

Culture and Happiness:

The Influence of Individualism



Master Thesis

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Abstract

Culture is an important factor affecting happiness. This paper researches the relation between individualism and happiness and researches both the direct and indirect effects of individualism on happiness. Theory suggests that there is a positive relation between individualism and happiness and that there are two indirect channels, which are income and tightness. This paper mainly uses panel data at country level, based on all six world values survey waves, to analyze the effects of individualism. To analyze the direct effect, a random effects model is used. For the indirect effects, sem analyses are used that can separate the direct and indirect effects. This paper could not find a relation between individualism and happiness. The results are robust with the exception of the income channel, which had ambiguous findings. Based on the research done in this paper we can conclude that this paper does not support evidence that points to a relation between individualism and happiness.

Keywords: Happiness, Culture, Individualism, Subjective well-being, Income, Tightness

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1. Introduction

Happiness is a concept that has gained interest in economics over the years (Di tella et al, 2006) (Kahneman et al, 2006). The concept gained attention when Easterlin (1974) found the happiness-income paradox that states that income does not affect happiness over time and across nations while it does affect happiness within nations. Happiness can be used as a measure to analyze economic policy issues. You could for example measure the actual costs of externalities (Leuchinger, 2009) or even look at the effects of cigarette taxes on the well-being of smokers (Gruber et al, 2006). Shifting attention to measures of well-being is important, as opposed to relying on gdp as a measure, which was not created to be “the measure” for the welfare of a nation. It was created as a rough measure to capture the income of a nation. Kuznets (1934), the creator of this measure, even stated that it is a measure that can barely capture the welfare of a nation. Knowing the determinants of happiness can give us valuable insights into the well-being of people (Hoorn et al, 2010). It is therefore important to research the dimensions of happiness.

Happiness economics is a field of research which lays doubt on the neoclassical economics idea that income is the best indicator for a successful economy. Happiness is influenced in part by income, but there are other dimensions that are important as well. Think of factors such as inequality and unemployment, explained in the method section. It is therefore important to find all the determinants that are important to happiness and not just income (Frey, 2008). One determinant that has had limited research in happiness economics is culture. Culture encompasses the values of a country’s people and it captures the variety of these values by dimensions. A difference in these values could greatly influence how people value happiness and can therefore be an important determinant that could explain a person’s happiness.

The relation between these two is therefore interesting. One example of research in this relation is Diener et al (1995), which used different ways to measure culture and found it striking that individualism was such a strong predictor of subjective well being and he suggested further research into this. After 20 years there has not been research that did look further into this relation. There has been some research towards the relation between culture and happiness, but these either look at different measurements of culture or look at all the measurements of culture, such as the paper by Ye et al (2015) which looked at all the determinants of culture and concluded that the most important cultural dimensions are power distance and gender egalitarianism. The problem with this paper is the limited explanations to why certain measurements are used for culture. This paper looks at one measurement of culture and goes in depth on the relation between culture and happiness.

As a further continuation of the research done by Diener et al (1995) this paper shines light on the question whether individualism influences happiness and whether individualism might have indirect effects running through other variables that affect happiness indirectly. Looking at many different determinants, as Ye et al (2015) did, might give some insights into the importance of different measurements, but it does not add to the research that tries to find the determinants of happiness. The further continuation of the line of thought of Diener et al (1995) is also interesting due to the contradicting result that was found by Schyns (1998), which could only find a spurious relation between culture and happiness.

The relation is researched by measuring culture through individualism, because it is an important cultural dimension to happiness (Diener et al, 1995)(Diener et al, 2000)(Arrindell et al, 1997). Though more recent research seems to suggest that it might be less important than other dimensions or even absent (Schyns, 1998)(Ye et al, 2015). Theories, discussed in the next chapter, between individualism and happiness also seem to suggest that there is a relation between individualism and happiness.

This paper incorporates previous happiness research by adding determinants of happiness that have proven to be significant and strong. It has also looked at a different way of measuring happiness as a way to check for robustness. The theory part explains the importance of both culture and happiness while also going in depth on the different theories of individualism and happiness. Three hypotheses are formed on the basis of these theories, which test both the direct and indirect effects of individualism on happiness. This paper found that individualism and happiness do not seem to have a relation. This is also a robust result as most analyses find an insignificant relation. As for the indirect effects of individualism, both channels, income and tightness, were not significant. We therefore conclude that there is no relation between individualism and happiness as was also suggested by Schyns (1998).

The paper is structured as follows. In the second chapter the literature that researches the relation between culture and happiness is reviewed and hypotheses are based on these theories. In the third chapter the methodology of this paper and the choices that were made are described. In the fourth chapter the regressions are described and discussed while also discussing several limitations. The fifth chapter concludes the paper.

2. Literature Review

This chapter is structured as follows. In the first section the importance of happiness and culture are explained. The second section elaborates the relation between culture and happiness based on previous research and incorporates both theories concerning the relation between culture and happiness as well as empirics that have researched this relation to eventually formulate hypotheses that are tested in the fourth chapter.

2.1 Culture and Happiness

Happiness economics is a field that is a valuable tool to policy makers, because it can be used as a measure to analyze policy issues. An example is to look at the effects of taxation on cigarettes to the well-being of smokers (Gruber et al, 2006). Happiness is something that is important to everyone and making sure that people are happy is in a way the goal that politicians are after, as happiness is a representation of a measurement that captures well-being (Hoorn et al, 2012)(Frey, 2008).

Investments in health, education and welfare of people can have benefits for the overall happiness of the people in a country (Diener, 2000). Though the importance of income, might just be exaggerated by neoclassical economists, such as Robert Barro who commented on a paper by Stevenson et al (2008) stating that if income and happiness are uncorrelated then the happiness data are flawed, that assume that income actually captures welfare, while in fact income captures only part of welfare (Hoorn et al, 2010), as is also suggested by the original creator Kuznets (1934). Happiness economics looks at factors such as economic growth, unemployment, inflation, inequality and income that play a role in a person's happiness (Diener et al, 2000). Happiness might, however, seem a concept that strains far from economics by measuring a state of mind that people have. The connection lays in the fact that neoclassical economics has always assumed that people are always more wealthier with more income and therefore we need to just increase the income of a country to benefit everyone. Happiness tries to capture welfare in a different way by looking at the outcomes of being wealthy, ergo being happy. Income is still an important part of happiness, but it is not the only part of the formula. From happiness research we know that health is at the very least as important as income and perhaps even more important (Okun et al, 1983)(Gerdtham et al, 2001).

Before moving on there is an important side note to make, this has to do with the difference between happiness and subjective well being. Subjective well being is where happiness economics is truly after, because it is the closest to measuring someone's happiness as we can get. This is opposed to happiness that can only partly describe subjective well being (Hoorn et al, 2012). This proxy is used in most happiness research as the measure for happiness. Although there are different measurements of happiness that can be found, the more prominent ones are life satisfaction and the ordinal happiness variable (Easterlin, 2010). For this reason this paper refers to subjective well being as happiness, because that is what is measured.

Culture is a determinant that encompasses the inherent values of people and the closer people are to each other the more of these values are similar. Culture can be different on many different levels from the individual to the firm to the country level. What is meant by this is that a person has different values from another person and that a country's values are in a way an average of these individuals (Hofstede et al, 2010). At each level there are differences in values that people have that influences the decisions that people tend to make in their decision making process. Politicians are part of the culture of a country and make decisions on the basis of their cultural values. They make the policy which is reflected in institutions and these institutions determine the possibilities or constraints on the decision making process (De Jong, 2009). The cultural dimensions proposed by Hofstede are important in measuring culture in a way that makes it possible to quantify values so that it is possible to use them in quantitative research, making it possible to research the relation of culture with other variables of interest (Hofstede et al, 2010). Culture is important to research, because it can give us insights into why the people of certain countries act in certain ways. In the context of happiness, it can give us insights in the things that make people happy.

2.2 Individualism

2.2.1 *Happiness*

In individualistic countries there is more personal freedom and you feel a higher responsibility for your achievements which increases happiness. Individualists are also more focussed on own well being as opposed to group well being in collectivist societies (Arrindell et al, 1997). Individualist societies are dominated by private enterprises that provide conveniences such as long hours and quick service, which are conveniences that can be demanded in societies where people are more selfish and concerned with their own preferences (Hofstede, 1980). This is opposed to collectivist societies such as China and Singapore, both scoring 20 (out of 100) on individualism (Hofstede et al, 2010), where a substantial amount of companies are state-owned enterprises, For example the fortune 500 where 78% of the companies listed in china are state-owned enterprises (Fortune, 2016). There is research that found that state-owned enterprises are less efficient than private enterprises (Al-obaidan et al, 1992)(Megginson et al, 1994)(Dewenter et al, 2001). This could explain the fact that private enterprises can provide conveniences such as long hours and quick service, which state owned enterprises have more problems to supply due to their lower efficiency. These conveniences increase happiness overall, because they give people the freedom to decide when to go to a service oriented company such as a bank, and spend less time there and more time doing things you enjoy. In collectivist societies it is normal to spend more time on simple tasks such as paying the bills or shopping (Diener et al, 2000).

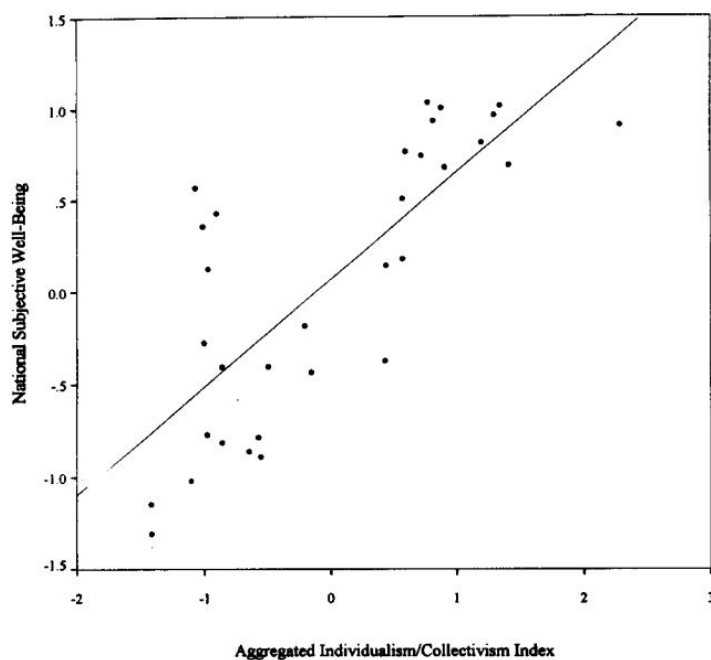
Individualistic cultures have members that are encouraged to pursue personal happiness. People in individualistic cultures have more income, averaging the income of several individualistic countries and collectivist countries over the year 2012, used in the analyses, gives averages of \$29,200 GDP P.C.(Current US\$) and \$10,630 GDP P.C.(Current US\$) respectively, and are generally happy, averaging the life satisfaction of several individualistic societies (scoring 50 or higher on individualism) (Hofstede et al, 2010) gives a 7.1 out of 10 compared to a 7 out of 10 for collectivistic societies (WVS, 2016).

