change or well-being can be traced over time.

Some countries have formed well-being indexes to keep track of the life satisfaction of their citizens. The Well-Being Index of the Centre for the Study of Living Standards (CSLS) of Canada, Gallup-Healthways Well-Being Index of USA and Australian Unity Well-Being Index of Australia are some of the prominent ones.[6] These indices have been formed as a structured tool to provide an opportunity for all individuals in society to make a subjective evaluation about their personal life satisfaction. With a public policy tool like a well-being Index individuals have a chance of to provide feedback on public policy by providing information on the social indicators affecting their quality of life. Since well-being has different dimensions, individuals will differ in their personal opinions on life satisfaction. To accommodate this, CSLS has divided the well-being index into four components which are further divided into sub-categories. Each component is then given a weight according to the latest trends in these components. The weights are based on value judgements of the researchers but their goal is to highlight the

[6] Details on the indices for Canada, USA and Australia are available on the websites of CSLS (www.csls.com), Gallup-Healthways (www.gallup.com) and Australian Unity (www.australianunity.com) respectively.

relative importance of some factors which are seen by individuals as more important to well-being than others.

Section 3: What makes people happy?

Society, personality, and individual circumstances are important factors in determining the different levels of well-being. Personality varies genetically and differences have been shown to affect the self-assessments of well-being and to influence how an individual responds to unfolding events. Cultural and societal differences are mostly determinants of international differences in subjective well-being.

Layard (2005) lists five factors in order of importance from the U.S General Social Survey. According to him, these act as different dimensions of happiness and the answers of the respondents from such surveys can help disentangle which of these dimensions are most important. They are: (1) family status; (2) financial situation; (3) job or housework; (4) community and friends; and (5) health. Layard uses only one survey to formally rank the determinants of happiness. After reviewing the literature that has attempted to study components of happiness using other surveys and micro data, this section will, discuss six determinants of happiness that have featured prominently; marriage, financial situation, employment, human development (including education and health), system and quality of government, and inequality.

3.1: Marriage

In the tradition of Becker (1981), marriage provides a basic safety net against adverse life experiences and allows for gains from economies of scale and specialization within the family. Marriage allows for one of the spouses to add to their human capital and advance in the labour

market. This is reflected in married people earning higher incomes than single people, *ceteris paribus* (Chun and Lee, 2001). While economists like Becker have focused on economic gains, psychologists and sociologists have stressed the increase in emotional support and relational gratification as an important benefit of marriage contributing to increased well-being.

Empirical studies have shown that compared to single people, married people have better physical and psychological health (Burman and Margolin 1992, and Ross *et al.*. 1990). Using data from the United States General Social Survey, Layard (2005) shows that a single person is less happy than a married person by 4.5 point on the happiness scale.[7] Widowers and the unmarried also suffer from a lower well-being than a married person but the group of people most affected are those who have been separated. A separated person is eight points lower on the happiness scale as compared to a married person.

Table: 3.1

Family Relationships	Fall in Happiness Points (Scale 10-100)
Divorced (rather than married)	5
Separated (rather than married)	8
Widowed (rather than married)	4
Never Married (rather than married)	4.5
Cohabiting (rather than married)	2

Source: Layard (2005), p64

The German Socio-Economic Panel has shown that happiness levels of married people follows a particular trend after controlling for the respondents' sex and basic demographics. Marriage generally makes people happy. Frey and Stutzer (2003) used the German Socio-Economic Panel to pin down this causality. Longitudinal data show that the level of happiness

[7] The scale is actually 1-10, but for simplicity, all units were multiplied by 10 so it ranges from 10-100.

starts to increase as the time of marriage comes nearer, and it peaks around the year of the marriage. After the peak period, there is reason to believe that adaptation sets in and the level of happiness keeps decreasing with time until it falls back to its baseline level. This notion is supported by some psychologists believe that marital transitions cause short term change in well-being (Johnson and Wu 2002).

Figure 1.3b: Life Satisfaction around marriage

Source: Frey and Stutzer (2003), p 32

Stack and Eshleman (1998) using the World Values Survey extended this analysis across 17 different countries. After controlling for socio-demographic variables, they also showed happiness is positively affected by marriage and that there is a very strong association between the two. They also make note of the two intermediaries that play an important role in the association between these two variables: financial satisfaction and an increase in perceived health. The former conforms to Becker's theory of increased economic gains from being married while the latter lends validity to the behavioral theories of psychologists and sociologists of marriage providing emotional support which helps control health oriented behavior. All this said,

this literature has not paid close attention to an identification strategy that controls for possible selection effects and accurately estimates the causal impact of marriage.

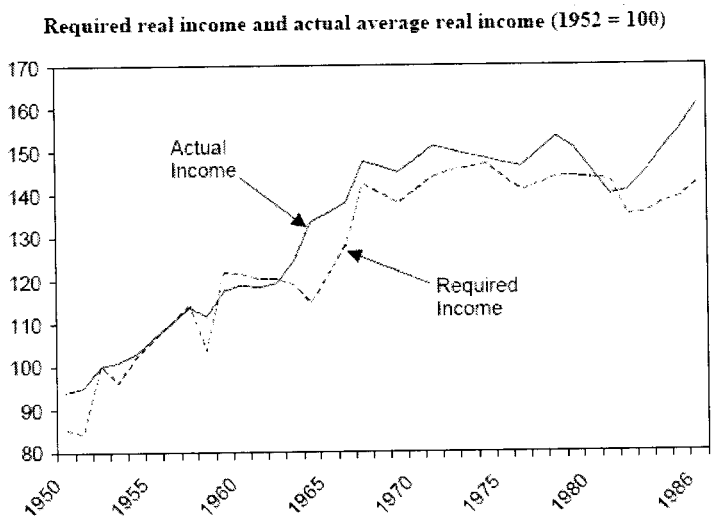
3.2: Financial Situation

An individual's economic status is an important factor in determining his or her well-being. It depends not only on one's current income stream in comparison with the reference group but also on expectations of future earnings. Bjornskov *et al.* (2008) even point to the role of absolute as well as quality of individual consumption in contributing positively to an individual's economic status. Traditionally researchers have focused on the role of current income. Samples including individuals within the same country have shown that higher relative incomes generally result in higher measures of subjective well-being, which are significant although the magnitude of the effect is often described as small (Diener *et al.* 1999).

Although most surveys have shown that the rich show higher well-being than the poor, happiness has not fully risen in proportion to the real income growth and this has generally been attributed to social comparisons with people belonging to the same income group. One case is the East German. Living standards of those in work have soared since 1990, but their level of happiness has plummeted because instead of comparing their incomes with their old reference group, the Soviet Bloc, they started making comparisons with the new reference group with a higher level of average income, the West Germans (Layard, 2005). Social comparisons are born out of Brickman and Campbell's (1971) concept of humans running on a 'hedonic treadmill'. The concept of hedonic treadmill is akin to psychology's notion of 'adaptation'. An individual's objectives and ambitions cease to be satisfying as the environment around him evolves. People adapt or respond to the evolving environment by revising their aims and objectives, the

attainment of which provides them satisfaction and happiness. From an economic point of view, an individual has a certain level of required or reference income which he or she compares with their current income and it rises as their needs and wants are revised upwards. This can be seen from Gallup Polls in United States with data collected over three and half decades. These show that required or desired level of income rise along with actual income over time.

Figure 3.2a: US real income and actual average real income (as a percentage of their 1952 levels)



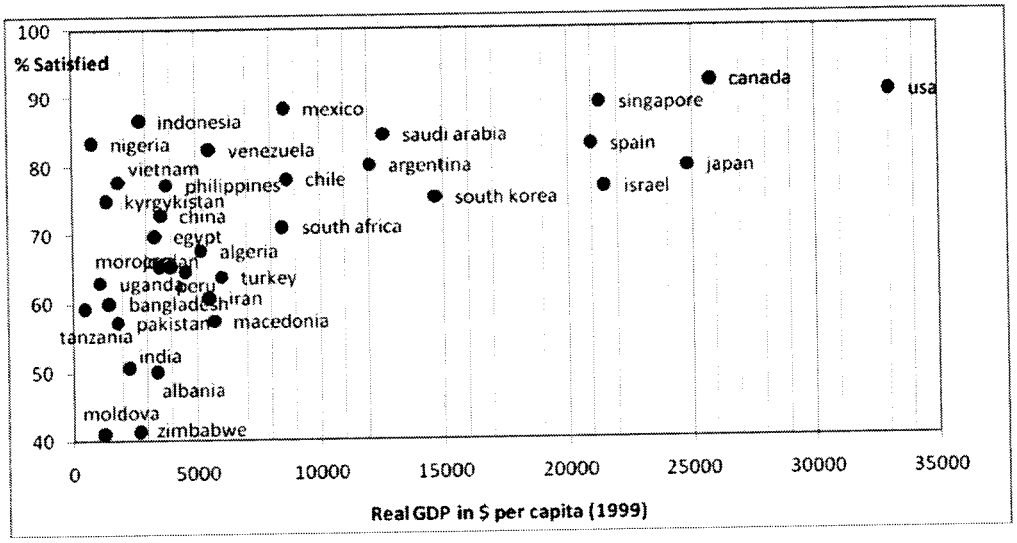
Source: Layard (2005), p 43

Note: The data on required income was collected with the following question: 'What is the smallest amount of money a family of four needs to get along in this community?'

Conditional on having attained an income level sufficient to fulfill basic needs, more income does not add to happiness. This can be seen from the right-hand side of the portion of the Figure 1.4. For countries above $10,000, additional income is not associated with extra

happiness.[8] Happiness rises steeply with additional income for poor countries where people are more likely not to have their basic needs fulfilled. The effect of income has been seen to be stronger when it goes towards fulfilling the basic need of the individual rather than affording them some luxury. The income effect of income on happiness declines steadily as people become richer (Helliwell, 2003).

Figure 3.2a: Cross Country Comparisons: Income and Happiness



Sources: World Development Indicators Database and World Values Survey.

Note: The percentage satisfied shown in the graph is obtained by taking the average of "quite" or "very happy" and per cent satisfied above level 6 in the World Values Survey. Layard (2005) has performed a similar analysis by merging two waves of the World Values Survey for a larger pool of countries.

However, Inglehart *et al.* (2008) use all five waves of the World Values Survey to test this hypothesis on 46 countries for which time series data was available and they were able to show a smooth and a positive relationship between life satisfaction and rising incomes. This relationship was also proved by Helliwell *et al.* (2009) and Deaton (2008, see Figure 3.2b) who used the

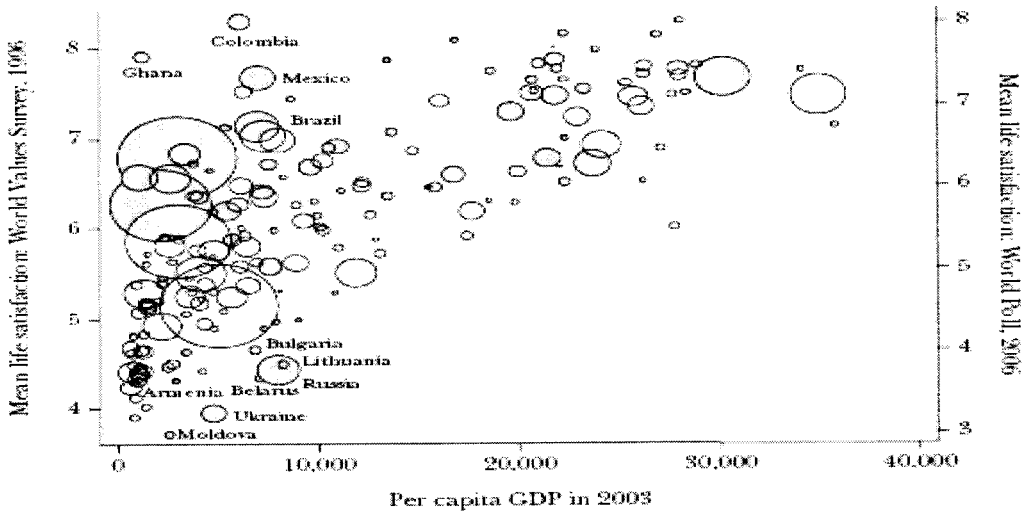
[8] Also see Inglehart and Klingemann, 2000

European Social Survey (23 countries) and Gallup World Poll (130 countries) respectively, with the latter survey having a more representative sample of the world's population. The reason leading Layard (2005), Easterlin (1995) and Bjornskov (2008) to doubt the relationship between happiness and rising incomes is that they used the World Values Survey, which includes few poor countries most of them in eastern Europe or parts of the former Soviet Union (among them Moldova, Ukraine, Armenia, Belarus, Russia, Bulgaria, Latvia, Estonia, Azerbaijan, Bosnia and Herzegovina, Macedonia, Romania, Estonia, and Slovakia). The respondents in these countries were found to be exceptionally dissatisfied and they established a cluster of countries well below the relationship between life satisfaction and income which should otherwise hold in a balanced sample. The World Values Survey in its earlier waves also surveyed people from urban parts of India, China, Ghana and Nigeria to establish some sort of balance in the sample which was tilted towards OECD countries. People from these countries had higher life satisfaction. Therefore, the sample of poor countries comprised of a mixture of satisfied people from the urban parts of some poor countries and dissatisfied respondents from poor countries in Eastern Europe failed to show any clear trend (Deaton, 2008).

