‘On the relationship between economic freedom, life satisfaction, economic growth, social trust, and income inequality: a cross country analysis’.

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ABSTRACT [This paper estimates the relationship between economic freedom and i) life satisfaction, ii) per capita income growth, iii) social trust, and iv) income inequality for a cross country analysis of 48 countries using the method of seemingly unrelated regressions. Economic freedom has a significant negative impact on life satisfaction. Particularly the sub-indices size of the government, sound money, and freedom to trade internationally are negatively associated with life satisfaction. However, the sub-index legal structure has an indirect positive effect on life satisfaction as it stimulates economic growth and raises social trust].

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Preface

This thesis marks the end of my studies in Tilburg, a period of time that I enjoyed very much and has been very valuable to me for a number of reasons. During the TIK-week at the beginning of my studies, I met my friends Marnix and Philippe. Two years later, I had a great time studying in Seattle and traveling through the United States. When I returned from exchange, I met Kim. In my fifth year I had a very valuable time as chairman of study association Asset | Economics. In my master I learned a lot during my internship at ING. In a nutshell, my period in Tilburg has been great.

With respect to studying, I am very glad that I have found field of study that I am genuinely interested in. This journey started in the third year of my Bachelor, when I followed the course philosophy of the economy. Especially during my preparation for the exam, when I studied the book *Economics, Ethics and the Market* by professor Graafland, I noticed that I really like to read about topics that relate to economics and philosophy. Hence, I am very satisfied that I have finished my studies with a thesis on economic freedom.

I would like to thank professor Graafland for his support and supervision. I particularly appreciate his commitment and the valuable comments on my work, as well as his suggestions for improvement.

1 Introduction

As of the 1970's, roughly twenty-five years after the second world war, increased living standards enabled social scientists to reconsider the importance of directing policy towards economic growth. The happiness literate was born in 1974 when Richard Easterlin published the fact that income per capita has been steadily growing, whilst self-reported happiness has been stable over the period 1946 – 1970 in the United States. This suggests that 'money does not buy happiness' and hence calls for a re-orientation of the importance of policy directed towards economic growth. Indeed, many years later, not only the scientists, but also politicians have begun to think about the importance of economic growth. For example, in the United Kingdom the Office of National Statistics is constructing a happiness index to enable politicians to have a better understanding of the elements driving happiness. In April 2008, the Sarkozy government installed the Stiglitz-Sen-Fitoussi commission to construct an index for economic performance and social development in France. Finally, last July the United Nations' General Assembly adopted a resolution to make happiness a development indicator.

Psychologists, sociologists, and economists are all contributing to the subjective well-being literature as it captures elements of all of these social studies. Hence, by now the concept of subjective well-being consists of a vast literature of variables affecting subjective well-being measures. Typically, wealth, health, and social capital (e.g. having family and friends) are among the most important variables explaining subjective well-being. One of the relationships that is still in its infancy however, is the relationship between economic freedom and subjective well-being. This relationship is very interesting as economic freedom relates to the institutional design of a society.

The concept of economic freedom relates to the degree of personal choice, voluntary exchange, freedom to compete, and protection of privately owned property. In 1996, James Gwartney defined the concept of economic freedom as follows:

> *'Individuals have economic freedom when property they acquire without the use of force, fraud, or theft is protected from physical invasions by others and they are free to use, exchange, or give their property as long as their actions do not violate the identical rights of others. An index of economic freedom should measure the extent to which rightly acquired property is protected and individuals are engaged in voluntary transactions. (Gwartney, 1996).*

Many different studies have proved (the theoretical argument) that economic freedom fosters economic growth. However, there are also economists who heavily criticize the pursuit of economic freedom, as market imperfections may imply undesirable outcomes for the society and/or the environment. Two books with conflicting views on the performance of free market operation were reviewed by Andrei Schleiffer in 2009. Interestingly, as I will illustrate, one may argue that the credit crisis has substantially widened the gap between these two visions.

On the one hand, Joseph E. Stiglitz, José Antonio Ocampo, Shari Spiegel, Richardo Ffrench- Davis, and Deepak Nayyar share their vision on market operation in their book *Stability with Growth:*

Macroeconomics, Liberalization, and Development (2006). The book's main message is that free market operation is undesirable because of the existence of (amongst others) information asymmetries.