The higher income can be explained by intrinsic motivation, which is more pronounced in individualistic societies, where people actually want to do something as opposed to extrinsic motivation where its social pressure that is the motivating force, it is expected to act in a certain way in collectivistic societies (Ahuvia, 2001). People in individualist societies also have higher levels of self-enhancement that is associated with self-esteem (Kitayama et al, 1997). This self-esteem is a factor that results in a higher levels of happiness, having a correlation of 0.47 (Diener et al, 2009). People seem to have more self-determination when they are higher on the social ladder. This self-determination gives people more freedom in their job and this higher autonomy gives rise to the higher level of happiness that is found (Kohn et al, 1990).

In collectivist countries there might be greater feelings of social support which increases happiness (Arrindell et al, 1997), at the other side of this is the feeling of being watched constantly in what you do that decreases happiness (Diener et al, 2000). The limitations that are faced in collectivist societies give rise to people having more fantasies that deter from reality, people in collectivist societies are being watched by other people so social norms are upheld. People in collectivist societies therefore are more likely to fantasize about doing something than actually doing something, due to the fear of social punishment by doing something that is not in line with social norms. This makes it more difficult to face reality where social norms limit the possible actions by the fear of social punishment and it thus lowers happiness (Parducci, 1995). In some cases these social norms give rise to such unhappiness that people are more likely to commit suicide. Lester (1988) found a -0.43 correlation between individualism and happiness. Suggesting that people in collectivistic societies commit more suicides, which might be caused by these social norms that make people unhappier.

On the empirical side the relation is more ambiguous. There is a study done by Ye et al (2015) that look at a wide range of cultural dimensions to see which ones are the most important to happiness. They find that power distance and gender egalitarianism are the most important dimensions to happiness. This is not in line with other research such as (Diener et al, 1995) that find that individualism is the most important dimension to happiness. Not all research find a strong correlation between culture and happiness there are some that even find that the relation is spurious (Schyns, 1998). There are, however, other papers that report a significant relation between individualism and happiness. Some of these even report this as the most important determinant (Diener et al, 1995)(Arrindell et al, 1997). The relation between individualism and happiness does not seem to be as straightforward in empirical research, as opposed to theoretical research. Figure 1 shows the relation between individualism and happiness that was found in the paper by Diener et al (1995), which is one example of empirical research that points to a strong relation between individualism and happiness.

Figure 1: Individualism and Happiness (Diener et al, 1995).

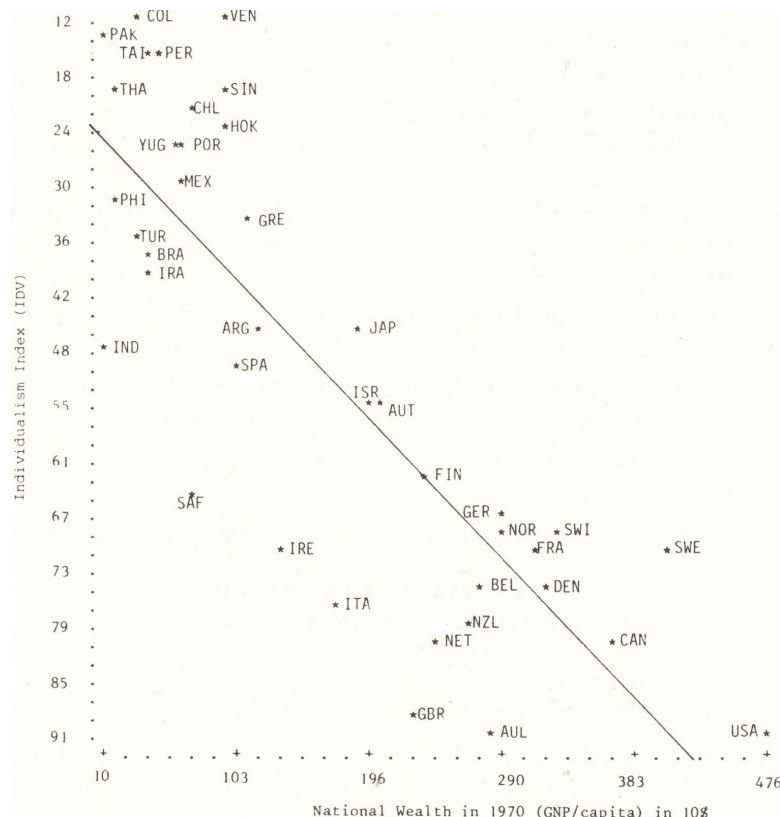


Hypothesis 1: Increased individualism leads to a higher level of happiness.

2.2.2 Income

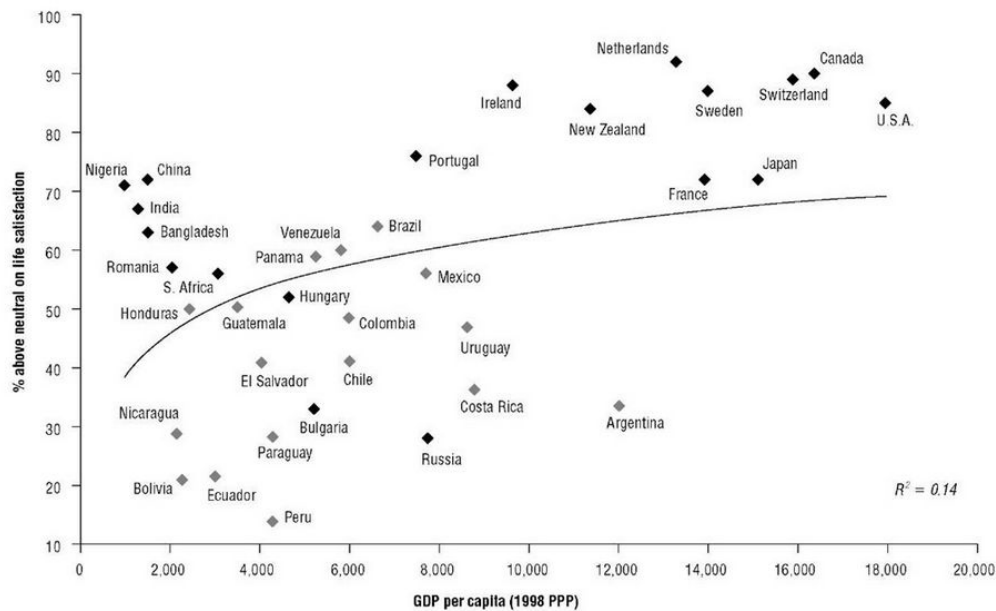
Hofstede (1980) found a significant relation between individualism and income, the correlation that was found is 0.82. He found that this variable together with geographical latitude and organization size could accurately predict the values of individualism. This relation is shown in figure 2 below, where it is clear that there is a relation between individualism and income.

Figure 2: Relation Income and Individualism (Hofstede, 1980).



There is also a positive relation between income and happiness (Diener et al, 1995). This relation has been researched quite extensively due to the easterlin paradox which states that income and happiness have a relation at a point in time, but this does not necessarily translate to a relation between the two over time (Easterlin et al 2010). This paradox that was first found by Easterlin has sparked lots of research (Becker et al., 2008)(Beja, 2014)(Deaton, 2008)(Frijters et al., 2004)(Sacks et al., 2010). The research on the relation between income and happiness do not consistently find a relation between income and happiness, but those that do find a correlation of around 0.10-0.20. One example of this is in figure 3 below where you can see that there is a relation between income and happiness, although the relation is diminishing where an increase in income gets increasingly less of an increase in happiness.

Figure 3: Relation Income and Happiness (Graham and Pettinato, 2002).



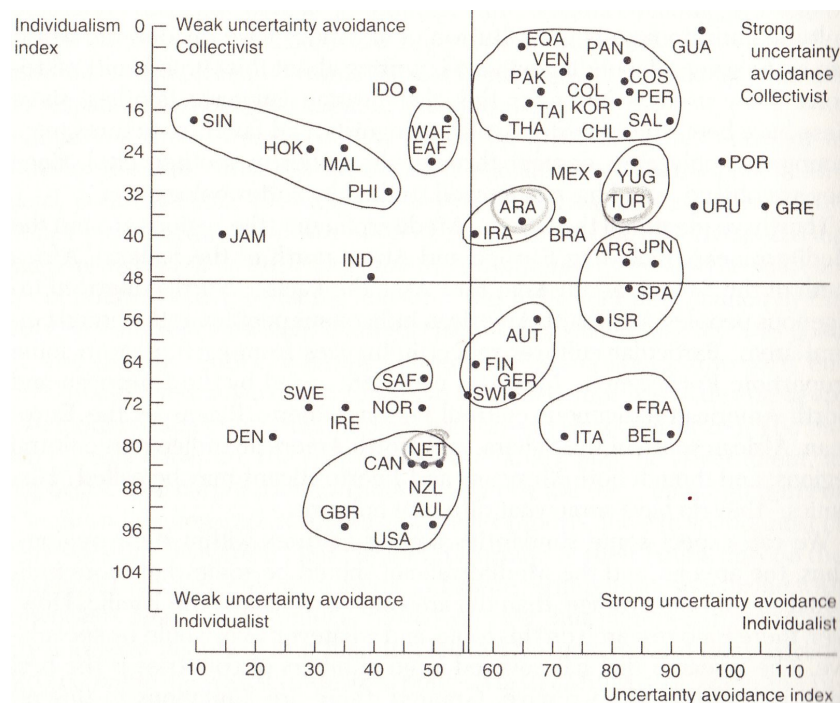
Individualism affects the total income of a country, possibly through individual achievement motivation, which is an important determinant of happiness (Frey, 2008). Where more individualistic societies are more prone to focus on individual goals and in this way earn more, which increases the happiness of these wealthier people.

Hypothesis 2: Increased individualism leads to a higher level of income, which leads to a higher level of happiness.

2.2.3 Tightness

It can be argued that collectivism is correlated with tightness, which constitutes correct action that must be obeyed or suffer criticism for deviations from this norm, collectivist societies rely on these societal pressures to enforce group norms as a sort of extrinsic motivation and this is in turn correlated to a lower level of happiness (Ahuvia, 2001). In tighter societies people have more anxiety, because they may not have the right behaviour and be afraid to commit a social error that might be costly to them. In figure 3 there is a clear relation between tightness and collectivism when looking at these two dimensions in countries, even though it is not a perfect fit with some countries deviating a lot from this supposed relation. The association between uncertainty avoidance and tightness is based on the premise that for people in tight societies with stronger social norms, they are more likely to avoid uncertainty. Uncertain situations are a risk to social norms, where you are more likely to break these social norms and be socially punished. It is therefore preferred to avoid uncertainty in societies with more tightness (Triandis, 1995).