Figure 3.2b: Cross Country Comparisons: Income and Happiness

Life Satisfaction in the World Poll and the World Values Surveys

(World Poll data shown as hollow circles, World Values Surveys data as shaded circles)



Source: Deaton (2008), p 59

Note: Each circle is a country, with diameter proportional to population. GDP per capita in 2003 is measured in purchasing power parity chained dollars at 2000 prices.

3.3: Employment

Work not only provides income, but it helps sustains social relationships. Loss of employment is seen by most as a stigma and causes one to lose self-respect. This factor is related to financial situation. The lack of employment will in most cases lead to a loss of income and decrease in well-being. Using the World Values Survey, Helliwell (2003) shows that unemployment lowers subjective well-being by as much as a one-unit drop on the five-point health scale.

Loss of employment causes a decrease in well-being, part of which can only be attributed to lower income. The German Socio Economic Panel has shown that for a person, the pain of unemployment is greater than the pain of losing income.[9] Moving between employment and being out of the labour force (a discouraged worker not looking for work) involves a smaller change in happiness than moving between work and unemployment. According to some researchers, unemployment causes persistent misery and despair which causes people to report a lower well-being even after being employed for a lengthy duration. Clark (2006) used data from three European Panels to show that there is no 'habituation' to unemployment and that it hurts as much after one or two years of unemployment as it does at the beginning. Helliwell (2003), however, believes that the constant reported loss in well-being is mostly to the habituation affects in the form of debt and despair that builds up after long-standing unemployment. And that it is important to disentangle the habituation affects which would provide a more accurate affect of the unemployment on well-being and satisfaction.

[9] Winklemann and Winklemann (1998). The causal affect of unemployed is higher than out of labour force for all the different models used with variations in demographic variables.

3.4: Human Development

According to Amartya Sen, "Human development, as an approach, is concerned with what I take to be the basic development idea: namely, advancing the richness of human life, rather than the richness of the economy in which human beings live, which is only a part of it." (Human Development Report, 2006). The Human Development approach arose in part as a result of growing criticism to the leading development approach of the 1980s, which presumed a close link between national economic growth and the expansion of individual human choices. Dr Mahbub ul Haq along with two other economists played in a key role in formulating an alternative development model with factors related which were more closely to the quality of human life. The alternative development model came to known as the Human Development Index which ranks countries by the level of its human development based on criteria such as life expectancy, education, health and income. These criteria or dimensions of human development have been used extensively in the happiness research especially health and education.

3.4a: Health

Health contributes towards all three measures of an individuals' objective well-being; social, mental, and physical. The indicators of health in the form of life expectancy, fertility and infant mortality are central measures of the quality of life. Hayes and Ross (1986) cite several studies indicating a high correlation between health and psychological well-being. This positive association has been confirmed by Helliwell (2003) and Bjornskov *et al.* (2006).[10] Using the World Values Survey, Helliwell showed that a one-point improvement in health, on the five point scale, is associated with a 0.61 point increase in subjective well-being and given the means

[10] It must be noted that Bjornskov *et al.* (2006) also used the Extreme Bound Analysis in addition to the ordered probit as a test of robustness where the variables of life expectancy and fertility were insignificant

and scales of the variables, a 1% increase in average reported health status is associated with just over 1% increase in subjective well-being. His analysis yielded similar results when the analysis was extended to cross country comparisons.

It must be noted that healthy people do have a tendency to overstate the loss in well-being from deterioration in their actual health (Layard, 2005). Therefore, there is cause to believe that there would be a significant difference between measuring the impact of a self assessed change in health status and an actual change in health status on well-being. It has also been found that individuals whose personalities are inherently more optimistic are more likely to give positive assessments of their health status and their subjective well-being. Scheier *et al.* (1989) preformed an experiment on optimism on 51 patients before and after a coronary artery bypass surgery where they found that post-surgery optimistic patients showing positive signs in the form of quicker recovery and positive emotional response to family and hospital staff.

3.4b: Education

Education has been found to be the strongest systematic determinant of individual participation in a variety of social activities, and social connections have been linked to increased health and well-being (Putnam, 2000). The results which have been obtained are quite surprising in relation to what theorists have proposed. Using the World Values data, Helliwell (2003) found the partial effects of different levels of education on life satisfaction to be small and insignificant. Using the data from the same survey with a larger pool of countries, Bjørnskov *et al.* (2006) found the variable of primary education to be significant only for people outside low income groups. Their results also showed that secondary schooling did not contribute to well-being for any income or age group. Satisfaction and return to education depends also on quality of

education received and a significant variance in the World Values sample is across countries. According to Helliwell (2003), an additional reason for such a trend is that the beneficial effects of education flowing though higher incomes, better health, and higher perceived trust levels are already taken into account and that it would not be unreasonable to conclude based on the international context that those who have stayed in full time education are not systematically satisfied with their lives once account has been taken of higher incomes and better health are taken into account which might have been enhanced and facilitated by their education.

3.5: System and Quality of Government

Happiness is also dependent on the quality of government which includes features such as the rule of law, stability and lack of violence, voice and accountability. These factors determine whether and to what extent politicians are responsive to their citizens, which societal groups are favored or disfavored, and whether conflicting interests are integrated. Helliwell (2003) used a 'quality of governance' variable based on 25 different indicators of quality of governance which are divided into six separate aspects: voice and accountability, stability and lack of violence, government effectiveness, the regulatory framework, the rule of law, and the control of corruption. For each group of indicators, the measures are scaled to have a mean of zero across all of the countries included, and a range from+2.5 to -2.6. The least squares estimate of this variable on well-being is 0.32, which is highly significant across all countries. This is because provisions of public goods and services such as transportation, health, education, and infrastructure are provided and regulated by the state. The higher quality of these will therefore depend on the quality of governance. Aside from governance, the economic performance of the government is gauged through macroeconomic variables like unemployment, inflation and

public debt and studies have shown that these impact the well-being negatively. (Alesina *et al.* 2001, 2003).

The system of government affects well-being in the context of personal freedom and civil liberties. The degree of freedom will be dependent not only on the political system but also on the ideology of the ruling authorities. Based on the simple political economy models it can be assumed that a democracy will have institutions which will offer greater personal, political as well as economic freedom. Political factors in a democracy are most likely to influence the extent to which the allocation of goods and resources are in line with people's preferences. A study by Frey and Stutzer (2000) observed different cantons (regions) in Switzerland that have varying degrees of autonomy to decide upon a local policy issue. They found that people were much happier in cantons that had greater political autonomy. This trend was also observed by Bjornskov *et al.* (2008) who used the Gastil Index[11] from the International Social Survey Programme data to show that democracy is conducive to happiness and individual welfare. Another survey which aimed to study the economic freedom of 161 countries based on a 10 different criteria showed that most of the top ranked countries were democracies (Lau and Lam, 2003).

3.6: Inequality

Inequality is an important factor in determining well-being. The actual degree of income inequality and related redistributive government policies might well affect personal socio-economic positions as well as the perceived fairness of the allocation of resources of society. First, the degree of income inequality affects the relative income position of individuals and

[11]The Gastil Index covers the availability of free and fair election but also the existence of basic rights such as freedom to associate and express one's opinion, rule of law, and equality of opportunities

might thus influence their well-being. Helliwell (2003) assessed inequality by adding the Gini coefficient for each national economy as a regressor of life satisfaction. This measure added no explanatory power to the well-being equation.[12] Bjornskov *et al.* (2008) using the same data set and methodology studied a larger pool of countries. Their results were similar to Helliwell's where inequality variable was insignificant.

Individuals are also concerned about their income position in relation to their peer or reference group for happiness. But the direction of this relationship is ambiguous. People in low income groups might be negatively influenced by inequality if the affect of envy and status race is strong, yet greater income inequality could also entail greater opportunities as unequal but dynamic societies might present opportunities for upward economic mobility which might be miniscule in a society with low inequality. The well-being of people in higher income brackets and those in favorable position in relation to their reference group is also indeterminate as it is also dependent on two opposing affects: the feeling of being in a good social position versus the fear of being deprived by the income groups below them (Alesina *et al.*, 2003).

Recent studies by Alesina *et al.* (2001, 2003) have also found that individuals in society have a taste for equality. This theory assumes that inequality as a good thing if it results in economic gains. Thus, comparing the effect of inequality on happiness across societies with different levels of mobility in the form economic progression, actual or perceived, across different income and ideological groups will provide a way to distinguish between these alternative theories. For instance, Europeans prefer more equal societies and perceived social mobility is lower than in the US. Therefore, the first hypothesis of inequality as a predictor of

[12] There were, however, some well-being effects of income inequality in an indirect manner where personal and national income averages were added to the regression equation, a negative effect on well-being was observed. The observation was based on the decile position of the individual.

future income dictates that the effect should not particularly hit the poor in mobile America, as they see inequality as an indication of the temporary nature of their condition. Similarly, the American rich should be negatively affected by inequality. On the other hand, the second hypothesis that states that people have a taste for equality would predict a negative effect of inequality on happiness amongst rich individuals. If mobility is perceived to be high, equality may be less appreciated. Therefore, if Europe is taken to be less mobile than America, the rich in Europe would display particularly strong aversion to inequality.

Alesina *et al.* (2001) designed a social mobility model based on the inequality-as-a predictor-of-future-income hypothesis to explain between differences in the redistribution undertaken by the US and European governments[13]. To motivate their results, they combined this model with a behavioural theory suggesting that people in a mobile society see poverty resulting from a lazy attitude. Using data from the World Values Survey, they found that over 71% of the Americans as compared to 40% of the Europeans believed that the poor have a genuine chance to escape from poverty. This indicates that people care less about the resulting income distribution in society than actual efforts by the government to redistribute. In other words there is more emphasis on perceived inequality than there is on the actual outcomes. Europeans prefer more equal societies and perceived social mobility is lower than in the US. Therefore, governments in Europe are seen more interventionists, who tax more to control for market outcomes which are influenced by luck, birth or connections. It has been observed that with regards to well-being,

[13] The following questions were used from the survey:
- Why, in your opinion, are there people in this country who live in need? Here are two opinions: Which comes closest to your view? 1) They are poor because society treats them unfairly. 2)They are poor because of laziness and lack of will power 3) Don't Know
- In your opinion, do most poor people in this country have a chance of escaping from poverty, or is there very little chance of escaping?
1) They have a chance. 2) There is very little chance. 3) Don't know

such countries are affected by inequality more than countries like the US which are comparatively less interventionists. The income advantage resulting from birth and social connections is also an important component of social mobility in the form of intergenerational equality. This component will be discussed in detail in the following section.

The relationship between inequality and well-being has for the most part been analyzed cross sectionally using measures of either actual or perceived disparities. The intergenerational transmission of inequality has not been part of this literature. Section 4 will build on the theoretical foundations of social mobility along the lines of intergenerational elasticity of income and education by reviewing literature on measurements and problems in estimation.