Notably, five years after publication, there still is a lot of support for this vision. Many people feel that they have fallen prey to our capitalistic system, since it is the tax payer that has to bear the costs that aim to rescue a further deterioration of the financial system. Some economists and politicians therefore name the credit crisis the bankruptcy of the Anglo-Saxon capitalism with its lack of prudential regulation, supervision of financial markets and proper provision of public goods by governments (Roubini, 2009). In this view, a group of Anglo-Saxon financial institutions are largely responsible for the worldwide mess from which the entire world has been suffering over the past years (BCG, 2010). This view suggests a reorientation from the Anglo-Saxon model of capitalism towards other models of capitalism with more binding rules on liquidity, capital, leverage, transparency, compensation and so on, in particular in the banking sector (Wolf, 2007; De Larosière Group, 2009; Bebchuk and Spamann, 2010, Krugman, 2009).

On the other hand, Leszek Balcerowicz and Stanley Fischer, both in favor of free market operation, elaborate on their vision of markets in their book: *Living Standards and the Wealth of Nations: Successes and Failures in Real Convergence (2006).* Deng Zoa Ping opened up the Chinese domestic market to the world economy in 1979, and in the same year Margareth Tatcher was elected as prime minister of the United Kingdom. In 1980, president Reagan of the United States was re-elected. These three world leaders all embraced Friedman's vision on how to raise standards of living. According to Friedman, a combination of trade openness, low taxes, low regulations, protection of private property, and balanced budgets are the key to economic growth. Hence, Schleiffer argues that it is natural to refer to the last quarter century as belonging to the famous economist Milton Friedman.

Also this view still has a lot of proponents roughly 3 years after the burst of the bubble (Saunders, 2009; Grant, 2009). They argue that the European banks failed as much as US banks. The capital ratios of the top continental banks were inferior to those of their American peers. Financial crises are inherent to capitalism, but not to one particular brand of capitalism, as the earlier crises in Japan and Sweden in the early nineties show. Furthermore, the source of the crisis on the US housing market was the political pressure by the Clinton and Bush administration on banks to provide credit under favourable conditions to people that lacked a sound financial basis to finance their houses. This political goal was based on the idea that every person, including the poor, has a right to an own house. In combination with loose monetary policy, the American housing law and lobbyism encouraged banks to provide sub-prime mortgage loans (Norberg, 2009). Banks were aware, however, that this policy might be very risky and therefore tried to share risks by packaging and selling these loans as investments to other market parties. In a real free market sub-prime loans would not have been invented. This view therefore implies that the Anglo-Saxon model cannot be blamed for the credit crisis and that more government intervention will probably only make things worse (Redwood, 2008; DiLorenzo, 2007).

Though this paper is not about the credit crisis (which already has got a lot of attention), the anecdote intends to introduce the underlying more fundamental concept of economic freedom. This paper studies

the validity of both conflicting views, by empirically studying the relationship between economic freedom and i) life satisfaction, ii) economic growth, iii) social trust, and iv) income inequality.

The contribution of this paper to the existing literature is threefold. First, data are covered up until 2009, hence the impact of the economic crisis might be visible in the analysis.

Second, this paper contributes to an interesting field of study that has received relatively little attention yet. The literature on economic freedom has primarily focused on the relationship between economic freedom and economic growth (Dawson, 1998; De Haan et al. 2000, 2005, 2006; Justesen, 2008) As to the importance of freedom, the subjective well-being literature has primarily focused on the importance of political- and civil rights (Welsch, 2003). Only very few studies have combined the two approaches by relating economic freedom to measures of subjective well-being. An exception is Ovaska and Takashima (2006), who found a positive relation between happiness and economic freedom, but no significant relation between life satisfaction and economic freedom. This analysis can therefore be considered as a follow-up on this study, but with more recent data.