Figure 4: Relation Uncertainty Avoidance (Tightness) and Individualism (Triandis, 1995).



In tight societies it might also be the case that rules limit who you might compare with and thus people are not able to compare themselves to those that make them feel better which leads to a lower level of happiness. Limiting a person's freedom has a negative influence on a person's happiness due to restricting the choices that a person can make that would have otherwise been possible without these restrictions (Ahuvia, 2001). When people are not able to remain invisible they are embarrassed and this embarrassment can be so high that people are more prone to commit suicide as a way to escape from shame. Lester (1988) found a -0.43 correlation with individualism and suicide rates.

Hypothesis 3: Increased individualism leads to a lower level of tightness, which leads to a higher level of happiness.

3. Research Method

This Chapter elaborates the research method that is used for the empirics in the next chapter. This chapter is structured as follows. The first section explains the data sources that were used to measure the variables that are used. The second section explains the variables that are used in the analysis including culture, happiness and several control variables. The third section explains the models that are tested in the empirical part. The fourth section explains the methodology that is used.

3.1 Data

Four data sources are used to capture all the variables that are used in the analysis. These are the world values survey, hofstede's cultural dimensions, the world bank databank and the world income inequality database.

The world values survey is a survey with six different waves in which 1400 people are surveyed on average for each country. It is a representative sample of scores of countries that uses a common questionnaire where the meaning is properly translated to the different languages of the countries participating (Inglehart et al, 2000). The data source has been used by over 1000 publications covering political science, sociology, social psychology, anthropology and economics (Ye et al, 2015). The data source covers 400.000 respondents in total and covers 90% of the world population. It is also a non-commercial data set covering human beliefs and values (WVS, 2016). This data source is used for happiness, health, education and the demographic variables.

Hofstede's cultural dimensions is a data source that captures the cultural variety of countries. It is a data source that is based on the research that was done on IBM by Geert Hofstede, which covers employee scores over 1967 and 1973. Subsequent studies on different parts of the population verified these earlier results and added several more countries. Considering that the data deals with culture that changes very slowly, it is stated that the scores are up to date (Hofstede et al, 2010). This data source is used for uncertainty avoidance and individualism.

The world bank databank is a database with data on indicators ranging from political to economic to social indicators. This data source is part of the world bank, which lends to governments of middle-income and creditworthy low-income countries. The organization behind the world bank databank has a development data group that ensures that the data is up to professional standards (The World Bank DataBank, 2016). This data source is used for income, rule of law and the misery index, consisting of inflation and unemployment

The world income inequality database is a database with data on inequality using different measures of inequality. It is a database that is built upon the contributions of many different papers that have calculated these inequality measures for different countries and different years. It has the most comprehensive set of income inequality statistics available (Unu-Wider, 2015). The world income inequality database is used for the gini index, the inequality measure that we use.

Data Remarks

The world values survey covers different waves, where each wave is done over different years. We use data on the variables from the latest year of each wave. The analysis therefore uses waves as the time variable and not years, as that would lead to a very unbalanced data set with lots of gaps in the time variable for many countries, because waves vary in the years in which countries get surveyed. We use all six waves and therefore have six different time periods that cover 30 years from 1984 to 2014. The data that was used from the previously named sources were not without any problems. Different decisions were taken on the data to make sure that the data is as complete as possible. Rule of law was added as a measurement in the world databank in 1996 and therefore no data is available for this variable prior to this. Therefore 1996 data is used as a replacement for wave 2 (1994) data. Unemployment data was scarce in 1984 for lots of countries, which would result in potential missings. The World Databank, however, did have estimates that are used as replacements for the missing unemployment data. Individualism and uncertainty avoidance are both variables that lack a substantial amount of countries. Hofstede et al (2010) wrote down regional values that cover groups of countries, these were used to fill in the blanks. These regions are Arab countries, Africa East and Africa West. This might cause some biased results if the actual countries are in fact very different from their respective regional values

The misery index is created by simply adding up unemployment and inflation. One problem in this case could be if either of them has a missing. The summing up of both counts them as a zero instead of a missing. This might bias the estimates of the misery index, although it is expected to underweigh the actual estimates by giving lower than real estimates for the countries with these missings.

Inequality data from the WIID is based on many different papers that have estimated the gini index for different countries. Sometimes there are multiple measurements for a single year and a single country, in that case the middle value is taken. There are also lots of missings, which are filled by the years that are not missing. Considering that most countries do not change that much on inequality, this should not bias estimates. One example of this is Chile, which has changed from 55 to 51 on the gini index in a period of 20 years. Another example is Japan, which has changed from 32 to 34 on the gini index in the same period of 20 years.

3.2 Variables

3.2.1 Culture Measurement

Culture can be measured through the cultural dimensions from Hofstede et al (2010) which has dimensions such as power distance, collectivism/individualism, femininity/masculinity, uncertainty avoidance, long-term/short-term and indulgence/restraint. Though it is also possible to look at certain proxies of culture such as religion or trust that capture part of the values of culture. This paper uses Individualism as the main dimension of culture as a way to capture the cultural variation that influences happiness based on Diener et al (1995). Uncertainty avoidance is used as a proxy for tightness, where a tighter society is associated with more uncertainty avoidance as explained in the previous chapter (Triandis, 1995).

3.2.2 Happiness Measurement

There are different ways to measure happiness that capture one part of subjective well being, five ways of measurement are discussed here. The first way to measure happiness is by asking people about their satisfaction with life through a survey such as the world values survey (Inglehart et al, 2000). The second way is the experience sampling method that takes the experiences of a person in his/her natural environment by asking people to provide systematic self-reports of their daily lives (Csikszentmihalyi et al, 2003). The third way is the day reconstruction method where people recall their positive and negative experiences of the day (Kahneman et al, 2004). The fourth way is the U-index where the amount of time being in an unpleasant state over a day is measured (Kahneman et al, 2006). The last way is the brain imaging method to measure brain activities with an fMRI (Davidson, 2003). In this paper the first method is used due to its data availability and the ease in which additional measures from these surveys, such as a variable as age or religion, can be added in these surveys.

Happiness is a broad concept that encompasses three different conceptions of happiness. The first is life satisfaction, which is the overall contentment with life. The second is happiness in the narrow sense that includes momentary feelings of joy and pleasure. The last one is the quality of life, which is achieved by developing and fulfilling your potential (Nettle, 2005). The measure we use in this paper is life satisfaction which captures the overall contentment with life.

3.2.3 Control Variables

Formal Institutions

Formal Institutions can be measured through different variables, our focus is on the variables that are used in the culture economics literature. Formal institutions are important in the way that they are part of the environment that people are in. Making sure that our cultural variable actually captures culture, and not formal institutions, is something that is important to the analysis. These variables are: expropriation risk: security of property rights (Knack et al, 1995), government effectiveness: ability of government to implement good policies (Kaufmann et al, 2002) and executive constraints: institutional constraints on the chief executives (Jaggers et al, 2004) The problem is that these measures do not measure the actual formal institutions, they do not measure the formal institutions we want to measure here. Instead these measures rely on outcomes as a way to predict the laws or lack of laws in a country and do not measure the actual formal institutions (Glaeser et al, 2004).

To accommodate this we use a rule of law measure that is in the world databank, which is able to capture these formal institutions. Rule of law has a high correlation with life satisfaction according to Abdallah et al (2008) with a correlation of 0.608. Helliwell et al (2006) found a strong positive association between government quality, an index based on different government measures including rule of law, and happiness. The effect of rule of law on happiness is expected to be positive.

Socio-economic factors

The relation between income and happiness has been researched extensively (Caporale et al., 2009)(Diener et al, 1995)(Easterlin, 2010)(Gerdtham et al, 2001)(Graham, 2005)(Ma et al, 2014)(Sacks et al., 2012)(Stevenson et al, 2013). In most research on this relation there is a strong relation between income and happiness and it is therefore added as a control variable. Income is measured through GDP P.C. (Current US\$). Income is expected to have a positive effect on happiness.

Education has been found to be an important determinant to happiness (Cuñado et al, 2012)(Gerdtham et al, 2001)(Witter et al, 1984). Education is measured through a variable that asks the survey respondents of the WVS to give their highest completed education and it is transformed to a percentage variable that is the percentage of people with a university degree. The effect of education on happiness is expected to be positive (Abdallah et al, 2008).

Alesina et al (2004) found that people from Europe were likely to be unhappier when the countries' incomes are less equally distributed. In America there was no effect though and it might be due to this country's high upward social mobility making it possible to move up the social ladder as opposed to low social mobility countries (Helliwell, 2003). Inequality is measured through the GINI measure, because it is a measure that is widely used in inequality research (Allison, 1978)(Cobham et al, 2013). Inequality is expected to have a negative effect on happiness (Alesina et al, 2004).

Health

Health is one of the strongest predictors of happiness (Okun et al, 1983)(Gerdtham et al, 2001). Health is measured through a subjective measure, state of health, with a 5-point scale running from poor to very good health from the WVS. It is transformed in a similar manner as education by taking a percentage of the total people with very good health. People with better health live longer and can enjoy life more and therefore have a higher happiness (Frey, 2008). Health is expected to have a positive effect on happiness.

Demographic Variables

There are several demographic variables added to the analyses. These include age, sex and marital status so that these are accounted for. At the country level sex, marital status and having children are percentage variables of the total population that are married, are male or have children respectively. Age is an average of the total population. In the multilevel model, age also has a quadratic term added based on previous research that found a u-shaped relation of age and happiness (Stone et al, 2010). In the multilevel model, sex, marital status and amount of children are dummy variables.

Age is expected to have a positive effect on happiness (Witt et al, 1980). Being male is expected to have a negative effect on happiness (Gerdtham et al, 2001). Marriage is expected to have a positive effect on happiness (Stavrova et al, 2012) Having children is expected to have a negative effect on happiness (Ferrer et al, 2004)(White et al, 1986).

Misery Index

Di Tella et al (2003) found that unemployed people were less happy than employed people with similar characteristics at the country level. Experiencing unemployment makes people unhappier, the effect is even stronger for well educated people (Clark et al, 1994). There are psychological costs, such as depression and anxiety (Frey, 2008), and social norms that trigger social sanctions, in the sense that being unemployed is something that is looked down upon and people feel a pressure to not be unemployed (Stutzer et al, 2004).

There is an index that can capture the negative (or positive) economic circumstances in a country, this is the misery index. The misery index captures both unemployment and inflation by adding these numbers up, capturing the total negative effects of economic circumstances (Welsch, 2007). The benefit of this measure is that it captures these negative effects in one index and this index is consistent with the separate estimates (Frey et al, 2000). The misery index is expected to have a negative effect on happiness.

Crisis Dummy

The crisis of 2008 has brought a shock to countries worldwide and this could therefore affect data that was collected around the period of the crisis. Gudmundsdottir (2013) found a significant negative effect of the crisis on happiness in iceland. We therefore add a crisis dummy to see whether it indeed had an effect on our data. If it is significant it is reported in the analyses. If it is insignificant then it shows that the crisis did not affect our data and it is not reported in the analyses. This dummy is expected to be negative.