4.1: Intergenerational mobility of income

The intergenerational transmission of income status refers to the relationship between the earnings or incomes of parents and the adult outcomes of their children. This relationship describes the degree to which an income profile or status is transmitted from one generation to another. This occurs primarily through three channels: (1) social connections which facilitate access to education and jobs; (2) family culture and investments that influence skills, beliefs and motivation; and (3) the genetic transmission of ability (Roemer 2004, Corak 2006). Social scientists believe that the lack of such mobility acts as an advantage to children born to high income parents and violates the norms of equality of opportunity. This perspective dates back at least to to Michael Harrington, who stated in an often cited passage that "..the real explanation of why the poor are where they are is that they made the mistake of being born to the wrong parents, in the wrong section of the country, in the wrong industry, or in the wrong racial or ethnic group" (1962, p. 21).

4.2: The measurement of the degree of intergenerational mobility

The intergenerational mobility has been traditionally measured through the following equation:

$$y_{1i} = \alpha + \rho y_{0i} + \varepsilon_i \qquad (1)$$

where y_{1i} stands for long-run economic status of a child in family 'i' often taken as the natural logarithm of permanent annual earnings. It is composed of the average earnings of the child in adulthood, α, and a fraction of the log of earnings of the parent, y_{1i}. The value of ρ represents the fraction of economic advantage that is on average transmitted across the generations. This coefficient represents the degree of generational income mobility in a society. A positive value would indicate a generational persistence of incomes where higher parents' income is positively

associated with higher incomes of the child. A negative number would mean that generational persistence of income is low and that parents' income is associated with lower adult incomes of the child. For example, if 50 percent of the difference in parents' incomes were passed on to the children, ρ take on the value of 0.5. When ρ is greater than zero but less than one there is some generational mobility of income, so that parents with incomes above (or below) the average will have children who grow up to have incomes above (or below) the average (Corak 2006).

4.3: Problems in Estimation

Solon (1992) criticized empirical analyses using equation (1) for two reasons. First, lacking direct measures of long-run status, previous research used short-run proxies, sometimes only single-year measures of earnings or income. This leads to standard errors in variables bias, which can be understood in terms of equation (2).

$$y_{0is} = y_{0i} + v_{0is} \qquad (2)$$

In this equation v_{1it} represents transitory fluctuations around the long-run status.

After Ordinary Least Squares (OLS) method is applied to equation (1) with y_{0is} and y_{1it} instead of y_{0i}, there is an errors-in-variables bias whereby the estimated slope coefficient is underestimated:

$$\text{plim estimated } \rho = \rho.\sigma^2_y / (\sigma^2_y + \sigma^2_v) < \rho \qquad (3)$$

According to Solon (1992), the degree to which this underestimation of ρ holds importance depends upon the variance of the transitory relative to the permanent fluctuation.

In his paper, he extends this model to add age profiles and earnings to control for life cycle differences:

$$y_{1it} = y_{1i} + \alpha_1 + \beta_1 A_{1it} + \delta_1 A^2_{1it} + v_{1it} \qquad (4)$$

where A_{1it} is the age of the son from family 'i' in year 't'. Similarly, the model in equation (2) for father's status in year s is extended to

$$y_{1is} = y_{1i} + \alpha_1 + \beta_1 A_{1is} + \delta_1 A^2_{1is} + v_{1is} \qquad (6)$$

where A_{1is} is the age of the son from family 'i' in year 's'.

He solves equation (4) and (5) to yield the following equation:

$$y_{1it} = (\alpha_1 - \rho\alpha_0) + \rho y_{0is} + \beta_1 A_{1it} + \delta 1 A^2_{1it} - \rho\beta_0 A_{0is} - \rho\delta_0 A^2_{0is} + \varepsilon_i + v_{1it} \qquad (6)$$

Equation (6) expresses child's observed status in year 't' as a regression function of father's observed status in year 's' and age controls for both father and son. However, the OLS estimation on this equation still sees the resulting estimated ρ as having an errors-in-variables bias because of the correlation between y_{0is} and v_{0is} which will lead it to be underestimated. Therefore, if no correction is made for measurement error there will be a tendency to attribute part of the temporary earnings fluctuations to generational mobility and the estimated coefficient will be an understatement of the true value.

Solon (1992) proposes two methods for avoiding this errors-in-variables bias. The first method is to average the parent's status in equation (5) over T years, so that intergenerational mobility equation (6) modified to:

$$y_{1it} = (\alpha_1 - \rho\alpha_0) + \rho \bar{y}_{0i} + \beta_1 A_{1it} + \gamma_1 A_{1it}^2 - \rho\beta_0 \bar{A}_{0i} - \rho\gamma_0 \bar{A}_{0i}^2 + \varepsilon_i + v_{1it} - \rho \bar{v}_{0i} \qquad (7)$$

where any variable in the form 'z_{0is}' in equation (6) that is substituted in equation (7) by:

$$\bar{z}_{0i} = \sum_{j=s}^{s+T} z_{0ij} \Big/ T \qquad (8)$$

The resulting estimated value of ρ will still be downward biased but the magnitude of the bias is reduced because averaging across T years reduces the variance of the error term in the equation of the parent's status. However, this form of correction has a drawback which relates to the age-earnings profile of parents. Income of an individual tends to rise steeply between the ages of 20 and 30, and then flattens out during the 40s, after which it declines during the 50s and 60s. This pattern may not be identical across all individuals and is could be subject to more variance at younger and older ages. Consequently, the importance of measurement error will vary depending upon the part of life cycle observed. It will be greater for younger and older parents and most likely to be lower for those in their 40s (Corak, 2006).

The alternative method proposed by Solon (1992) is the Instrumental Variables (IV) procedure on the equation which represents the father's status. He recommends using education as an IV instrument for father's single year-status:

$$y_{0i} = a_0 z_{IV} + v_{0is} \quad (9)$$

where 'z_{IV}' is the education variable of the parent. This form of correction reduces reliance upon longitudinal data and panel studies for conducting intergenerational mobility analysis. However, there is a case for the parent's education to be included in the child's long-run earnings status:

$$y_{1i} = \beta_1 y_{0i} + \beta_2 E_i + \varepsilon_i \quad (10)$$

where E_i and y_{0i} are the education and the long run earnings of the parent. This could potentially lead to an upward bias in the IV estimator:

$$\text{plim estimated } a_{IV} = a_0 + \beta_2 \sigma_E (1 - \lambda)/ (\lambda \sigma_Y) \quad (11)$$

The IV coefficient, a_{IV} is estimated consistently under two conditions; first, if $\beta_2 = 0$, that is the parent's education is not associated with income status of the child. The second condition is if $|\lambda|=1$, where λ is the correlation between the parent's education and income. (Solon, 1992)

Using data from the Panel Study of Income Dynamic (PSID) with father's earnings from 1967 to 1971, Solon (1992) demonstrates how the simple OLS method can lead to a downward bias in the income mobility estimate. The single year estimates range from 0.28-0.37. When the father's earnings are average over two to five years, the estimates converge to 0.4. The IV approach estimates the intergernational earnings mobility at 0.5. Therefore, to develop comparable estimates of intergenerational earnings mobility across countries, there is a need to recognize differences in the degree to which researchers have controlled for the measurement error and how they have done it. Use of multi-year averages potentially leaves a downward bias, while the use of the IV method leaves an upward bias.

Some studies conducted in France, United Kingdom and other developing countries have used the IV method for intergenerational income mobility by estimating the paternal income retrospectively by using education or even occupation as an IV instrument. This method has been used by Pla (2009) for Spain, Nicoletti and Ermisch (2007) for Britain, Ng (2007) for Singapore, Grawe (2004) for Ecuador, Nepal, Pakistan and Peru, Lefranc and Trannoy (2004) for France, Fortin and Lefebvre (1998) for Canada and by Bjorklund and Jantti (1997) for Sweden. Even though the IV method can be biased at times, it does offer another way to correct for measurement error when a longitudinal survey or government records are not available.

4.4: Intergenerational Mobility of Education

Another outcome examined in this literature is intergenerational education mobility. This is the relationship between a child's education attainment and that of his or her parents is often measured in the years of schooling.

$$s_{1i} = \alpha + \beta s_{0i} + \varepsilon_i \quad (12)$$

where s_{1i} is the years of schooling of the child, which is related to s_{0i}, the years of schooling of parents, with β showing the degree of education mobility. A high positive value means generational persistence and lower educational mobility in society.

One advantage of using education over income as to measure mobility is that there is generally less measurement error in educational attainment than there is in earnings or incomes. A second advantage of using education over income to study generational mobility is that not only is it widely measured concept on most of labour force and household surveys, but most importantly the recall-based information on education of parents is likely to higher quality than

that of income. However, using education over income as a proxy also has its drawbacks. It has been found that not all surveys measure education with accuracy or precision. Secondly, a large segment of population in countries with low literacy levels has received no formal education. Zero values on their education are not treated as censored values of human capital but as correct value of the outcome of interest. More importantly, in some countries such as South Africa, Hertz (2001) found that those without education had higher average incomes than those with a year or two of schooling. In such instances, the relationship between education and income is weakened to a certain extent (Hertz *et al.* 2007).

4.5: Cross Country Comparisons

Researchers have taken the errors-in-variables bias in account when deriving the measures of the intergenerational earnings mobility for different countries to establish a framework for comparison. This framework is, however, greatly sensitive to the methodology used in computing the estimates. For instance, measures computed using the IV method for the same country could vary on the basis of instrument used in the form of occupation or education to estimate the parent's earnings. Besides estimation methods, comparability is also a problem with regards to the accuracy of the data sets, sample selection rules. For instance, the measures offered by Mocetti (2007) and Piraino(2007) for Italy differ on the basis of sample selection rules and definitions of predicting variables Therefore, it is important that the specifics of the study design be taken into account especially with regards with to these factors.

In an extensive review of studies on intergenerational earnings, Corak (2006) made note of the data source, the year in which the son's earnings were observed and the sample selection rules. After reviewing all common information at hand on the study design and particulars within

and across countries, he established a common ground for comparison. This common ground helped select a 'preferred estimate' (see table below) to enable comparison across countries.

Table 3.5: Intergenerational Elasticity of Earnings

OECD Countries	Preferred Estimate	Year of survey	Upper Bound	Lower Bound	Average Age - Child	Average Age - Parent	Method of Estimation	Number of Years Earnings Averaged Father	Number of Years Earnings Averaged Son
Australia	0.26	1965-2004	0.26	0.18	25-54		IV		
Canada	0.19	1996	0.16	0.21	-	-	generated	-	-
Denmark	0.15	1997	0.13	0.16	40	50	OLS	1	1
Finland	0.18	1990	0.16	0.21	40	46	OLS	2	3
France	0.41	1993	0.35	0.45	55-70	30-40	IV	-	-
Germany	0.32	1997	0.27	0.35	-	-	generated	-	-
Italy	0.50	2000-2004	0.47	0.55	41	30-50	IV		
Norway	0.17	1992	0.15	0.19	30-34	40-48	generated	3	1
Spain	0.40	2005	0.38	0.42	30-50	37-57	IV	-	-
Sweden	0.27	1991	0.23	0.3	30-39	43	IV	-	-
United Kingdom	0.50	1991	0.43	0.55	-	-	generated	-	-
United States	0.47	1993	0.4	0.52	<46	40	OLS	5	-

Source: Corak (2006) p 52-63, Mocetti (2007) p8, Pla (2009) p23, Leigh(2007) p9

The table above shows the details of the sample selection rules in the form of range of age for the child and parent; survey year, and method of estimation in the form of the econometric method and number of years of averaging used by Corak (2006). The estimates for Spain (Pla 2009), Australia (Leigh 2007) and Italy (Mocetti 2007) are also selected based on the criteria of a preferred estimate. The 'child' and 'parent' in the all the studies are a son and a father aged above 30 years (with the exception of Australia) surveyed in the last twenty years.

For Germany, Canada UK and Norway, Corak (2006) used the US estimates from Grawe (2004) as a base study to calculate the measures. He estimated the range of the intergenerational elasticity measures by using the lower and upper bound for the US estimate. The lower bound was calculated using the preferred estimate multiplied by the ratio of the US lower bound to the US preferred estimate; and a similar method was used to calculate the upper bound. For all other countries in the table (except Australia, Italy and Spain), the upper bounds are based on US predictions on a 45 year old with five years of averaging for a lower bound and fifteen years of averaging for an upper bound. The bounds for Australia, Italy and Spain are range of estimates based on the different birth cohorts and survey waves.