Third, whereas Ovaska and Takashima (2006) used multiple regression to analyze the relationship between economic freedom and happiness, this paper studies a system of relationships between life satisfaction, economic growth, social trust and income inequality, using the method of seemingly unrelated regressions. This method enables one to incorporate the fact that a variable may be a dependent as well as an independent variable at the same time, which leads to more precise estimates of the coefficients. Social trust was included in the system of equations as the literature has both studied its importance in explaining economic growth (Knack and Keefer, 1997; Zak and Knack, 2001), and measures of well-being (Helliwell, 2002, 2009, 2010). Moreover, higher levels of economic freedom are found to raise levels of social trust (Berggren and Jordahl, 2006). Also income inequality has been studied in relation with economic freedom, Berggren (1999), and measures of life satisfaction (Bjornskov, 2005). Finally, life satisfaction is taken as independent variable because it reflects outcomes of rational choices better than happiness measures do.

This paper is structured as follows. Section 2 provides a more detailed overview of previous empirical research on the relationship between life satisfaction, economic growth, social trust, income inequality, and economic freedom. Section 3 follows with the methodology, a model specification, and description of the data. Section 4 briefly presents the results, and section 5 follows with an elaborate discussion. Section 6 concludes.

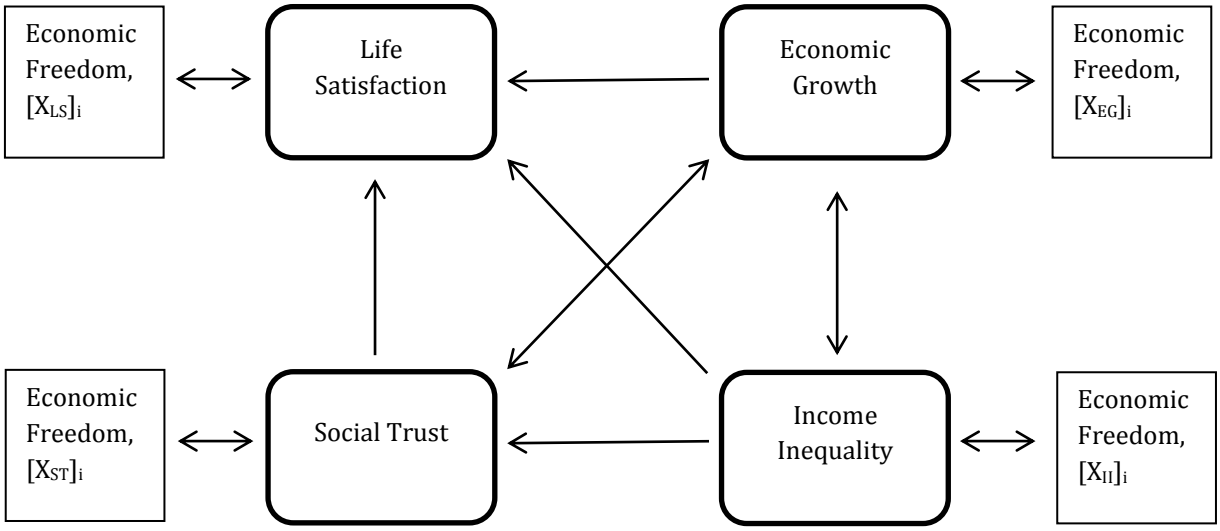
2 Review of empirical studies

One can imagine that the four variables of interest affect each other, i.e. social trust may positively affect life satisfaction and economic growth at the same time (which is why they are estimated simultaneously). The conceptual framework below illustrates the fashion in which variables are expected to influence each other, using the arrows to indicate the direction. Sometimes the direction is unclear a priori, hence the

arrow points in both directions. In some cases theoretical arguments may provide hypotheses, or previous empirical research has solved the question of causality.

In this research, the impact of economic freedom is explicitly assessed in explaining the variable of interest. To control for possible omitted variable biases, vectors of control variables $[X]_i$ are included for each of the four variables.

Figure 1: Conceptual Framework



The following four paragraphs briefly discuss the fashion in which economic freedom and the set of control variables are expected to be related to the variable of interest. For concreteness, the tables at the beginning of each paragraph summarize empirical findings of these studies. Note that some of these studies are based on micro-level data, whilst others are based on macro-level data. Variables found to be significantly related to life satisfaction on the micro level may be inconclusive at the macro-level, as country averages less accurately explain relationships that are essentially micro in nature. However, as this research primarily focusses on the importance of institutional design, country level data are required.