3.3 Models

To test the different hypotheses we need to use different models. We use three different models in our analysis to test the direct and the two indirect channels. These models are described in more detail below.

The model that is used to test the first hypothesis is shown under as model A and captures all the independent variables that are used in the main analysis. The model includes both the main variables of interest, life satisfaction and individualism, and the controls that were described in the previous section. The model is based on a panel data and all variables with the exception of individualism vary by country and time, while individualism only varies by country. The expected direction of the variables are also captured in the model.

Model A

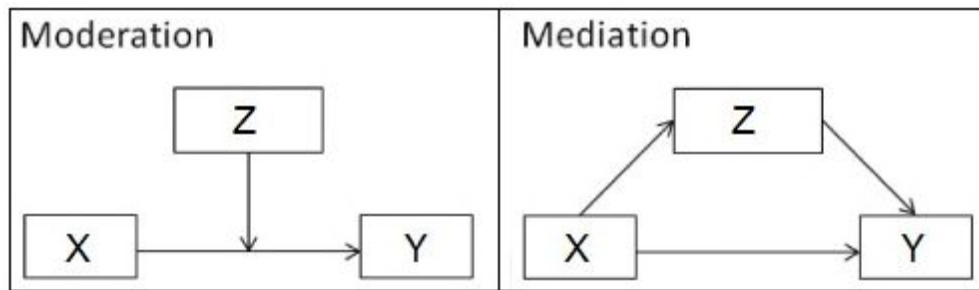
$$LS_{it} = \beta_0 + \beta_1 INV_i + \beta_2 INC_{it} + \beta_3 EDU_{it} + \beta_4 RL_{it} - \beta_5 MIS_{it} + \beta_6 HP_{it} - \beta_7 G_{it} + X - \beta_{12} C_t + \epsilon_{it} \quad (1)$$

$$X = \beta_8 AGE_{it} - \beta_9 SEX_{it} + \beta_{10} MAR_{it} - \beta_{11} CH_{it}$$

- LS = Happiness - INV = Individualism
- INC = Income - EDU = Education
- RL = Rule of Law - MIS = Misery Index
- HP = Health - G = Inequality
- AGE = Age - SEX = Male
- MAR = Married - CH = Children
- C = Crisis Dummy - TIG = Tightness
- i = Country - t = Wave

The channels described below require a mediation analysis, which is different from a moderation effect. A moderation effect is when a variable influences the strength of the relation between two other variables. While a mediation effect is when a variable can explain the relation between two other variables (Baron et al, 1986), in figure 5 you can see the differences between mediation and moderation graphically. In this figure it is important to note that X and Y are the variables of interest and that Z is either a moderation effect or a mediation effect. It is clear from the figure that the moderation effect influences the relation between X and Y while the mediation effect is a channel in which X influences Y. It is important that you test for the right effect as there is a major difference between the two different effects (Frewen et al, 2013).

Figure 5: Moderation versus Mediation



The model that is used to test the second hypothesis is shown under as model B. This is the model that is needed to see whether there is a mediation effect from the income and tightness channels. This model is shown as two separate regressions that are estimated in the sem procedure. The sem procedure makes estimates for the mediation analysis on the basis of two different equations that capture part of the mediation, with a different error term and different estimates. The sem procedure can estimate the direct and indirect effects on the basis of these different estimates, thus making it possible to test our hypotheses that include mediation effects (Gunzler et al, 2013).

Model B

$$INC_{it} = \beta_0 + \beta_1 INV_i + \beta_2 EDU_{it} + \beta_3 RL_{it} - \beta_4 MIS_{it} + \beta_5 HP_{it} - \beta_6 G_{it} + X + \omega_{it}$$

$$LS_{it} = \beta_0 + \beta_1 INC_{it} + \beta_2 INV_i + \beta_3 EDU_{it} + \beta_4 RL_{it} - \beta_5 MIS_{it} + \beta_6 HP_{it} + X - G_{it} + \varepsilon_{it}$$

$$X = \beta_7 AGE_{it} - \beta_8 SEX_{it} + \beta_9 MAR_{it} - \beta_{10} CH_{it}$$

The model that is used to test the third hypothesis uses the same type of model as the second hypothesis, shown below as model C. This model looks at a different channel, which is the tightness channel. This requires the same method as is used by model B, which is the sem procedure.

Model C

$$TIG_i = \beta_0 + \beta_1 INC_{it} + \beta_2 INV_i + \beta_3 EDU_{it} + \beta_4 RL_{it} - \beta_5 MIS_{it} + \beta_6 HP_{it} - \beta_7 G_{it} + X + \omega_{it}$$

$$LS_{it} = \beta_0 - \beta_1 TIG_i + \beta_2 INC_{it} + \beta_3 INV_i + \beta_4 EDU_{it} + \beta_5 RL_{it} - \beta_6 MIS_{it} + \beta_7 HP_{it} + X - \beta_{12} G_{it} + \varepsilon_{it}$$

$$X = \beta_8 AGE_{it} - \beta_9 SEX_{it} + \beta_{10} MAR_{it} - \beta_{11} CH_{it}$$

3.4 Methodology

This paper uses a panel data set and therefore uses different kinds of regressions. The availability of panel data on almost all variables makes it possible to do a panel data analysis as opposed to a cross sectional analysis, where the analysis is limited to a point in time. To test the first hypothesis a random effects model is used to account for country variation and for the use of the time invariant main variable. To test the second and third models a sem model¹ is used that can capture the direct and indirect effects of a mediation analysis.

The analyses includes a residual analysis that test whether any assumptions of regression models are violated, e.g. heteroskedasticity, multicollinearity, autocorrelation, outliers, influential cases, normality and nonlinearity. The panel data is tested on the use of a fixed effects or random effects model and tested on the use of a pooled model or random effects model. The fixed effects model is never used or displayed due to the variable of interest being a time invariant variable.

There are also some Robustness analyses done, including a cross section, a multilevel analysis and an alternative happiness variable. The multilevel analysis uses a multilevel model to be able to capture the variables that we are concerned with. This means taking culture and other country level variables as country level effects and the others that are at the individual level as individual level effects. The multilevel analysis makes it possible to capture the full range of the data, which is on two different levels. The multilevel analysis uses the data of all the countries and assumes that all the countries behave in the same way at the individual level. This makes it possible to capture the effect of culture on the individual level. The alternative happiness variable is the happiness scale, which is an ordinal variable that is transformed so that it can be used on the country level. It is transformed to a percentage variable that captures the percentage of people that are (very) happy, as is also done by Easterlin et al (2010) and Ye et al (2015).

¹ A side note for all sem analyses done in this paper is that the full regressions are not shown in the tables, the control variables are not displayed for the channels. The estimates are, however, based on the full model that is not displayed. Another side note is that the second individualism variable in all the analyses is the indirect effect, which includes only the indirect effect of the channel.

4. Results

This chapter describes the results of the empirical analyses that are done. This chapter is structured as follows. The first section describes the main analysis that is done. The second section describes the robustness analyses.

4.1 Main Analysis

The main analysis is a panel data in which we look at the relation between individualism and happiness over time and across different countries. This paper looks at the three hypotheses discussed in the theory. These are as follows:

H1: Increased individualism leads to a higher level of happiness

H2: Increased individualism leads to a higher level of income, which leads to a higher level of happiness.

H3: Increased individualism leads to a lower level of tightness, which leads to a higher level of happiness.

Before starting the analyses, we first look at the summary statistics of the sample that is used in the regressions of this section. The variables that are used in the analyses are from a few different sources, which are described in the previous chapter. The amount of countries, used in this panel data sample, covers 57 countries and these countries cover up to 6 different waves. Most countries have participated in 2 to 3 different waves and thus this analysis has 129 observations in total. The summary statistics are in table 1 below.

Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Min	Max	Label
LSQ	47.55884	11.75667	19.8305	72.4627	Mean Life Satisfaction
Happiness2	82.94123	11.7349	29.6783	98.1132	% (Very) Happy
Education	14.94516	8.739049	.26264	43.8333	% University Degree
Health	23.25728	10.70884	2.40196	52.5773	% Very Good Health
Sex	47.87073	3.289229	32.1733	55.541	% Male
Married	64.29198	7.561229	44.7809	87.4624	% (Living as) Married
Age	42.52181	5.118309	30.9246	53.8624	Mean Age in Years
Children	72.21158	6.703321	51.5025	88.7	% with Children
TightQ	5058.922	2712.181	64	10201	Tightness
IDV	43.8062	23.43311	6	91	Individualism
LIncome	9.006031	1.341479	5.98184	11.4797	GDP P.C. (Current U.S\$)
Rule	.4368488	.9860355	-1.33079	2.01711	Rule of Law
LMisery	2.404889	.7113007	-.424214	4.51679	Inflation + Unemployment
Inequality	37.93915	9.752931	21.2	59.4	Gini Index

The residual analysis that is done tests for heteroskedasticity, multicollinearity, autocorrelation, non-linearity, normality and outliers. Heteroskedasticity was tested using the Breusch-Pagan test, which looks whether there is a constant variance. When the hypothesis of the test, H_0 : constant variance, is not supported then there is heteroskedasticity (Breusch et al, 1979). In the analyses done in this section there is no heteroskedasticity, where the P-values of this test range from 0.67 to 0.73, whereas the critical p-value is 0.05. This paper uses a panel data analysis as opposed to a time series analysis, it therefore needs a different way to test for autocorrelation. The wooldridge test is therefore used to test for first order autocorrelation in the panel data. When the hypothesis of the test, H_0 : no first order autocorrelation, is not supported then there is first order autocorrelation (Wooldridge, 2002). The test revealed that the models in this section have first order autocorrelation, p-value of the wooldridge test was 0.02, which is beyond the critical p-value of 0.05. We therefore need to use a different estimator for the standard errors. For this we use Driscoll-Kraay standard errors that can deal with both heteroskedasticity and autocorrelation (Driscoll et al, 1998).

Multicollinearity was tested by looking at the correlation matrix to see whether there are any high correlations between the independent variables, displayed in table 2. The correlations in the table with values above 0.6, as a rule of thumb, were tested with a vif statistic, which looks at the explanatory power of variables, where a vif of 5 or higher is a sign of multicollinearity (Kutner et al, 2004). It was found that rule of law has a vif above 5 and it was therefore dropped from this analysis.