Section 5: Data and Key Variables

Using the World Values Survey (WVS) data from 1991 to 2000 on socio-demographic characteristics of about 120,000 persons in about 80 countries, for a subsample of 20 OECD countries, information is extracted on 45,000 individuals. Subjective Well-Being is measured using the life satisfaction question, which asks , "All things considered, how satisfied are you with your life as whole these days ?", and rates its answers on a 10-point scale, ranging from "completely dissatisfied" to "completely satisfied".

Intergenerational earnings elasticity and intergenerational educational elasticity are key variables of analysis representing intergenerational mobility or intergenerational transmission of inequality. These measures will help test the hypothesis of whether a society with low as opposed to high inequality has happier or satisfied individuals. This paper employs measures of intergenerational earnings elasticity for 12 countries discussed in the previous section, and measures of 15 countries for intergenerational educational elasticity from the findings of Hertz *et al.* (2007). The latter have been estimated with survey data from 1996-2000 using the simple regression model in which a child education attainment is dependent on that of his parents. To ensure accuracy and comparability, Hertz *et al.* (2007) calculated elasticity measures for each five-year birth cohort and calculated a single country measure by averaging the results of all the cohorts for each country as opposed to running a single regression for all ages which would have placed more weight on larger cohorts. This method also helped ignore questions of population growth and changes in fertility, and treated survivors-to-date as representative of their birth cohort.

The Gini coefficient and the log of GDP per capita are the other two country level variables used in the analysis. The former is employed as measure of cross-sectional inequality. While previous studies by Bjornskov (2007) and Helliwell (2003) have found this variable to be insignificant, it is still included to provide contrasting with the relationship of intergenerational transmission of inequality versus cross-sectional inequality with well-being.

Table 5 below shows the key country variables used in the main results reported in the paper.

Table 5: Social Mobility and SWB

Country	Gini Coefficient	GDP per capita ($US)	Intergenerational Education Elasticity	Intergenerational Earnings Elasticity	Subjective Well Being (%)
Australia	30.5	21496	.	0.26	62
Belgium	27.16	21210	0.41	.	59
Canada	30.09	21481	.	0.19	67
Czech Republic	25.96	11560	0.44	.	43
Denmark	22.48	23116	0.49	0.15	77
Finland	26.1	18284	0.48	0.18	71
France	27.3	21122	.	0.41	46
Germany	27.75	19361	.	0.32	52
Hungary	29.34	9275	0.61	.	28
Italy	34.71	19666	0.67	0.5	49
Netherlands	25.06	20552	0.58	.	36
New Zealand	33.67	17326	0.4	.	68
Norway	26.1	24586	0.4	0.17	64
Poland	36.74	6684	0.48	.	64
SlovakRepublic	26.9	1996	0.61	.	35
Spain	32.91	15947	.	0.4	37
Sweden	24.28	17110	0.58	0.27	64
Switzerland	26.66	25754	0.49	.	72
United Kingdom	32.56	20187	0.71	0.5	57
United States	35.67	28250	0.46	0.47	61

The intergenerational measures for earnings elasticity are taken from Corak (2006), Mocetti (2007), Pla (2009) and Leigh (2007). The intergenerational education elasticity measures are taken from Hertz et al (2007).

Gini Coefficients are taken from the OECD data base. The income concept used is that of disposable household income, adjusted for household size and all coefficients are multiplied by 100. The Gini coefficient for all countries is calculated for the year 2000 except 1995 for Belgium and Spain, 1998 for Slovak Republic, 1999 for Australia, 2001 for Germany, New Zealand and Switzerland; and 2002 for the Czech Republic.

GDP measures are taken from Pen World Tables. The average of GDP per capita over ten years from 1991-2000 has been taken in the log form for the analysis.

In the course of this analysis, a measure of perceived social mobility is also used in the micro level analysis. It has been constructed from the 'need to eliminate inequality' question following Bjornskov *et al* (2008). A person is defined as perceiving his or her society as socially mobile if she chooses the bottom three out of the five categories in the question, "How important is the need to eliminate inequality in society?", where 1 is the 'very important' and 5 is 'least important. Therefore, the less emphasis laid by an individual on the need to eliminate inequality, the better his or her perceptions are about socio-economic mobility in society. Altogether, this procedure yields a social mobility perception measure for 18,000 individual's in 14 OECD countries.

5.2 Methodology

As a first step, a country level analysis has been carried out using Subjective Well Being, defined as the population share of those responding individuals in the highest three categories of the life satisfaction question. This follows Bjornskov *et al.* (2008). This information is aggregated at country level which gives rise to 12 and 15 data points which are available for regression on intergenerational earnings and educational elasticity. Regressions are carried out using Ordinary Least Squares (OLS) with robust standard errors. Country level intergenerational

correlations with well-being are also tested on individuals with at least one child and within four different age brackets for both forms of mobility.

The second sub-section of this results section applies multi-level multivariate regressions exploiting the micro level as well as the country level variation in data. A cross section is obtained by combining individual level information with country level characteristics. Using this data a linear probability model with random country effects is estimated. Most the satisfaction studies have used the full scale of the satisfaction question usually using the ordered probit model, however, since satisfaction levels have been shown to be cardinal, that is the difference between a score of 4 and 5 is the same as the difference between a score of 1 and 2, a linear probability model has been used for the empirical analysis.

Linear probability models (LPM) have been generally been less preferred over the logit or probit models since they have a tendency to predict fitted values of the dependent variable outside the 0-1 range and cause hetroskedasticity. The latter can and has been dealt with as errors have been corrected for heteroskedasicity while the former is not much of a problem since fitted values of the dependent variable close to the mean of the data are unlikely to lie outside the 0-1 range. This model is also appropriate as this paper seeks to perform a primary analysis with focus on the significance of the relationship between intergenerational mobility and well-being rather than the magnitude of coefficient of intergenerational mobility (Moffitt 1999, Amemiya 1981).

The random country effects are applied to avoid the risk of regression errors being correlated across groups, which is usually the case when an explanatory variable is drawn from a population with a grouped structure. Using the assumption of independent standard errors and

not adjusting for them could potentially result in them being downward biased and spurious regression (Moulton, 1986). The Subjective Well-Being in this micro-level analysis is a binary variable taking the value of one if the individual respondent indicated a life satisfaction among the top three categories.

As a test of robustness, a sensitivity analysis has carried out at both the micro and country level. The cutoff point of satisfaction has been set at the 5 highest category which is also the midpoint of the scale. The results of this analysis can be found in Appendix 2.

Section 6: Results

A simple correlation investigation into the unexplored relationship between Subjective Well Being (SWB) and measures of social mobility as measured by intergenerational earnings and educational elasticity suggests that stronger intergenerational dependence of lowers well-being at the societal level. The correlation coefficients are ρ = -0.48 and -0.71 for educational and earnings elasticity respectively. As shown by figure 6.3a and 6.3b, the findings of from this analysis reveal that happiness or well being measured for a group of societies with similar economic standing but varying degrees of (intergenerational) social mobility has an inverse relationship with well-being.

Figure: 6.3a: SWB and Educational Elasticity

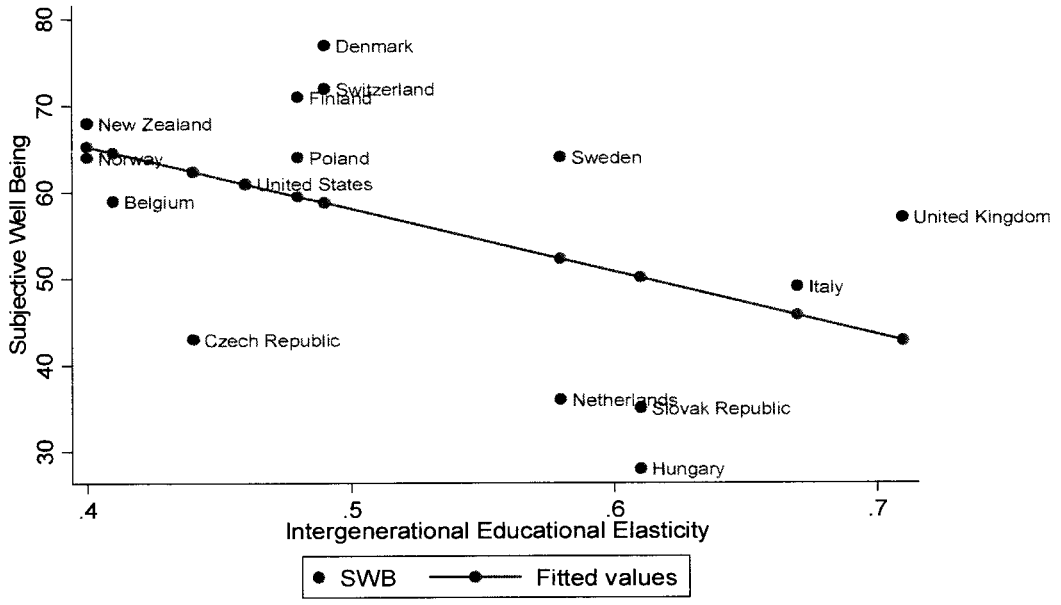


Figure: 6.3b: SWB and Earnings Elasticity

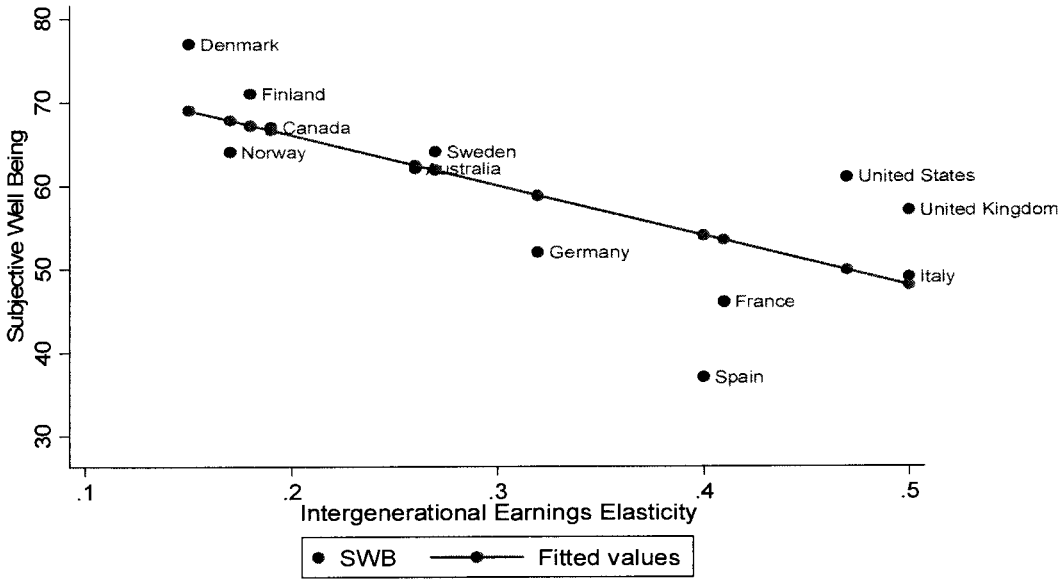


Table 6.3ai: Social Mobility and SWB

	1	2	3	4	5	6
Intergenerationc' Education Elasticity	-72.63+	-56.17				
	[-1.98]	[-1.63]				
Intergenerational Earnings Elasticity			-60.03**	-58.51**		
			[-3.18]	[-3.48]		
Gini Coefficient					-0.14	-0.06
					[-0.18]	[-0.09]
Log GDP per capita		9.55+		27.13+		11.20*
		[1.92]		[1.89]		[2.26]
Constant	94.35**	-6.17	78.03**	-192.05	59.78*	-51.19
	[4.87]	[-0.11]	[12.07]	[-1.34]	[0.02]	[-0.95]
Observations	15	15	12	12	20	20
R-squared	0.72	0.41	0.50	0.64	0.00	0.23

Notes: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the three highest of ten categories. Standard errors corrected for White's Heteroskedasicity. T-Statistics are reported in the brackets. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively

Table 6.3a reports the OLS coefficient estimates for the association between social mobility and happiness. The results suggest that a decrease in intergenerational education elasticity by 0.1 increases the share of happiest persons in society by 7.3%. Similarly a decrease in intergenerational earnings elasticity by 0.1 increases share of the happiest in society by 6%. However, when income is added to the two mobility models, it decreases the coefficient of educational elasticity to 5.6% but, this is not significant at the 10% level. The coefficient on the earnings elasticity falls to 5.8%, but is highly significant. Per capita income growth is also positively associated with well-being as a 1% increase in a country's per capita income leads to the increase in the share of satisfied individuals in society by 9.5% and 27% respectively (Models 2 and 4). In the third set of analysis (Models 5 and 6), the Gini coefficient was used as a regressor in the well-being equation. The results show that Gini coefficient which is used as a measure of cross-sectional inequality is statistically insignificant and is not related to the well-

being of individuals in society, consistent with the findings of Bjornskov (2008) and Helliwell (2003).