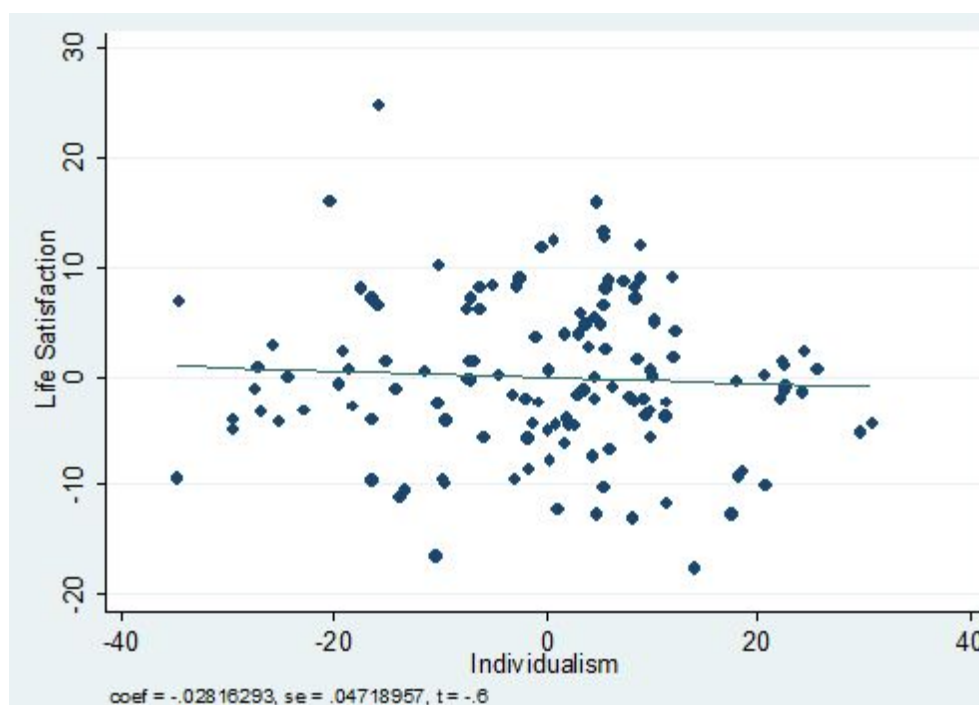
Table 2: Correlation Matrix

	LSQ	Happin~2	Educate~n	Health	Sex	Married	Age	Children	TightQ
LSQ	1.0000								
Happiness2	0.6930	1.0000							
Education	0.1020	0.0934	1.0000						
Health	0.5028	0.4952	-0.0108	1.0000					
Sex	-0.1137	0.0913	-0.1917	0.0650	1.0000				
Married	-0.2071	-0.0452	0.0463	-0.1692	0.2161	1.0000			
Age	0.1765	0.1581	0.3672	-0.0497	-0.4567	0.1135	1.0000		
Children	-0.1289	-0.0955	0.0233	-0.2135	-0.0633	0.6264	0.3164	1.0000	
TightQ	-0.0731	-0.2931	-0.0684	-0.4900	-0.2453	-0.2624	0.0955	-0.0230	1.0000
IDV	0.2050	0.2604	0.3211	0.3170	-0.2218	-0.1583	0.5605	-0.0244	-0.3257
LIncome	0.5573	0.4346	0.4643	0.2805	-0.4049	-0.2622	0.6747	-0.2177	0.0758
Rule	0.3713	0.4606	0.3979	0.3088	-0.2451	-0.0596	0.6328	-0.0574	-0.2351
LMisery	-0.3234	-0.4062	-0.1724	-0.1690	0.0168	-0.2128	-0.2473	-0.0427	0.2366
Inequality	0.0816	-0.1075	-0.2719	0.1451	0.1504	-0.1935	-0.5260	0.0492	0.0632
	IDV	LIncome	Rule	LMisery	Inequa~y				
IDV	1.0000								
LIncome	0.5715	1.0000							
Rule	0.6853	0.7590	1.0000						
LMisery	-0.0387	-0.3149	-0.3378	1.0000					
Inequality	-0.3443	-0.3662	-0.4537	0.2468	1.0000				

Normality was tested by looking at the histograms of all the variables. It is important to test for normality as it is assumed that variables follow a bell-shaped pattern (Ghasemi et al, 2012). Variables with left or right skewness are adjusted by either applying a logarithm or a quadratic term to ensure that there is a bell-shape pattern. Non-linearity was tested by looking at the partial plots of all the variables that are used in the analysis to see whether the relation are nonlinear or linear. This is important to test, because it influences the estimates of the variables that are nonlinear (Seber et al, 1989). Nonlinearity was not found in any of the variables. Outliers were tested by looking at lever and influential cases were tested by looking at dfits and cook's distance. Outliers are countries that are far from the fitted line (Barnett et al, 1994) and these countries become even more problematic if they also affect the regression results by being influential cases (Allen, 1997). The most problematic countries are the ones that are both outliers and are influential to the analyses. These countries are dropped from the analyses so that the estimates are not biased. In the main analysis these countries are Brazil and India.

In this analysis we start by looking at the partial plot of the relation between these two variables. Graph 1 shows this partial plot and what can be seen in this graph is that there is not a straightforward relation between the two variables. There is a downward trend as suggested by the fitted line that points out that there is in fact a negative relation between individualism and happiness as opposed to a positive one that was hypothesized.

Graph 1: Individualism and Life Satisfaction



The first analysis that is done looks at the relation between individualism and happiness using all the control variables that this paper described in the previous chapter. Considering we have a panel data analysis, there are multiple steps we have to take to determine which model fits the variables the best. Table 2 has two different models, where both are random effects models with the difference being the controls, the first model is without controls and the second model is with controls. Overall there are three models that are used in a panel data and these are pooled, fixed effects and random effects (Hill et al, 2012).

The pooled model has the assumption that all the people from different countries would behave in the same way, which is a very strong assumption. The fixed effects model cannot model variables that are fixed over time and considering our variable of interest is fixed over time, fixed effects is therefore not used. The random effects model can model variables that are fixed over time, but for random effects to be a consistent model its estimates should be close to the fixed effects model estimates. To test this a hausman test is used, which compares the estimates of the variables of the fixed effects and random effects regressions. When the hypothesis of the test, H_0 : difference in coefficients not systematic, is not supported a fixed estimator is preferred (Hausman, 1978). In this analysis the hypothesis is not supported thus the random effects model is preferred. To test whether a random effects model is preferred over a pooled regression model, we use a Breusch Pagan LM test to see which model is preferred. When the hypothesis of the test, H_0 : variance of the unobserved fixed effects is 0, is not supported the random effects model is preferred (Breusch et al, 1980). In our analysis the hypothesis is not supported and the random effects model is preferred.

The first thing to notice when looking at the results from table 3 is that individualism is positive without controls and negative when controls are added. Considering that the random effects model is preferred based on the hausman and the breusch pagan lm test, only the random effects model is displayed. In this model, 3 variables are significant at the 5% level and these are health, income and the misery index, these variables are also in the expected directions. Health and income are both positive, while the misery index is negative. Individualism on the other hand is not in the expected direction, it is in fact negative instead of positive. Individualism, however, is not significant in the random effects model with the controls. In the model without controls it is significant at the 10% level of significance while being in the expected direction. On the basis of this table we do not support hypothesis 1, because there is no relation between individualism and happiness based on the fact that individualism is not significant.

Table 3: Hypothesis 1 (random effects with and without controls)

	(1) Random	(2) Random
Individualism	0.101* (1.71)	-0.0862 (-1.58)
% University Degree		-0.148* (-1.75)
% Very Good Health		0.387*** (4.83)
% Male		0.226 (1.20)
% (Living as) Married		-0.0620 (-0.46)
Mean Age in Years		-0.290 (-1.16)
% with Children		0.201 (1.35)
GDP P.C. (Current U.S\$)		5.948*** (5.94)
Inflation + Unemployment		-3.282*** (-2.94)
Gini Index		0.0932 (0.84)
Constant	40.92*** (15.07)	-14.11 (-0.80)
Observations	201	129
R-squared	0.040	0.598

t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

The sem analyses are described in table 4. These analyses are to test the indirect relations of individualism and happiness through two different channels. The first channel is the income channel, where individualism has a positive influence on income, due to personal goal orientation and where income has a positive effect on happiness. The second channel is the tightness channel, where individualism has a negative effect on tightness, due to less societal pressures from group norms and where tightness has a negative relation with happiness. To model these channels, we use a SEM analysis, which stands for structural equation modelling, that makes it possible to create models in which effects can be separated, which is important to be able to see whether hypotheses 2 and 3 hold true or not. SEM analyses are important when creating a model that uses a mediation effect, because it can capture the simultaneous nature of direct and indirect effect and use the dual role of the mediator as both a cause for the outcome and an intervention effect (Gunzler et al, 2013).

The sem analyses that were done are displayed in table 4. The first model looks at the income channel and it looks like this channel is significant at the 10% level of significance and is in the expected, positive, direction. The individualism variable under life satisfaction is the indirect effect and as can be seen in the table it is significant and positive as was expected. On the basis of this table we therefore support hypothesis 2, because there is a significant income channel in the expected, positive, direction. The second model looks at the tightness channel and it looks like this channel is significant at first hand and in the expected, negative, direction. The issue here, however, is that this channel does not seem to affect happiness, as can be seen by the indirect effect of individualism on happiness being insignificant and in the wrong, positive, direction. On the basis of this table we therefore do not support hypothesis 3, because the channel has no relation to happiness.

Table 4: Hypotheses 2 & 3 (SEM analyses)

	(1) SEM H2	(2) SEM H3
	GDP P.C.	Tightness
Individualism	0.00719* (1.93)	-70.21*** (-6.97)
Mean Life Satisfaction		
GDP P.C. (Current U.S\$)	7.012*** (7.10)	6.760*** (6.37)
Individualism	0.0504* (1.86)	-0.0167 (-0.64)
% University Degree	-0.255*** (-2.79)	-0.246*** (-2.66)
% Very Good Health	0.300*** (3.96)	0.326*** (3.81)
% Male	0.469** (2.03)	0.479** (2.07)
% (Living as) Married	-0.0534 (-0.40)	-0.0263 (-0.19)
Mean Age in Years	-0.438 (-1.52)	-0.456 (-1.58)
% with Children	0.346** (2.05)	0.332* (1.96)
Inflation + Unemployment	-3.631*** (-3.33)	-3.892*** (-3.35)
Gini Index	0.188** (1.98)	0.186* (1.96)
Tightness		0.000239 (0.64)
Constant	-40.38** (-2.06)	-40.54** (-2.07)
Observations	129	129
R-squared	0.616	0.617

t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

4.2 Robustness

4.2.1 Cross Section

The first robustness analysis is a cross section analysis. This cross section is based on wave 6 of the WVS (WVS, 2016). The summary statistics in table 5 show the different variables that are used in the analysis. This cross section sample covers 45 countries and therefore has 45 observations in total.

Inequality is not included in this analysis due to the amount of observations dropping below the 40 observations that are required to do a proper analysis (Hill et al, 2012).

Table 5: Summary Statistics (Cross Section)

Variable	Mean	Std. Dev.	Min	Max	Label
LS	7.029219	.6964723	5.00696	8.5125	Mean Life Satisfaction
LMisery	2.19177	.5421368	.868822	3.4492	Inflation + Unemployment
LIncome	9.330711	1.204976	6.5449	11.4797	GDP P.C. (Current U.S\$)
LIDV	3.527216	.5497574	2.07944	4.51086	Individualism
Married	62.02443	9.074253	44.7809	82.6087	% (Living as) Married
Education	16.05055	10.38583	2.25188	43.8333	% Completed University
Health	28.63081	12.08279	4.97393	56.3388	% Very Good Health
Sex	48.7351	4.467768	37.6178	63.6725	% Male
Age	42.17361	5.832763	30.9246	53.8624	Mean Age
TightQ	4694.333	2487.611	64	10000	Tightness
Children	69.72685	8.261545	47.0722	84.3913	% with Children
Rule	.2724896	1.029611	-1.52271	2.01711	Rule of Law

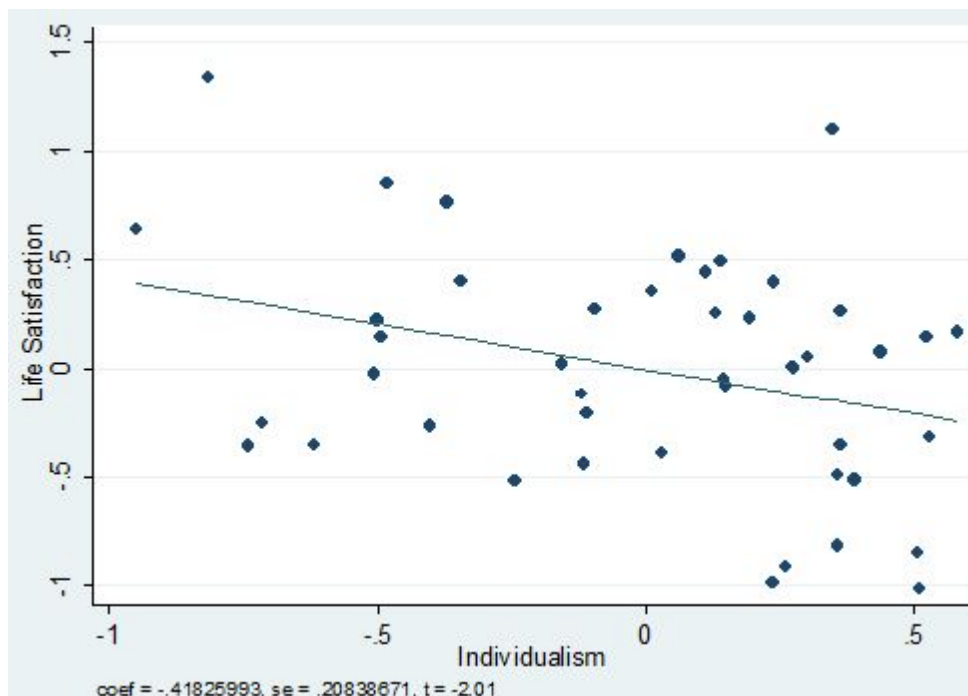
The residual analysis is done in the same way as the main analysis, with the exception of autocorrelation due to this analysis being at a point in time. The Breusch-Pagan test revealed that there is no heteroskedasticity in the models used, p-values of the test ranged from 0.70 to 0.87. Multicollinearity was tested by looking at the correlation matrix and calculating the vif for the correlations that are above 0.6, as a rule of thumb. Rule of law and income have a high correlation of 0.72. As can be seen in table 6. A further investigation with the vif statistic revealed that there is multicollinearity in the model of the second sem analysis in table 8 and therefore rule of law is dropped in this analysis. Variables are adjusted for normality when it was necessary and partial plots were looked at to see if there were any non-linearity problems, which is not the case in these analyses. The outlier and influential cases analysis revealed that Rwanda is an outlier and an influential case, it is therefore excluded from the analysis.

Table 6: Correlation Matrix (Cross Section)

	LS	LMisery	LIncome	TightQ	LIDV	Married	Education	Health	Sex	Age
LS	1.0000									
LMisery	-0.2121	1.0000								
LIncome	0.4593	-0.2141	1.0000							
TightQ	0.1392	0.2343	0.0942	1.0000						
LIDV	-0.1253	0.1097	0.4315	-0.0968	1.0000					
Married	0.0179	-0.2572	0.0280	-0.1621	0.0659	1.0000				
Education	0.2206	-0.3360	0.6438	-0.0462	0.3170	0.2733	1.0000			
Health	0.0620	-0.0258	-0.2309	-0.4744	-0.0984	-0.2270	-0.1596	1.0000		
Sex	-0.0519	-0.1196	-0.1703	-0.1560	-0.1156	0.0420	-0.1532	0.2671	1.0000	
Age	0.2673	-0.1526	0.6845	0.1497	0.4855	0.2871	0.4620	-0.5323	-0.3915	1.0000
Children	0.3694	-0.2399	0.2108	0.1592	-0.0001	0.5503	0.1348	-0.4020	-0.1063	0.5260
Rule	0.2526	-0.2999	0.7194	-0.1209	0.5054	0.1866	0.4890	-0.1778	-0.1776	0.6917
	Children	Rule								
Children	1.0000									
Rule	0.2291	1.0000								

The first thing we look at in the cross sectional analysis is a partial plot of individualism on happiness, which can be seen in graph 2. As opposed to the main analysis, it is now clear that there is in fact a downward trend in the graph that clearly shows that there is a negative relation between the two variables.

Graph 2: Individualism and Life Satisfaction (Cross Section)



The first analysis that was done on the cross sectional data is to look at the relation between individualism and happiness. Considering there is no heteroskedasticity or non-linearity, we used an OLS regression as the method of choice due to it being the most efficient estimator. Table 7 shows this analysis. The first thing to notice is that individualism is significant at the 10% level of significance and still negative. Even without adding the controls individualism is negative as opposed to being positive in the main analysis. As for the other variables, the misery index is not significant anymore, while income and health, only at the 10% significance level, are still positive and significant.

Table 7: Hypothesis 1 (OLS with and without controls)

	(1) OLS	(2) OLS
Individualism	-0.180 (-0.88)	-0.401* (-1.91)
Inflation + Unemployment		0.0533 (0.28)
GDP P.C. (Current U.S\$)		0.395*** (2.84)
% (Living as) Married		0.00490 (0.34)
% Completed University		-0.00429 (-0.34)
% Very Good Health		0.0198* (1.93)
% Male		-0.0339 (-1.40)
Mean Age		-0.0130 (-0.38)
Tightness		0.0000371 (0.83)
% with Children		0.0293* (1.79)
Rule of Law		-0.0322 (-0.22)
Constant	7.563*** (10.42)	3.830* (1.76)
Observations	50	45
R-squared	0.016	0.493

t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

The results from the sem analyses are in table 8. The first model in the table looks at the income channel and it looks like there is no income channel in this analysis. There is no indirect effect from individualism on happiness and no significant effect of individualism on income. The second model in the table looks at the tightness channel and it looks like there is no tightness channel in this analysis. There is no indirect effect from individualism on happiness through income and through tightness. As opposed to the main analysis, both channels are insignificant in this analysis. It seems that the results of the main analysis are therefore not robust.

Table 8: Hypothesis 2 & 3 (SEM analyses)

	(1) SEM H2	(2) SEM H3
	GDP P.C.	Tightness
Individualism	-0.0795 (-0.35)	-609.8 (-0.88)
Mean Life Satisfaction		
GDP P.C. (Current U.S\$)	0.413*** (3.47)	0.383*** (3.50)
Individualism	-0.418 (-0.35)	-0.0235 (-0.67)
% Completed University	-0.00426 (-0.39)	-0.00397 (-0.37)
% Very Good Health	0.0160** (2.02)	0.0196** (2.24)
% Male	-0.0352* (-1.68)	-0.0337 (-1.62)
% (Living as) Married	0.00265 (0.22)	0.00449 (0.36)
Mean Age	-0.0145 (-0.49)	-0.0153 (-0.54)
% with Children	0.0311** (2.21)	0.0299** (2.15)
Rule of Law	-0.0520 (-0.41)	
Inflation + Unemployment	0.0865 (0.53)	0.0628 (0.39)
Tightness		0.0000387 (1.02)
Constant	4.083** (2.20)	4.010** (2.33)
Observations	45	45
R-squared	0.482	0.488

t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

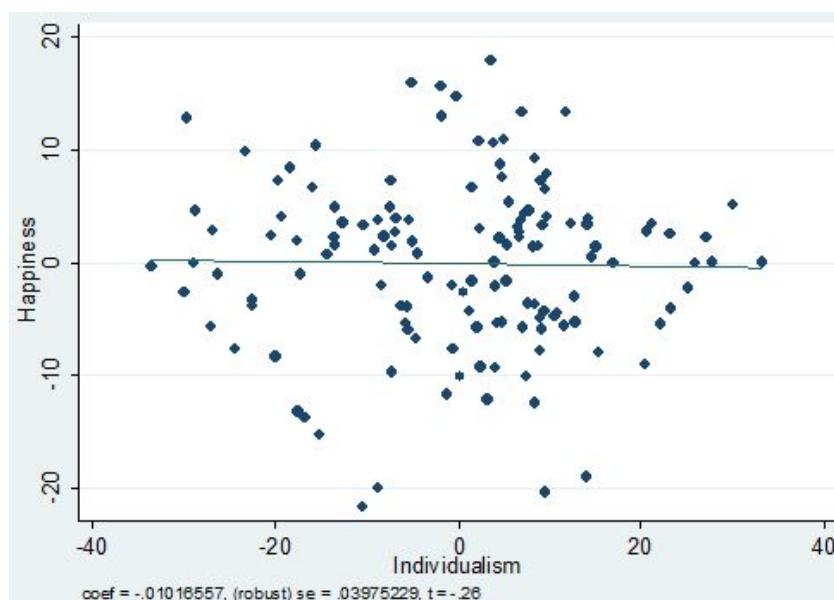
4.2.2 Alternative Happiness

The second robustness analysis uses the same data as the main analysis with one major change and that is a different variable of happiness. The same summary statistics and correlation table apply for this analysis as it did in the main analysis and these are therefore not reported here.

The residual analysis was done in the same way as the panel data. The Breusch-Pagan test revealed that there is heteroskedasticity in all the models, p-values of the test are all 0.00. Robust SE are used when necessary as opposed to OLS for estimation of standard errors unless there is also autocorrelation. The Wooldridge test revealed that there is autocorrelation in all the models, p-values of the test are all 0.03. To deal with both heteroskedasticity and autocorrelation we use Driscoll-Kraay standard errors that can deal with both heteroskedasticity and autocorrelation. There is multicollinearity between rule of law and income in all the regressions, vif values are above 5. Rule of law is therefore removed from the analysis. Variables are adjusted for normality when it was necessary and partial plots were looked at to see if there were any non-linearity problems, which is not the case in these analyses. The outlier and influential cases analysis revealed that Turkey and Brazil are problematic on both and are therefore removed from the regression analysis.