Using a sample of seven countries on which data was available for all three country level variables, a similar analysis was carried out. Table 6.3aii shows the coefficients of education elasticity are statistically significant and higher than the coefficients of earnings elasticity. Both the mobility measures are also superior to the Gini Coefficient. Therefore, intergenerational measures of elasticity of income and education are superior measures of inequality when compared to the Gini coefficient which is a poor indicator of well-being in society.

Table 6.3aii: Social Mobility and SWB (common sample)

	1	2	3	4	5	6
Intergenerational Education Elasticity	-49.86+	-65.82*				
	[-2.06]	[-2.53]				
Intergenerational Earnings Elasticity			-47.26*	-48.00*		
			[-3.37]	[-3.05]		
Gini Coefficient					-1.38	-1.57
					[-2.68]	[-4.37]
Log GDP per capita		-19.27+		7.75		18.67
		[-2.39]		[0.68]		[1.44]
Constant	90.28**	290.94*	78.41	1.42	103.08	-77.46
	[6.36]	[3.55]	[15.58]	[0.01]	[7.10]	[-0.62]
Observations	7	7	7	7	7	7
R-squared	0.74	0.50	0.72	0.74	0.66	0.77

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the three highest of ten categories. Standard errors corrected for White's Heteroskedasicity. T-Statistics are reported in the brackets. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively

6.3b: SWB across different age groups

The well-being affects of intergenerational inequality are also analyzed across different four different age groups; 15-35 years, 36-55 years, 56-75 years and above 75 years. The subjective well being for individuals in these four age groups has also been extracted from the life satisfaction question and aggregated at the country level. Social mobility in the form of earnings elasticity is negatively related with well-being of people in the higher age categories. This is can be seen from table 6.3bi. An increase in earnings elasticity by 0.1 is associated with a 6.5 percentage point increase in the number of satisfied individuals. This association steadily declines with higher age: 6.2% for people aged between 36 to 55 years; 5.3% for people aged 56-75 years; and 3.2% for people aged above 76. The coefficient on the 75+ age category is statistically insignificant.

Table 6.3bi: Correlations of Earnings Mobility with SWB across different age groups

	Age (15-35)		Age (36-55)		Age (56-75)		Age (75 above)	
	1	2	3	4	5	6	7	8
Intergenerational Earnings Elasticity	-64.66**	-63.45**	-61.74**	-60.21**	-52.91+	-50.83*	-32.79	-31.43
	[-3.67]	[-3.83]	[-3.33]	[-3.68]	[-2.08]	[-2.26]	[-1.39]	[-1.36]
Log GDP per capita		21.56		27.43+		37.16+		24.35
		[1.52]		[1.97]		[1.94]		[1.24]
Constant	80.17**	-134.47	76.32**	-196.69	78.43**	-291.42	68.94**	-173.43
	[13.26]	[-0.95]	[12.01]	[-1.42]	[9.01]	[-1.52]	[8.49]	[-0.88]
Observations	12	12	12	12	12	12	12	12
R-squared	0.57	0.66	0.53	0.67	0.30	0.51	0.16	0.28

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the three highest categories out of ten with ages shown above. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for White's Heteroskedasicity

When income is added to the equation (models 2, 4, 6 and 8), it reduces the correlation between well-being and earnings elasticity for each age category. The coefficient for each age category (in ascending order) declines from 6.3% to 6% to 5.1%. The coefficient for the 75+ age category is still statistically insignificant. It must be noted that the coefficient on income is statistically insignificant for the age categories of above 75 years. It appears that younger individuals in a country are more concerned about social mobility than their older counter parts. And it would appear normal for the younger individuals to show a stronger well-being affect as their prospects are longer and they have more to gain economically from a mobile society. Although, Senik (2006) was also able to show this trend, he used an indirect approach by using relative income as a variable of interest.

When the education elasticity is used as a measure of intergenerational mobility and analyzed across different age groups, the results not only fail to show any consistent pattern but are also statistically insignificant (Appendix-1, Table:1a). Using a different sample containing seven countries for which both generational mobility measures were available, the coefficients of the educational elasticity are significant and negative across two age cohorts. According to table 6.3bii, the association of educational mobility with well-being weakens across higher age cohorts, consistent with the previous findings where earnings mobility was used as a variable of interest. It must be noted that the coefficients of earnings elasticity are insignificant for the two higher age cohorts of 55-75 and 75 above.

Table 6.3bii: Correlations of Education Mobility with SWB across different age groups (common sample)

	Age (15-35 years)		Age (35-55 years)		Age (55-75 years)		Age (75 above)	
	1	2	3	4	5	6	7	8
Intergenerational Education	-59.54+	-84.11*	-48.06+	-62.79*	-41.80	-45.14	-13.68	-15.11

Elasticity	[-2.23]	[-3.37]	[-2.33]	[-3.19]	[-1.28]	[-1.13]	[-0.48]	[-0.36]
Log GDP per capita		-29.64*		-17.78		-4.03		-1.71
		[-2.71]		[-1.62]		[-0.4]		[-0.06]
Constant	96.52**	405.27*	87.02**	272.16+	88.92**	130.89	67.12**	84.95
	[5.86]	[3.75]	[6.74]	[2.51]	[5.19]	[1.18]	[3.85]	[0.29]
Observations	7	7	7	7	7	7	7	7
R-squared	0.39	0.55	0.39	0.48	0.31	0.31	0.04	0.04

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the three highest categories out of ten with ages shown above. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for White's Heteroskedasicity.

6.3bii: SWB across individuals with children

The sample was further split into individuals who had at least one child for those 15 to 35 years of age and those 36 to 55. The results were stronger in the younger age group: a coefficient of 7.7% versus 6.4%. The magnitude of the impact lessens for both age groups but the overall findings remain the same when income growth is added to the equation. It must be noted that the income growth has no significant impact for the younger cohort.

Table 6.3bii: Correlations of Earnings Mobility with SWB across different age groups and individuals with children

	At least one child				All Individuals			
	Age (15-35 years)		Age (36-55 years)		Age (15-35 years)		Age (36-55 years)	
	1	2	3	4	5	6	7	8
Intergenerational Earnings Elasticity	-77.65**	76.60**	-63.15**	-61.60**	-64.66**	-63.45**	61.74**	60.21**
	[-3.54]	[-3.49]	[-3.22]	[-3.49]	[-3.67]	[-3.83]	[-3.33]	[-3.68]
Log GDP per capita		18.81		27.68+		21.56		27.43+
		[1.00]		[1.84]		[1.52]		[1.97]
Constant	86.14**	-101.05	77.94**	-197.56	80.17**	-134.47	76.32**	-196.69
	[11.45]	[-0.54]	[11.57]	[-1.32]	[13.26]	[-0.95]	[12.01]	[-1.42]
Observations	12	12	12	12	12	12	12	12
R-squared	0.56	0.60	0.51	0.64	0.57	0.66	0.53	0.67

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the three highest categories out of ten with ages shown above. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for White's Heteroskedasicity

When these results are compared with the entire sample in these two age groups, it was found that well-being affects are stronger for individuals who have a minimum of one child in both age groups. Using micro-level analysis, Bjornskov (2006) and Fray and Stutzer (2003) have shown children have a negative impact on well-being. However, since well-being affects of intergenerational earnings are being tested here, it would appear normal for parents to be concerned about the future prospects of the child, especially since mobility in a society has a an important role to play in their economic status in adulthood. This reasoning is similar to one used to justify the preferences of younger individuals towards greater social mobility. The sensitivity analysis with a different cutoff point for the satisfaction shows that only the youngest age cohort (15-35) had the strongest relationship with well-being. The strength of this relationship does not reduce across the other three older age cohorts. A similar pattern has been observed when the sample was split into individuals with children. The youngest age cohort with children had strong association with well-being as compared to the all the individuals in the same cohort, while the group of individuals aged 36-55 years does not show such a pattern and the coefficients remain relatively same. (Appendix 2, Tables 2bi and 2bii)

The results do not change when education mobility measure is used as the variable of interest. According to table 6.3bii, the coefficients of education elasticity are markedly higher for individuals with children than those without children in the younger age cohort: 7% versus 5.9%. This outcome is consistent when income growth is added to the model: 10.7% versus 8.4%. The difference in magnitude is slightly lower for the older age cohort (36-55 years). When income

growth is added to the models for this age cohort (model 4 and model 8), individuals without children have well-being which is more closely related to social mobility than those with children, although the difference between the two coefficients of education mobility is not large.

Table 6.3biii: Correlations of Earnings Mobility with SWB across different age groups and individuals with children (common sample)

	At least one child				All Individuals			
	Age (15-35 years)		Age (36-55 years)		Age (15-35 years)		Age (36-55 years)	
	1	2	3	4	5	6	7	8
Intergenerational Education Elasticity	-70.49**	-106.98*	-47.23*	-64.61*	-59.54+	-84.11*	-48.06+	-62.79*
		[-3.96]	[-2.4]	[-4.06]	[-2.23]	[-3.37]	[-2.33]	[-3.19]
Log GDP per capita		-44.04*		-20.97		-29.64*		-17.78
		[-2.93]		[-2.06]		[-2.71]		[-1.62]
Constant	105.45	564.12*	88**	306.38*	96.52**	405.27*	87.02**	272.16+
	4.84	[3.82]	[6.91]	[3.09]	[5.86]	[3.75]	[6.74]	[2.51]
Observations	7	7	7	7	7	7	7	7
R-squared	0.32	0.53	0.52	0.64	0.39	0.55	0.39	0.48

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the three highest categories out of ten with ages shown above. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for White's Heteroskedasicity.

6.3c: Social Mobility at the Micro-level

Table 6.3c below shows that intergenerational earnings elasticity exerts a strong influence on well-being. A 0.1 increase in earnings elasticity will decrease the chances of a person being happy by 5.4%. The magnitude of the correlation with well-being increases to 6.7% when income growth is added to the equation. Income growth by 1% in society increases the chances of a person being happy 20%. As a next step education elasticity is used as a regressor in the

well being equation (model 4 and 5). It is evident from the findings that coefficient of education elasticity is insignificant and has no impact. The third set of analysis (model 5 and 6) shows that cross-sectional inequality in the form of the Gini coefficient associated with well-being but the strength of this relationship is weak. This relationship becomes statistically significant when income growth is added to the equation as an explanatory variable; whereby a one unit increase in the Gini coefficient decreases the chances of a person being happy by 2%.

Table 6.3c: Micro-level analysis of Social Mobility

	1	2	3	4	5	6
Intergenerational Education Elasticity	-0.36	-0.13				
	[-1.36]	[-0.73]				
Intergenerational Earnings Elasticity			-0.54**	-0.67**		
			[-3.23]	[-5.03]		
Gini					-0.01	-0.02**
					[-1.60]	[-3.46]
Log GDP per capita		0.08 **		0.35**		0.12**
		[4.21]		[4.20]		[5.06]
Constant	0.76**	-0.14	0.77**	-2.56	0.78**	-0.13
	[5.28]	[-0.60]	[10.27]	[-3.09]	[-4.88]	[0.49]
Controls for Age, Gender, Employment Status, Education, Income and Marital Status and Number of Children	Yes	Yes	Yes	Yes	yes	Yes
Observations	31778	31778	26168	26168	45261	45261
Overall R-squared	0.06	0.08	0.06	0.08	0.08	0.08

Note: Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top three out of the ten categories of life satisfaction question. Z -Statistics are reported in the brackets. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for within-country correlation. The coefficients of the control variables can be found in Appendix 1 – Tables 1b i, ii and iii

In this light of these results, it can be asserted that social mobility in the form of intergenerational earnings elasticity is negatively associated with well-being at the societal as

well as the individual level although the education elasticity has a higher correlation at the country level. It is also noteworthy that the Gini Coefficient is a variable which does not illustrate the relationship between inequality and happiness in a convincing manner.