We first look at the graph shown in graph 3 before moving on to the actual analysis. Graph 3 does not show a relation between individualism and happiness. It would be difficult to draw a distinct line to the seemingly random points of the graph. The fitted line, however, still shows a negative relation between the two variables.

Graph 3: Individualism and Happiness



The first analysis that was done is to look at the relation between individualism and happiness, which can be seen in table 9. The hausman test and the Breusch Pagan LM test revealed that random effects is preferred over other regression models and therefore we report only this model. The table shows a similar pattern as the main analysis where individualism is positive without controls and negative with controls. It is, however, insignificant in both of these models. As for the other variables, health, income and the misery index are all significant and in the expected directions, which was also the case in the main analysis.

Table 9: Hypothesis 1 (random effects with and without controls)

	(1) Random	(2) Random
Individualism	0.0913 (1.62)	-0.0168 (-0.30)
% University Degree		-0.0165 (-0.21)
% Very Good Health		0.278*** (3.29)
% Male		0.190 (0.78)
% (Living as) Married		0.00791 (0.06)
Mean Age in Years		-0.391 (-1.53)
% with Children		0.143 (0.96)
GDP P.C. (Current U.S\$)		3.811*** (3.68)
Inflation + Unemployment		-2.841** (-2.47)
Gini Index		-0.0600 (-0.52)
Constant	77.83*** (30.23)	49.13*** (2.58)
Observations	202	133
R-squared	0.045	0.469

t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

The results from the sem analyses are in table 10. The first model in the table looks at the income channel and it looks like there is no income channel in this analysis, both the channel and the indirect effect are insignificant. The second model in the table looks at the tightness channel and it looks like there is no tightness channel in this analysis. Both channels are insignificant in this analysis.

Table 10: Hypothesis 2 & 3 (SEM analyses)

	(1) SEM H2	(2) SEM H3
	GDP P.C.	Tightness
Individualism	0.00494 (1.36)	-67.95*** (-7.17)
% (Very) Happy GDP P.C. (Current U.S\$)	3.875*** (3.87)	4.337*** (4.08)
Individualism	0.0191 (1.28)	0.0322 (1.21)
% University Degree	-0.122 (-1.38)	-0.139 (-1.56)
% Very Good Health	0.330*** (4.19)	0.279*** (3.16)
% Male	0.250 (0.88)	0.230 (0.82)
% (Living as) Married	0.0809 (0.56)	0.0339 (0.23)
Mean Age in Years	-0.525* (-1.77)	-0.485 (-1.64)
% with Children	0.105 (0.59)	0.128 (0.71)
Inflation + Unemployment	-4.243*** (-3.72)	-3.726*** (-3.09)
Gini Index	-0.0997 (-1.05)	-0.0933 (-0.99)
Tightness		-0.000474 (-1.23)
Constant	52.88** (2.47)	53.19** (2.50)
Observations	133	133
R-squared	0.489	0.494

t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

4.2.3 Multi level model

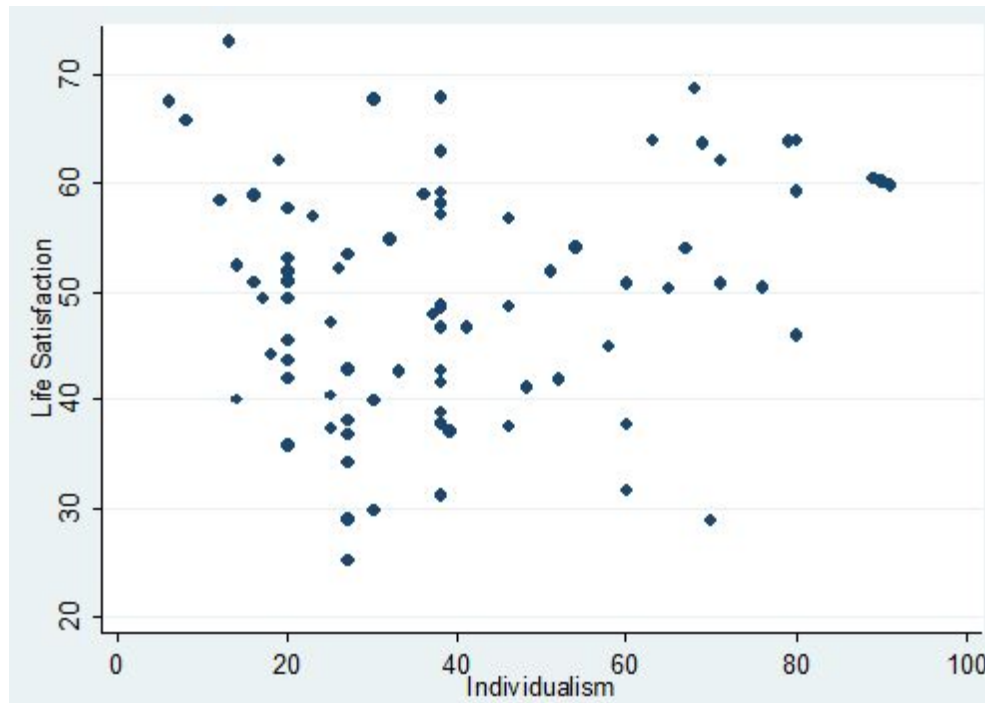
The third robustness analysis is a panel data at two different levels to capture the full variation of the data that are used in this paper. The summary statistics in table 11 are slightly different from the previous analyses. The table includes lots of dummies that were made from the four variables used in the previous analyses. In this analysis it is possible to look at the effects of different levels of these variables through the dummy variables. For example education is represented in the sample by several dummies that represent the different levels of education. If there is a positive effect from education, we expect a higher education dummy to give a higher estimate than the lower levels of education dummies. The multilevel data covers the same amount of countries as the panel data, but covers both the individual and country level. The amount of individuals surveyed defer for each country, but at the very least 642 people were surveyed for each country. The data covers 59 countries over 6 waves and over at least 642 people, totaling 189712 observations, where some variables are at the country level and others are at the individual level.

Table 11: Summary Statistics (Multi)

Variable	Mean	Std. Dev.	Min	Max	Label
LSQ	52.3317	29.31662	1	100	Life Satisfaction
LAge	3.642867	.4037865	2.70805	4.59512	Age
Age2	13.43352	2.928777	7.33354	21.1151	Age (Quadratic)
TightQ	4757.303	2646.394	64	10201	Tightness
LIncome	8.870236	1.369879	5.67964	11.4797	GDP P.C. (Current U.S\$)
LMisery	2.519812	.8703999	-.424214	7.64103	Inflation + Unemployment
IDV	44.70988	22.38358	6	91	Individualism
Rule	.3703072	.941896	-1.07299	2.01711	Rule of Law
Inequality	40.25638	10.34214	21.2	59.4	Gini Index
HpDum1	.2428207	.4287887	0	1	Very Good Health
HpDum2	.4390075	.4962673	0	1	Good Health
HpDum3	.2564361	.4366665	0	1	Fair Health
HpDum4	.0569758	.2317971	0	1	Poor Health
SexDum1	.4892574	.4998859	0	1	Male
MarDum1	.5679346	.4953647	0	1	Married
MarDum2	.0760363	.2650569	0	1	Living as Married
MarDum3	.0361337	.1866233	0	1	Divorced
MarDum4	.0200831	.1402849	0	1	Separated
MarDum5	.0565752	.2310298	0	1	Widowed
EduDum2	.1550245	.361929	0	1	Completed Elementary School
EduDum3	.0826516	.2753556	0	1	Incomplete College
EduDum4	.1854443	.3886586	0	1	Completed College
EduDum5	.0956924	.2941697	0	1	Incomplete Pre-University
EduDum6	.1668002	.3727984	0	1	Completed Pre-University
EduDum7	.075836	.2647362	0	1	Incomplete University
EduDum8	.1548452	.361758	0	1	Completed University
ChiDum2	.1688507	.374621	0	1	1 Child
ChiDum3	.2643902	.4410091	0	1	2 Children
ChiDum4	.1440921	.351184	0	1	3 Children
ChiDum5	.0681454	.2519959	0	1	4 Children
ChiDum6	.0320433	.1761156	0	1	5 Children
ChiDum7	.0179588	.132802	0	1	6 Children
ChiDum8	.008534	.0919848	0	1	7 Children
ChiDum9	.0125717	.1114168	0	1	8 Children or more

The graph that is drawn in graph 4 is not a partial plot as with the previous analyses, due to the nature of multilevel models. Graph 4 does not give us a very clear relation between the two variables, this graph does not show any relation between the two variables.

Graph 4: Individualism and Life Satisfaction (Multi)



This analysis is done differently than the others due to the nature of the multilevel model that is used, estimates are made on different levels making it difficult to use test statistics based on these estimates (Snijders et al, 2012). This analysis therefore has a limited residual analysis where the data was tested for normality and multicollinearity. Variables were tested for right and left skewness and adjusted if necessary. Multicollinearity was tested by looking at the correlation matrix, which does seem to point at a high correlation between rule of law and income, as can be seen in table 12.

Table 12: Correlation Matrix (Multi)

	LSQ	LAge	Age2	LIncome	LMisery	IDV	Rule	Inequa~y
LSQ	1.0000							
LAge	-0.0117	1.0000						
Age2	-0.0096	0.9984	1.0000					
LIncome	0.1627	0.1977	0.2026	1.0000				
LMisery	-0.0699	-0.0934	-0.0942	-0.3308	1.0000			
IDV	0.0263	0.1628	0.1671	0.5359	-0.0475	1.0000		
Rule	0.0841	0.1909	0.1951	0.7413	-0.3787	0.6633	1.0000	
Inequality	0.0701	-0.1641	-0.1662	-0.3681	0.3502	-0.2907	-0.4868	1.0000

The first analysis that was done here was to look at the relation between individualism and happiness in table 13. We use a multilevel mixed effects model to be able to model the variables of the two different levels, individual and country. As with other analyses, individualism changes direction based on the inclusion or exclusion of controls in the model. Individualism is negative and significant in the model with the controls. The only insignificant variables are several children dummies where a higher increase in children leads to an increasingly positive effect on happiness, although not significant. All the variables in this table are in the expected directions with the exception of individualism.

The sem analyses were done in a similar fashion as the previous sections of this chapter, but using a generalized sem to be able to look at multilevel data while also being able to properly estimate dummy variables. The sem analyses are shown in table 14. The first model is the income channel and from this table it looks like it is actually there with significant effects for both the indirect effect of individualism as well as for individualism on income. The second model is the tightness channel and this channel also is significant. The indirect effect of individualism on happiness is positive and significant as expected as well as the relation between individualism and tightness. These results support the second and third hypotheses as opposed to the previous analyses where we could not find a significant effect from the channels.

Table 13: Hypothesis 1 (Multilevel mixed effects with and without controls)

	(1) Multilevel Mixed	(2) Multilevel Mixed
Life Satisfaction		
Individualism	0.0793 (1.44)	-0.307*** (-5.07)
Age		-105.3*** (-35.04)
Age (Quadratic)		14.79*** (35.94)
GDP P.C. (Current U.S\$)		2.651*** (15.76)
Inflation + Unemployment		-0.515*** (-3.42)
Rule of Law		5.651*** (11.82)
Gini Index		-0.325*** (-10.14)
Very Good Health		31.19*** (34.79)
Good Health		21.82*** (24.50)
Fair Health		13.25*** (14.88)
Poor Health		3.224*** (3.52)
Male		-1.997*** (-16.10)
Married		6.982*** (29.82)
Living as Married		3.275*** (11.36)
Divorced		-1.614*** (-4.15)
Separated		-1.970*** (-4.14)
Widowed		1.556*** (4.33)
Completed Elementary School		2.181*** (8.17)
Incomplete College		3.218*** (10.34)
Completed College		3.609*** (13.30)
Incomplete Pre-University		2.856*** (9.45)
Completed Pre-University		3.965*** (14.40)
Incomplete University		3.990*** (12.31)
Completed University		6.391*** (22.68)
1 Child		-1.132*** (-4.82)
2 Children		-1.128*** (-4.85)
3 Children		-0.645** (-2.46)
4 Children		-0.380 (-1.20)
5 Children		-0.0278 (-0.07)
6 Children		0.224 (0.44)
7 Children		0.112 (0.16)
8 Children or more		-0.588 (-1.00)
Constant	46.47*** (18.55)	211.1*** (32.63)
Observations	292982	189712
R-squared	0.025	0.094

t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 14: Hypotheses 2 and 3 (GSEM analyses)

	(1) SEM H2	(2) SEM H3
Individualism	GDP P.C. 0.00631*** (50.16)	Tightness -61.15*** (-203.95)
Life Satisfaction		
GDP P.C. (Current U.S\$)	4.449*** (61.30)	4.748*** (57.54)
Individualism	0.0275*** (37.95)	0.0139*** (7.61)
Age	-104.1*** (-33.60)	-104.4*** (-33.72)
Age (Quadratic)	14.56*** (34.35)	14.61*** (34.48)
Inflation + Unemployment	-1.517*** (-17.97)	-1.282*** (-14.27)
Rule of Law	-0.638*** (-5.05)	-0.867*** (-6.68)
Gini Index	0.326*** (43.68)	0.317*** (42.03)
Very Good Health	32.84*** (35.59)	32.50*** (35.18)
Good Health	22.92*** (24.98)	22.67*** (24.70)
Fair Health	14.00*** (15.24)	13.81*** (15.03)
Poor Health	2.761*** (2.92)	2.582*** (2.73)
Male	-1.946*** (-15.18)	-1.952*** (-15.23)
Married	6.215*** (25.97)	6.205*** (25.94)
Living as Married	5.626*** (19.06)	5.682*** (19.24)
Divorced	-1.682*** (-4.20)	-1.633*** (-4.08)
Separated	0.478 (0.98)	0.567 (1.16)
Widowed	0.596 (1.61)	0.664* (1.79)
Completed Elementary School	1.530*** (5.62)	1.520*** (5.58)
Incomplete College	3.544*** (11.26)	3.606*** (11.46)
Completed College	2.347*** (8.58)	2.324*** (8.50)
Incomplete Pre-University	1.666*** (5.43)	1.604*** (5.23)
Completed Pre-University	1.575*** (5.65)	1.574*** (5.65)
Incomplete University	4.056*** (12.35)	4.047*** (12.33)
Completed University	4.912*** (17.24)	4.901*** (17.20)
1 Child	-1.292*** (-5.35)	-1.291*** (-5.34)
2 Children	-0.848*** (-3.54)	-0.825*** (-3.44)
3 Children	0.773*** (2.86)	0.762*** (2.82)
4 Children	1.558*** (4.78)	1.509*** (4.63)
5 Children	2.168*** (5.20)	2.100*** (5.04)
6 Children	3.050*** (5.84)	2.943*** (5.64)
7 Children	3.043*** (4.24)	2.957*** (4.12)
8 Children or more	2.817*** (4.68)	2.769*** (4.60)
Tightness		-0.000232*** (-7.61)
Constant	163.1*** (28.77)	162.9*** (28.73)
Observations	193141	193141
R-squared	0.136	0.136

t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

4.3 Discussion

The results of the second section of this chapter were not discussed in detail. This section addresses each hypothesis and the results found in the empirical analysis to see whether the hypothesis are supported or not on the basis of the main analysis and the robustness analyses.

This research is concerned with the relation between individualism and happiness and tried to find this relation by looking at both direct and indirect effects of individualism on happiness to see what the direct and indirect effects of individualism on happiness are. One thing to note here is that this paper by no means claims to measure the total effect of individualism on happiness, as there might be more channels in which individualism affects happiness, a possible channel could be formal rules. The lack of some variables that affect happiness might cause a missing variables bias that might influence the results in such a way that it harms the external validity. To achieve this goal, this paper developed three hypotheses that capture these direct and indirect effects.

The first hypothesis is that increased individualism leads to a higher level of happiness. This is tested in the different analyses and what is clear from these analyses, is that the hypothesis cannot be supported on the basis of the results. The results seem to point out that there is no relation between individualism and happiness. On the basis of the analyses that were conducted we therefore do not support hypothesis 1. The absence of a relation can be caused by different reasons. It could be due to the absence of a relation between the two. Another explanation is that individualism has both positive and negative effects on happiness. We could also be missing mediation or moderation effects, which might be the cause of this insignificant relation.

The second hypothesis is that increased individualism leads to a higher level of income, which leads to a higher level of happiness. This hypothesis was tested using a sem analysis, which is necessary to be able to do a proper mediation analysis. In this way we could look at the individual parts of the hypothesis to see if there is a channel and if this channel does affect happiness in the way we expected it to do. The main analysis seemed to point out that there is in fact an income channel, though it is only weakly significant at the 10%. The problem, however, is that this relation is not very robust. In both the cross section and the alternative happiness measure, there was no significant indirect relation caused by the income channel. There is therefore only weak evidence to suggest that there might be an income channel. We therefore do not support hypothesis 2 with our findings.

The third hypothesis is that increased individualism leads to a lower level of tightness, which leads to a higher level of happiness. The sem analysis is used for this hypothesis as well. The main analysis seemed to point out that there is no tightness channel. This is also backed up by the alternative happiness measure and the cross sectional analysis that also could not find a tightness channel. The effect of individualism on tightness was significant and negative as expected, but the lack of relation between tightness and happiness shows us that there is no tightness channel that affects the relation between individualism and happiness. We therefore do not support hypothesis 3 with our findings.

The question that is at hand now is what can we do with these results. The answer to this question is not really a clear cut one. This paper has contributed to research by showing that individualism does not affect happiness and that cultural research should focus on other dimensions as suggested by Ye et al (2015) or even move on to use something different than cultural dimensions, such as trust (Lu et al, 2011) or religion (Dorn et al, 2006). Even though individualism does not seem to affect happiness, that does not mean culture does not affect happiness. Research on culture and happiness is still limited and different research is still needed to find the proper measure of culture that affects happiness. Culture is a big concept and finding the right part of cultural values that influence happiness is a difficult task.

Future research could research the relation between individualism and happiness on the individual level. Using a different measure of individualism, such as suggested in Triandis (1995), could also be a way to see whether the individualism measurement is robust to ensure that individualism is captured. A meta-analysis on the relation between individualism and happiness or even culture and happiness could help in gaining valuable insights into the relation between culture and happiness.

This research has a similar result to Schyns (1998) who could not find a relation between culture and happiness. This research shows that the relation between individualism and happiness is not clear cut. This paper further researched the line of thought by Diener et al (1995) and by doing so came to a different conclusion. Instead of finding a relation between individualism and happiness, this paper found no support for such a relation, both through direct and indirect channels.

5. Conclusion

The research done in this paper has several limitations that might influence the results. The first limitation is the use of life satisfaction as a proxy for happiness. As was said earlier it only measures part of the happiness concept, which might not capture enough to already make good conclusions on. It has, however, been found that the different measurements of happiness give similar results (Easterlin et al, 2010). Variables that influence happiness such as income, health and the misery index are robust in the analyses that were run in this paper and are expected to influence happiness in all its variations. What is referred here is the fact that these variables should still be strong predictors in the different proxies of happiness. In this paper these strong predictors remained significant and in the expected direction for both life satisfaction as well as the 5-point scale of happiness.

Another limitation that is inherent to using survey data is the risk of self-selection bias that might influence the representation, external validity, of the sample. This might not really be an issue considering our main analysis is not concerned with the individuals in a country and whether these individuals represent their country. We are concerned with the country level and to see whether there is a relation between individualism and happiness. In a way this bias is less of an issue due to the use of a panel data with a big N and a small T.

The missing variables bias is something that is still relevant for this paper as there are still some variables missing from the analyses. This can be seen by the r-squared which ranges around 0.5-0.6, pointing towards the fact that there are still some variables missing that can explain the residuals from the different models that were used in this paper. This might affect the results that are found in this paper, but considering that the r-squared is 0.5-0.6 this should not affect the results to such a degree that we get completely different results.

This research is about the relation between culture, measured through individualism, and happiness. This paper has researched whether there is a relation between individualism and happiness, both direct and indirect through channels. Theories pointed out towards a positive relation between individualism and happiness, while the empirics from this paper suggest that there is no relation between individualism and happiness. The main question was to find out if there is in fact an relation between individualism and happiness, based on this paper there is no relation.

The hypotheses were as follows. Hypothesis 1 is that increased individualism leads to a higher level of happiness. Hypothesis 2 is that increased individualism leads to a higher level of income, which

leads to a higher level of happiness. Hypothesis 3 is that increased individualism leads to a lower level of tightness, which leads to a higher level of happiness. All the hypotheses were not supported on the basis of the analyses that were done.

Culture is something that is always a part of the decision making process and is something that influences the decisions that people make. It is therefore something that is vital to any research in economics. Individualism is a component of the culture concept and is a way to capture part of cultural variation. This research is a continuation of the work by Diener et al (1995) to find out the exact influence of individualism. As opposed to this research, this paper has found no relation. This is a similar result to what was found by Schyns (1998). It might be the case that other cultural measurements are indeed more important as was suggested by Ye et al (2015).

What we can get out of this research is that the effect of culture is not as clear cut as theory would suggest. Other forces may be at play here that can explain why individualism has no relation with happiness. What is clear from the analyses is that income, health and the misery index are indeed strong and significant predictors of happiness, as was expected from other research. It is therefore vital for policy makers to take into account these predictors when making policy and keeping in mind the cultural background of their respective countries to be able to make the best fitting policy for the country at hand. It is vital for a policy maker to have a criteria in which to make policy and happiness can help in this aspect. This paper is another step in this direction and hopefully one that sparks more steps towards happiness research.

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