6.3d: Perceived versus actual Social Mobility

The concept of perceived mobility has been exhaustively explored by researchers. The data on perceived mobility is gathered using socio-economic surveys like the World Values and U.S General Social Survey using individual evaluations of degree of equality and the equity of income distribution. However, both Senik (2006) and Bjornskov (2008) have used direct and indirect methods to gauge the degree of the perceived mobility. While the direct methods involved gathering responses from particular questions in a survey, the indirect method involved individuals' relative income position in relation to a desired level of income. Both were able to show a positive association between higher perceived mobility and well-being. Alesina *et al* (2004) even went on to suggest that it is perceived rather than actual social mobility in society which has a greater closely related to subjective well-being. However, there is a gap in literature with regards to comparisons of perceived versus actual social mobility, where actual social mobility is an intergenerational measure. Therefore, a simple measure of perceived mobility is constructed using a question from the World Values survey. The question used for this analysis reflects individuals' opinion on 'the need to eliminate inequality' on a five point scale where one is the signal for a great need and five is the signal for very little need. Individuals in the top two categories are selected to have a low perceived mobility.

Table 6.3d: Perceived versus actual Social Mobility

	1	2
Perceived Social Mobility	-0.04	-0.01

	[1.44]	[-0.40]
Gini Coefficient	-0.01+	
	[-1.75]	
Intergenerational Earnings Elasticity		-0.55**
		[-3.06]
Constant	0.75**	0.78**
	[4.50]	[8.86]
Controls for Age, Gender, Employment Status, Education, Income and Marital Status and Number of Children	yes	yes
Observations	44978	26168
Overall R-squared	0.06	0.06

Note: Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top three out of the ten categories of life satisfaction. Perceived Social Mobility is binary variable derived from the top two out of the four categories for the "need to eliminate inequality" question. z-Statistics are reported in the brackets. Standard errors corrected for within-country correlation. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. The coefficients of the control variables can be found in Appendix 1 – Tables 1c i and ii.

Two models are used for a comparative analysis as shown in table 6.d above; one which contains the Gini coefficient along with perceived mobility, while the second one contains intergenerational earnings elasticity along with perceived mobility as the explanatory variables. The results from the first model that a unit increase in perceived mobility increase the chances of a person being happy by 4%. However, the coefficient of perceived mobility is statistically insignificant at the 10% level of significance. Consistent with the micro-analysis in the previous sub-section, the Gini coefficient is negatively related with well-being: a one unit increase decreases the chances of happiness by 1%. Model 2, however, shows that the intergenerational mobility measure has a stronger relationship with subjective well-being than the perceived equality measure. While a reduction in intergenerational earnings elasticity by 0.1 increase the chances of happiness by 5.5%, the perception of the society being mobile only increases that

chance by only 1%. The coefficient of perceived mobility is also insignificant at the 10% level of significance.

In the light of these findings, doubts can be raised over Alesina et al's (2004) assertion that perceived mobility matters more than actual mobility where subjective well being is concerned. In particular, Alesina et al. (2004) as well as Senik (2006) suggest that the happiness effects of income inequality are heterogeneous, depending on perceived and actual social mobility in a society. There is, however, room to explore perceived mobility in a different way and undertake a similar comparison. Based on these results one can conclude that if heterogeneity of inequality in society is to be explored with actual mobility, it should be done with the aid of intergenerational and not cross sectional measures.

Section 7: Conclusion

Intergernational mobility measures have been largely absent in the happiness literature. The empirical evidence on the relationship of well-being and living in a socially mobile society have been only indirect through comparisons of relative income and inequality effects across countries (Alesina *et al.*, 2004, Senik 2008) with cross sectional measures. Studies which have conducted such comparisons have been able to show that social mobility is conducive to happiness and that it should not be taken for granted in empirical studies.

Using data from the World Values Survey from 1991 to 2000 for 20 OECD countries, this paper analyzes the well-being effects intergenerational transmission of equality in the form of intergenerational earnings and education elasticity, both at the individual and country level. International well-being data from this survey permits the combined use of individual and societal variables.

It was found that well-being measured for a group of countries with similar economic standing but varying degrees of (intergenerational) social mobility responds negatively to intergenerational transmission of inequality. The analysis also showed that at country and individual level both mobility measures are better than the static measure in the form of the Gini Coefficient, which was found to be a poor indicator of inequality when used as a regressor for well-being, consistent with the findings of previous researchers.

It was also established that younger individuals in a country are more concerned about social mobility than their older counterparts as they have a greater economic stake in societal mobility. Senik (2006) using an indirect approach with relative income as the main variable of interest was able to show that a younger group of individuals in society is more concerned about social mobility than their older counter parts. The younger age groups have more to gain from the society being educationally or economically mobile as they have longer prospects as compared to individuals at who are established or are at the end of their careers. Using the two intergenerational measures in separate equations, the association with well being was studied across four age cohorts. The results show a clear trend whereby the relationship of well-being with social mobility weakens across higher age groups providing validation to Senik's findings. The coefficient of both mobility measures was statistically insignificant at the country level for individuals in the highest age cohort of above 75 years. Hypothesizing along the same line of reasoning, the well-being effects for the two middle aged cohorts with (having the highest well being effects) children were studied at the country level. It was found that the younger age group (15-35 years) with at least one child had great well-being effects than the older age cohort (36-55 years). The individuals with children in these two cohorts were then compared with the total sample in these two cohorts where the former had a stronger correlation with well-being. These

individuals (with children) are concerned about social mobility since it will in turn play a key role in the economic status of their child's adulthood. These results are different from the findings of Bjornskov (2006) and Fray and Stutzer (2003) who showed having children is negatively associated with well-being.

Most of the previous studies have been very particular in making a clear distinction between perceived social mobility and actual social mobility. While perceived social mobility gauges perceptions of fairness and opinions on income distribution, the actual social mobility is mostly measured through social and qualitative indicators on governance or a cross sectional measures like the Gini coefficient. It has also been claimed by Alesina *et al.* (2004) that living in a less mobile society may be beneficial for an individual if it creates a scope for economic gain and progress using the perceived social mobility approach. In such a case, individuals are said to have a 'taste' for inequality. The results obtained from the micro-level analysis refute such a claim. In fact, perceived mobility appears to have a weak relationship with well-being. The relationship of intergenerational earnings elasticity in the same model was not only robust but also had a noteworthy magnitude. There is, however, room for exploring perceived mobility in different ways, but intergenerational mobility measures cannot be overlooked when undertaking a study on inequality and social mobility.

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Appendix – 1

Table 1a: Correlations of Social Mobility with SWB across different age groups

Dependent Variable(s)	Age (15-35 years) 1	2	Age (35-55 years) 3	4	Age (55-75 years) 5	6	Age (75 above) 7	8
Intergernational Education Elasticity	-37.60	-19.54	-46.84	-19.54	-51.92	-21.15	-41.22	-13.43
	[-0.99]	[-0.66]	-1.16	-0.66	-1.19	-0.7	-1.02	-0.46
Log GDP per capita		15.84**		15.84**		17.85		16.12**
		[3.69]		3.69		4.08		3.81
Constant	78.04**	-88.49+	78.25**	-88.49+	85.97**	-101.96	76.86**	-92.87+
	[3.88]	[-1.86]	3.66	-1.86	3.73	-2.1	3.59	-1.98
Observations	15	15	15	15	15	15	15	15
R-squared	0.07	0.48	0.09	0.58	0.10	0.62	0.07	0.58
Adjusted R-squared	0.00	0.40	0.02	0.50	0.03	0.56	0.00	0.51

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the three highest categories out of ten with ages shown above. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for White's Heteroskedasicity

Table 1b i): Micro Level Analysis of Social Mobility

	1			2		
	Coefficient		Z-value	Coefficient		Z-value
Country Level Variables						
Intergenerational Earnings Elasticity	-0.54	**	-3.23	-0.67	**	-5.03
Log GDP per capita				0.35	**	4.20
Individual Level Variables						
Gender						
Female	-		-	-		-
Male	-0.02	**	-2.81	-0.02	*	-2.31
Age						
15-35	-		-	-		-
36-55	-0.06	**	-5.42	-0.06	**	-5.91
56-75	0.01	**	0.91	0.01		0.73
75 above	0.06	**	2.26	0.04	+	1.89
Martial Status						
Married	-		-			
Divorced	-0.08	**	-3.40	-0.10	**	-6.19
Separated	-0.20	**	-5.22	-0.20	**	-5.54
Widowed	-0.10	**	-7.91	-0.11	**	-8.53
Single	-0.13	**	-12.22	-0.13	**	-13.40
Employment Status						
Employed	-		-			
Unemployed	-0.18	**	-4.51	-0.18	**	-4.26
Number of Children						
None	-		-	-		-
One	-0.04	**	-2.72	-0.05	**	-2.85
Two	-0.04	**	-2.63	-0.04	**	-2.93
Three or more	-0.02		-1.38	-0.03		-2.10
Income Level						
One(lowest)	-0.02		-0.92	-0.04		-1.55
Two	-0.05		-3.55	-0.07	**	-4.78
Three	-0.03		-1.63	-0.04		-2.00
Four	-0.01		-0.41	-0.01		-0.86
Five	0.02		0.99	0.02		0.72
Six	0.03		1.44	0.02		1.31
Seven	0.07	**	2.76	0.05	**	3.76
Eight	0.08	**	2.97	0.06	**	4.09
Nine	0.13	**	3.77	0.09	**	6.20

Ten	0.15	**	4.54	0.13	**	5.50
Eleven(highest)	-		-	-		-
Level of Education						
Incomplete Elementary Education	-		-	-		-
Completed Elementary Education	0.03		0.92	0.02		0.77
Incomplete Secondary Education (Technical/Vocational Type)	0.10		1.61	0.05		1.30
Completed Secondary Education (Technical/Vocational Type)	0.07		1.22	0.03		0.79
Incomplete Secondary Education (University Preparation)	0.11	*	1.83	0.08	+	1.93
Completed Secondary Education (University Preparation)	0.09		1.64	0.07	+	1.69
Some University Education	0.09		1.51	0.05		1.13
University Degree or Higher	0.09		1.57	0.05		1.28
Constant	0.77	**	8.66	-2.56	**	-3.09
Observations	26168			26168		
R-Squared	0.06			0.08		

Note:

"-" denotes the base individual.

Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top three out of the ten categories of life satisfaction question

. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for within-country correlation.

Model 1 contains Intergenerational Education Elasticity as the only explanatory variable at the country level. Model 2 contains both Intergenerational Education Elasticity and Log GDP per capita as the explanatory variables at the country level.

Table 1b ii): Micro Level Analysis of Social Mobility

	1			2		
	Coefficient		Z-value	Coefficient		Z-value
Country Level						
Intergenerational Education Elasticity	-0.36		-1.36	-0.13		-0.73
Log GDP per capita				0.08	**	4.21
Individual Level						
Gender						
Female	-		-	-		-
Male	-0.03	**	-4.26	-0.03	**	-3.96
Age						
15-35	-		-	-		-
36-55	-0.08	**	-6.77	-0.08	**	-7.48
56-75	0.01		0.81	0.01		0.35
75 above	0.07	**	2.98	0.05	+	1.93
Martial Status						
Married	-		-	-		-
Divorced	-0.08	**	-4.89	-0.09	**	-5.23
Separated	-0.15	**	-4.82	-0.17	**	-5.47
Widowed	-0.14	**	-9.50	-0.13	**	-7.55
Single	-0.09	**	-5.04	-0.09	**	-4.74
Employment Status						
Employed	-		-	-		-
Unemployed	-0.13	**	-6.90	-0.13	**	-6.59
Number of Children						
None	-		-	-		-
One	-0.07	**	-3.98	-0.06	**	-4.36
Two	-0.06	**	-3.33	-0.04	**	-3.25
Three or more	-0.03	+	-1.77	-0.02		-1.39
Income Level						
One(lowest)	-0.08	*	-2.24	-0.07		-2.12
Two	-0.08	*	-1.99	-0.06		-1.97
Three	-0.07	*	-2.16	-0.06		-1.78
Four	-0.05		-1.40	-0.03		-0.97
Five	-0.01		-0.32	0.00		-0.01
Six	0.02		0.63	0.04		1.16
Seven	0.08	*	2.21	0.09	**	2.77
Eight	0.10	*	2.53	0.10	**	3.03

Nine	0.13	**	3.40	0.13	**	3.86
Ten	0.19	**	4.38	0.19	**	4.62
Eleven(highest)	-		-	-		-
Level of Education						
Incomplete Elementary Education	-		-	-		-
Completed Elementary Education	0.06		1.58	0.02		0.36
Incomplete Secondary Education (Technical/Vocational Type)	0.06		1.55	0.03		0.73
Completed Secondary Education (Technical/Vocational Type)	0.11	*	2.04	0.08		1.64
Incomplete Secondary Education (University Preparation)	0.08	*	1.83	0.05		1.14
Completed Secondary Education (University Preparation)	0.06		1.63	0.03		0.71
Some University Education	0.13	**	3.75	0.09	*	2.06
University Degree or Higher	0.11	**	3.12	0.08	*	2.06
Constant	0.76	**	5.28	-0.14		-0.6
Observations	31778			31778		
R-Squared	0.06			0.08		

Note:

"-" denotes the base individual.

Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top three out of the ten categories of life satisfaction question

. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for within-country correlation.

Model 1 contains Intergenerational Education Elasticity as the only explanatory variable at the country level. Model 2 contains both Intergenerational Education Elasticity and Log GDP per capita as the explanatory variables at the country level.

Table 1biii): Micro Level Analysis of Social Mobility

	1			2		
	Coefficient		Z-Value	Coefficient		Z-Value
Country Level						
Gini Coefficient	-0.01		-1.60	-0.02	**	-3.46
Log GDP per capita				0.12	**	5.06
Individual Level						
Gender						
Female	-		-	-		-
Male	-0.03	**	-4.75	-0.03	**	-4.73
Age						
15-35	-		-	-		-
36-55	-0.07	**	-6.34	-0.07	**	-6.87
56-75	0.02		1.40	0.01		0.77
75 above	0.09	**	5.49	0.06	**	3.89
Martial Status						
Married	-			-		-
Divorced	-0.09	**	-5.85	-0.10	**	-9.26
Separated	-0.15	**	-5.64	-0.17	**	-6.65
Widowed	-0.12	**	-12.86	-0.11	**	-11.14
Single	-0.10	**	-8.21	-0.10	**	-8.90
Employment Status						
Employed	-			-		-
Unemployed	-0.16	**	-5.77	-0.16	**	-5.14
Number of Children						
None	-			-		-
One	-0.06	**	-4.20	-0.05	**	-4.53
Two	-0.05	**	-3.91	-0.04	**	-3.78
Three or more	-0.02		-1.01	-0.01		-0.66
Income Level						
One(lowest)	-0.05	*	-1.83	-0.05	*	-2.18
Two	-0.05	*	-2.20	-0.05	**	-3.05
Three	-0.05	*	-2.16	-0.05	*	-2.43
Four	-0.03		-1.36	-0.02		-1.18
Five	0.00		0.05	0.01		0.29
Six	0.03		1.05	0.03	+	1.62
Seven	0.08	**	2.96	0.08	**	3.64
Eight	0.10	**	3.29	0.09	**	3.95
Nine	0.14	**	4.29	0.13	**	5.15
Ten	0.18	**	5.24	0.17	**	6.35
Eleven(highest)	-			-		

Level of Education

Incomplete Elementary Education	-		-	-		-
Completed Elementary Education	0.06	**	2.67	0.01		0.45
Incomplete Secondary Education (Technical/Vocational Type)	0.10	**	2.81	0.06	+	1.63
Completed Secondary Education (Technical/Vocational Type)	0.12	**	3.04	0.08	*	2.11
Incomplete Secondary Education (University Preparation)	0.13	**	3.34	0.07	*	2.14
Completed Secondary Education (University Preparation)	0.09	**	3.07	0.06	*	1.83
Some University Education	0.16	**	6.70	0.09	**	2.88
University Degree or Higher	0.14	**	4.92	0.09	**	2.93
Constant	0.78	**	4.88	-0.13		-0.49
Observations	45261			45261		
R-Squared	0.08			0.08		

Note

"-" denotes the base individual.

Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top three out of the ten categories of life satisfaction question

. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for within-country correlation.

Model 1 contains the Gini Coefficient as the only explanatory variable at the country level. Model 2 contains both Gini Coefficient and Log GDP per capita as the explanatory variables at the country level.

Table 1c: Perceived versus Actual Social Mobility

	1			2		
	Coefficient		Z-Value	Coefficient		Z-value
Country Level						
Gini				-0.01	+	-1.75
Intergenerational Earnings Elasticity	-0.55	**	-3.06			
Perceived Mobility	-0.01		-0.40	0.04		1.44
Individual Level						
Gender						
Female	-		-	-		-
Male	-0.02	**	-2.81	-0.03	**	-4.81
Age						
15-35	-		-	-		-
36-55	-0.06	**	-5.78	-0.07	**	-6.43
56-75	0.01		0.88	0.02	**	1.46
75 above	0.06	*	2.27	0.08		5.21
Martial Status						
Married	-		-	-		-
Divorced	-0.08	**	-3.48	-0.09	**	-5.84
Separated	-0.20	**	-5.17	-0.16	**	-5.87
Widowed	-0.10	**	-7.98	-0.12	**	-11.60
Single	-0.13	**	-13.2	-0.10	**	-8.05
Employment Status						
Employed	-		-	-		-
Unemployed	-0.18	**	-4.49	-0.16	**	-5.64
Number of Children						
None	-		-	-		-
One	-0.04	**	-2.81	-0.05	**	-4.37
Two	-0.04	*	-2.50	-0.05	**	-3.87
Three or more	-0.02		-1.34	-0.02		-1.01
Income Level						
One(lowest)	-0.02		-1.00	-0.05		-1.70
Two	-0.05	**	-3.54	-0.05	+	-1.85
Three	-0.03		-1.64	-0.04	+	-1.73
Four	-0.01		-0.38	-0.03		-1.09
Five	0.03		0.99	0.01		0.24
Six	0.03		1.45	0.03		1.19
Seven	0.07	**	2.71	0.08	**	2.97
Eight	0.08	**	2.99	0.10	**	3.30

Nine	0.13	**	3.78	0.14	**	4.29
Ten	0.15	**	4.53	0.18	**	5.22
Eleven(highest)	-		-	-		-
Level of Education						
Incomplete Elementary Education				-		-
Completed Elementary Education	0.03		0.92	0.08	**	3.33
Incomplete Secondary Education (Technical/Vocational Type)	0.10		1.63	0.12	**	3.24
Completed Secondary Education (Technical/Vocational Type)	0.07		1.21	0.13	**	3.36
Incomplete Secondary Education (University Preparation)	0.10	+	1.90	0.14	**	3.83
Completed Secondary Education (University Preparation)	0.09	+	1.65	0.11	**	4.00
Some University Education	0.09		1.50	0.17	**	6.84
University Degree or Higher	0.09		1.55	0.15	**	5.27
Constant	0.78	**	8.68	0.75	**	4.50
Observations	26168			44978		
R-Squared	0.06			0.06		

Note:

"-" denotes the base individual.

Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top three out of the ten categories of life satisfaction.

Perceived Social Mobility is binary variable derived from the top two out of the four categories for the "need to eliminate inequality" question

Standard errors corrected for within-country correlation. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively.

Model 1 contains the Gini Coefficient and Perceived Mobility as explanatory variables at the country level. Mode 2 contains Intergenerational Earnings Elasticity and Perceived Mobility as explanatory variables at the country level.

Appendix - 2

Table 2a: Social Mobility and SWB

	1	2	3	4
Intergenerational Education Elasticity	-25.30	-2.20		
	[-0.83]	[-0.12]		
Intergenerational Earnings Elasticity			-26.77*	-26.28*
			[-2.81]	[-2.78]
Log GDP per capita		13.40**		8.81
		[4.97]		[1.09]
Constant	93.97**	-47.14	92.57**	4.88
	[5.85]	[-1.57]	[28.32]	[-0.06]
Observations	15	15	12	12
R-squared	0.05	0.68	0.44	0.51
Adjusted R-squared	-0.02	0.63	0.38	0.40

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the five highest categories out of ten. Standard errors corrected for White's Heteroskedasicity. T-Statistics are reported in the brackets. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively.

Table 2b i): Correlations of Social Mobility with SWB across different age groups

	Age (15-35 years)		Age (35-55 years)		Age (55-75 years)		Age (75 above)	
	1	2	3	4	5	6	7	8
Intergenerational Earnings Elasticity	-30.90**	30.60**	-23.94*	-23.43*	-25.33+	-24.59+	-25.12+	-24.73
	[-3.85]	[-3.77]	[-2.82]	[-2.95]	[-2.02]	[-2.00]	[-1.91]	[-1.81]
Log GDP per capita		5.50		9.24		13.28		6.89
		[1.03]		[1.97]		[1.23]		[0.58]
Constant	95.03**	40.30	91.29	-0.72	91.33**	-40.89	89.03**	20.42
	[46.03]	[0.75]	[46.98]	[-0.01]	[27.80]	[-0.38]	[21.43]	[0.17]
Observations	12	12	12	12	12	12	12	12
R-squared	0.58	0.61	0.35	0.43	0.28	0.39	0.24	0.24

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the five highest categories out of ten. Standard errors corrected for White's Heteroskedasicity. T-Statistics are reported in the brackets. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively.

Table 2b ii): Correlations of Social Mobility with SWB across different age groups

	Age (15-35 years)		Age (35-55 years)		Age (55-75 years)		Age (75 above)	
Dependent Variable(s)	1	2	3	4	5	6	7	8
Intergenerational Education Elasticity	-23.20	-4.53	-31.07	-4.75	-34.16	-8.19	-10.64	11.48
	[-1.06]	[-0.32]	[-0.99]	[-0.28]	[-1.02]	[-0.38]	[-0.49]	[0.59]
Log GDP per capita		10.83**		15.27**		15.07**		12.82**
		[4.56]		[3.68]		[3.25]		[3.37]
Constant	94.74**	-19.27	95.54**	-65.22	97.11**	-61.52	83.99**	-51.09
	[8.97]	[-0.80]	[6.45]	[-1.63]	[6.08]	[-1.34]	[7.27]	[-1.20]
Observations	15	15	15	15	15	15	15	15
R-squared	0.06	0.63	0.05	0.64	0.06	0.57	0.01	0.61

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the five highest categories out of ten. Standard errors corrected for White's Heteroskedasicity. T-Statistics are reported in the brackets. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively.

Table 2b ii): Correlations of Social Mobility with SWB across different age groups and individuals with children

	At least one child				All Individuals			
	Age (15-35 years)		Age (35-55 years)		Age (15-35 years)		Age (35-55 years)	
Dependent Variable(s)	1	2	3	4	5	6	7	8
Intergenerational Earnings Elasticity	-38.48**	-38.23**	-22.24*	-21.75*	-30.90**	-30.60**	-23.94*	-23.43*
	[-4.02]	[-3.86]	[-2.58]	[-2.66]	[-3.85]	[-3.77]	[-2.82]	[-2.95]
Log GDP per capita		4.47		8.77		5.50		9.24
		[0.58]		[1.37]		[1.03]		[1.97]
Constant	97.18	52.67	91.31	3.86	95.03**	40.30	91.29	-0.72
	[38.14]	[0.68]	[45.17]	[0.06]	[46.03]	[0.75]	[46.98]	[-0.01]
Observations	12	12	12	12	12	12	12	12
R-squared	0.59	0.60	0.31	0.37	0.58	0.61	0.35	0.43

Note: Dependent Variable is Subjective Well-Being aggregated at the country level as the population share of respondents in the five highest categories out of ten. Standard errors corrected for White's Heteroskedasicity. T-Statistics are reported in the brackets. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively.

Table 2a i): Micro Level Analysis of Social Mobility

	1			2		
	Coefficient		Z-value	Coefficient		Z-value
Country Level Variables						
Intergenerational Earnings Elasticity	-0.19	*	-2.52	-0.23	**	-3.27
Log GDP per capita				0.10	**	3.86
Individual Level Variables						
Gender						
Female	-		-	-		-
Male	0.00		-0.41	0.00		-0.26
Age						
15-35	-		-	-		-
36-55	-0.04	**	-5.43	-0.04	**	-5.49

56-75	-0.02	*	-2.39	-0.02	*	-2.48
75 above	0.00		0.01	0.00		-0.28
Martial Status						
Married	-		-	-		-
Divorced	-0.07	**	-4.46	-0.07	**	-5.45
Separated	-0.16	**	-6.69	-0.16	**	-6.86
Widowed	-0.07	**	-4.99	-0.07	**	-5.00
Single	-0.06	**	-10.88	-0.06	**	-11.36
Employment Status						
Employed	-		-	-		-
Unemployed	-0.19	**	-4.54	-0.19	**	-4.51
Number of Children						
None	-		-	-		-
One	-0.02		-1.59	-0.02		-1.60
Two	-0.01		-0.97	-0.01		-1.03
Three or more	-0.01		-0.69	-0.01		-0.96
Income Level						
One(lowest)	-0.07	**	-3.19	-0.07	**	-3.18
Two	-0.05	**	-3.71	-0.05	**	-3.76
Three	-0.02		-1.58	-0.02	*	-1.80
Four	0.00		0.14	0.00		-0.04
Five	0.01		1.05	0.01		0.90
Six	0.02		1.48	0.01		1.12
Seven	0.04	**	4.81	0.03	**	4.90
Eight	0.04	**	2.61	0.03	*	2.52
Nine	0.06	**	5.15	0.05	**	4.10
Ten	0.07	**	6.60	0.06	**	5.86
Eleven(highest)	-		-			
Level of Education						
Incomplete Elementary Education	-		-	-		-
Completed Elementary Education	0.04	*	1.81	0.04	*	1.84
Incomplete Secondary Education (Technical/Vocational Type)	0.05		1.59	0.03		1.35

Completed Secondary Education (Technical/Vocational Type)	0.05	*	1.87	0.04	*	1.72
Incomplete Secondary Education (University Preparation)	0.06	*	2.08	0.06	*	2.06
Completed Secondary Education (University Preparation)	0.07	*	2.55	0.07	**	2.61
Some University Education	0.07	*	2.36	0.06	*	2.24
University Degree or Higher	0.08	**	2.69	0.07	**	2.68
Constant	0.91	**	22.62	-0.06		-0.21
Observations	26310			26310		
R-Squared	0.05			0.06		

Note

"-" denotes the base individual.

Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top five out of the ten categories of life satisfaction question

. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for within-country correlation.

Model 1 contains Intergenerational Earnings Elasticity as the only explanatory variable at the country level. Model 2 contains both Intergenerational Earnings Elasticity and Log GDP per capita as the explanatory variables at the country level.

Table 2c ii): Micro Level Analysis of Social Mobility

	1			2		
	Coefficient		Z-value	Coefficient		Z-value
Country Level Variables						
Intergenerational Education Elasticity	-0.24		-0.92	-0.04		-0.24
Log GDP per capita				0.07	**	4.04
Individual Level Variables						
Gender						
Female	-		-	-		-
Male	-0.01	*	-1.99	-0.01		-1.48
Age						
15-35	-		-	-		-
36-55	-0.06	**	-5.40	-0.07	**	-5.32
56-75	-0.02		-1.55	-0.03	*	-2.13
75 above	0.03		1.53	0.01		0.53
Martial Status						
Married	-		-	-		-
Divorced	-0.06	**	-2.84	-0.06	**	-3.33
Separated	-0.12	**	-4.26	-0.14	**	-4.37
Widowed	-0.09	**	-5.98	-0.08	**	-5.09
Single	-0.04	**	-3.13	-0.04	**	-3.33
Employment Status						
Employed	-		-	-		-
Unemployed	-0.15	**	-6.24	-0.15	**	-6.73
Number of Children						
None	-		-	-		-
One	-0.04	*	-2.53	-0.03	*	-2.49
Two	-0.04	**	-2.74	-0.03	*	-2.39
Three or more	-0.02		-1.56	-0.01		-1.13
Income Level	-		-	-		-
One(lowest)	-0.11	**	-2.61	-0.10	**	-2.46
Two	-0.08	**	-2.60	-0.06	**	-2.56
Three	-0.06	*	-2.07	-0.05	*	-1.70
Four	-0.02		-0.70	0.00		-0.18
Five	0.01		0.16	0.02		0.49
Six	0.05		1.52	0.06	*	2.14
Seven	0.08	*	2.44	0.09	**	2.98
Eight	0.10	**	2.85	0.10	**	3.29
Nine	0.10	**	3.34	0.10	**	3.73
Ten	0.13	**	3.53	0.13	**	3.68
Eleven(highest)	-		-			
Level of Education						
Incomplete Elementary Education	-		-			
Completed Elementary Education	0.05		1.50	0.01		0.26

Incomplete Secondary Education (Technical/Vocational Type)	0.05		1.53	0.02		0.66
Completed Secondary Education (Technical/Vocational Type)	0.09	*	2.06	0.07		1.56
Incomplete Secondary Education (University Preparation)	0.09	*	2.37	0.06		1.56
Completed Secondary Education (University Preparation)	0.08	**	2.90	0.05	*	1.82
Some University Education	0.12	**	5.56	0.08	**	2.50
University Degree or Higher	0.13	**	4.54	0.10	**	3.03
Constant	0.91	**	7.49	0.14		0.82
Observations	31985			31985		
R-Squared	0.07			0.08		

Note:

"-" denotes the base individual.

Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top five out of the ten categories of life satisfaction question

. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for within-country correlation.

Model 1 contains Intergenerational Education Elasticity as the only explanatory variable at the country level. Model 2 contains both Intergenerational Education Elasticity and Log GDP per capita as the explanatory variables at the country level.

Table 2c iii): Micro Level Analysis of Social Mobility

	1			2		
	Coefficient		Z-Value	Coefficient		Z-Value
Country Level Variables						
Gini Coefficient	-0.005		-1.01	-0.01	**	-2.52
Log GDP per capita				0.10	**	6.00
Individual Level Variables						
Gender						
Female	-		-	-		-
Male	-0.011	**	-2.45	-0.01	*	-2.19
Age						
15-35	-		-	-		-
36-55	-0.055	**	-5.57	-0.06	**	-5.42
56-75	-0.017	*	-1.86	-0.02	*	-2.41
75 above	0.032	**	2.50	0.02		1.17
Martial Status						
Married	-		-	-		-
Divorced	-0.072	**	-4.84	-0.08	**	-6.49
Separated	-0.128	**	-5.54	-0.14	**	-6.21
Widowed	-0.087	**	-7.30	-0.08	**	-6.71
Single	-0.048	**	-5.78	-0.05	**	-6.13
Employment Status						
Employed	-		-	-		-
Unemployed	-0.179	**	-6.54	-0.17	**	-6.20
Number of Children						
None	-		-	-		-
One	-0.037	**	-3.17	-0.03	**	-3.13
Two	-0.034	**	-3.04	-0.02	**	-2.63
Three or more	-0.011		-0.91	-0.01		-0.55
Income Level						
One(lowest)	-0.103	**	-3.17	-0.10	**	-3.43
Two	-0.060	**	-2.50	-0.06	**	-3.02
Three	-0.044	*	-1.88	-0.04	*	-2.03
Four	-0.013		-0.70	-0.01		-0.42
Five	0.006		0.25	0.01		0.48
Six	0.038		1.50	0.04	*	1.94
Seven	0.064	**	2.46	0.06	**	2.86
Eight	0.076	**	2.67	0.07	**	2.99
Nine	0.088	**	3.29	0.08	**	3.68
Ten	0.108	**	3.88	0.10	**	4.33
Eleven(highest)	-		-	-		-

Level of Education						
Incomplete Elementary Education	-		-	-		-
Completed Elementary Education	0.070	**	3.36	0.03		1.11
Incomplete Secondary Education (Technical/Vocational Type)	0.069	**	2.72	0.03		1.11
Completed Secondary Education (Technical/Vocational Type)	0.098	**	2.99	0.06	*	1.92
Incomplete Secondary Education (University Preparation)	0.111	**	3.64	0.07	*	2.38
Completed Secondary Education (University Preparation)	0.096	**	4.83	0.07	**	2.90
Some University Education	0.143	**	6.68	0.09	**	3.26
University Degree or Higher	0.144	**	5.72	0.10	**	3.77
Constant	0.917	**	6.30	0.18		0.84
Observations	45261			45261		
R-Squared	0.06			0.08		

Note:

"-" denotes the base individual.

: Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top five out of the ten categories of life satisfaction question

. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively. Standard errors corrected for within-country correlation.

Model 1 contains the Gini Coefficient as the only explanatory variable at the country level. Model 2 contains both Gini Coefficient and Log GDP per capita as the explanatory variables at the country level.

Table 2b: Perceived versus Actual Social Mobility

	1			2		
	Coefficient		Z-Value	Coefficient		Z-value
Country Level Variables						
Gini	-0.005		-1.08			
Intergenerational Earnings Elasticity				-0.19	**	-2.49
Perceived Mobility	0.034		1.60	-0.01		-0.38
Individual Level Variables						
Gender						
Female	-		-	-		-
Male	-0.011	**	-2.46	0.00		-0.41
Age						
15-35	-		-	-		
36-55	-0.054	**	-5.55	-0.04	**	-5.69
56-75	-0.015		-1.59	-0.02	*	-2.41
75 above	0.034	**	2.57	0.00		0.01
Martial Status						
Married	-			-		-
Divorced	-0.072	**	-4.72	-0.07	**	-4.47
Separated	-0.129	**	-5.78	-0.16	**	-6.67
Widowed	-0.087	**	-7.20	-0.07	**	-4.97
Single	-0.045	**	-5.14	-0.06	**	-10.77
Employment Status						
Employed	-		-	-		-
Unemployed	-0.177	**	-6.43	-0.19	**	-4.53
Number of Children						
None	-		-	-		-
One	-0.035	**	-3.09	-0.02		-1.57
Two	-0.033	**	-3.03	-0.01		-0.95
Three or more	-0.010		-0.83	-0.01		-0.69
Income Level						
One(lowest)	-0.098	**	-3.05	-0.07	**	-3.23
Two	-0.059	*	-2.43	-0.05	**	-3.72
Three	-0.043	*	-1.77	-0.02		-1.59
Four	-0.013		-0.67	0.00		0.16
Five	0.006		0.25	0.01		1.04
Six	0.038		1.43	0.02		1.53
Seven	0.063	*	2.37	0.04	**	5.07
Eight	0.074	**	2.58	0.04	**	2.75
Nine	0.085	**	3.19	0.06	**	5.73
Ten	0.104	**	3.77	0.07	**	7.36
Eleven(highest)	-		-	-		-
Level of Education						
Incomplete Elementary Education	-		-	-		-

Completed Elementary Education	0.078	**	3.89	0.04	*	1.85
Incomplete Secondary Education (Technical/Vocational Type)	0.077	**	2.96	0.05		1.62
Completed Secondary Education (Technical/Vocational Type)	0.101	**	3.19	0.05	*	1.84
Incomplete Secondary Education (University Preparation)	0.120	**	3.81	0.06	*	2.17
Completed Secondary Education (University Preparation)	0.105	**	5.51	0.07	**	2.58
Some University Education	0.149	**	6.37	0.07	*	2.37
University Degree or Higher	0.147	**	5.70	0.08	**	2.65
Constant	0.890	**	6.07	0.92	**	23.70
Observations	45261			26310		
R-Squared	0.06			0.05		

Note:

"-" denotes the base individual.

Subjective Well-Being is a binary dependent variable which denotes the satisfaction as measured by the top five out of the ten categories of life satisfaction.

Perceived Social Mobility is binary variable derived from the top two out of the four categories for the "need to eliminate inequality" question

Standard errors corrected for within-country correlation. "**", "*" and" +" indicate significance at 1, 5 and 10 per cent respectively.

Model 1 contains the Gini Coefficient and Perceived Mobility as explanatory variables at the country level. Model 2 contains Intergenerational Earnings Elasticity and Perceived Mobility as explanatory variables at the country level.