2.1 Life satisfaction

Subjective well-being data can be categorized in different categories, amongst which happiness and life satisfaction are the two most prominent ones. Happiness measures are more influenced by emotions, and are thus more affected by short term influences. Life satisfaction measures are more influenced by reason, and therefore reflect more long term (cognitive) influences (Ovaska, 2006).

Dolan, Peasgood, and White (2008) provide a useful review paper of the economic literature classifying the factors that relate to happiness into seven sub categories[1]. Another useful paper is Blanchflower and

[1] i)income, ii)personal characteristics, iii)social characteristics, iv) characteristics that relate to how we spend our time, v) characteristics that relate to attitudes and beliefs about one's life or others' life, vi) characteristics that relate to one's relationships, vii)wider economic characteristics.

Oswald (2011). Below I give a short overview of the most important factors explaining subjective well-being.

Table 1: Condensed overview of the most important variables affecting Life Satisfaction

	Macro studies						**Micro studies**			
Variables	**EA**	**B & O**	**DT & MC**	**DPW**	**D**	**O & T**	**EA**	**DT MC**	**DPW**	**B & O**
Economic Freedom						+				
Log Income/Capita	+	+	+	+	+		+	+	+	+
GDP growth	0				-	+				
Unemployment		-		-					-	-
Income Inequality		-		-/+						
Social Capital		+							+	
Inflation		-		-						
Political Rights		+		0		+			+	
Social Trust		+		+						
Education									+	+
Life Expectancy at Birth					0/+[2]	+			+	
Age					-	-			U	U[3]
Religious									+	+
Female									+	+
Married									+	+
Welfare States and Public Spending		+		+						
Entrepreneurial Activity										+

EA: Easterlin (1974), B&O: Blanchflower and Oswald (2011), DT & MC: Di Tella and Muc Cullogh (2008), D: Deaton (2008), O & T: Ovaska and Takashima (2006), DTW: Dolan, Peasgood, White (2008).

[2] Changes in Life Satisfaction have an effect, not the level.

[3] U-shaped, based on data for The United States

The freedoms

On the micro level, Frey and Stutzer (2005) find that participation in the political process significantly contributes to an individual's well-being, irrespective of the outcome. A possible explanation for this finding (which Frey and Stutzer call procedural utility) is that political participation stimulates feelings of self-determination and influence. Hence, the institutional design of a country is important in explaining life satisfaction, at least at the micro level.

Welsch (2003) studies the relationship between happiness and both political freedom and rationality for a cross section of 54 countries. He finds that at high levels of freedom and rationality, happiness is positively correlated with freedom and rationality, whilst low levels show a negative correlation. Importantly, political freedom becomes insignificant when controlled for income, suggesting that political freedom and income are highly correlated.

On the other hand, there is the 2006 paper of Ovaska and Takashima. Using a cross section of 68 countries, Ovaska and Takashima study the relationship between various macroeconomic variables and subjective well-being. They find that only very few institutional variables are statistically significant and economically meaningful. Only economic freedom enters significantly in the regression equation.

Income per capita

As mentioned in the introduction, Richard Easterlin was one of the first who pioneered the literature on the relation between happiness and income with his 1974 classical study 'Does Economic Growth Improve the Human Lot?'. For the United States, where subjective well-being data were available, Easterlin found that happiness has roughly been stable over the period 1946 -1970 although income had been growing steadily over that period of time. This finding has become known as the 'Easterlin Paradox'.

On the other hand, there are many scholars who find seemingly conflicting results: Stevenson and Wolfers (2008) for example find that the absolute level of income (more than the relative level, as opposed to Easterlin) explains subjective well-being, and hence conclude that the Easterlin Paradox is a fallacy. Moreover, Stevenson and Wolfers find positive correlation between subjective well-being and income that is significant and robust among countries, within countries, *and across time*. Stevenson and Wolfers argue that happiness does not rise with income in The United because the fruits of economic growth are quite unequally distributed, which makes the United States an exception on the rule.

Also Fisher (2007) criticizes the existence of the paradox, arguing that the Easterlin Paradox does not hold for the United States. According to Fisher, the Easterlin Paradox is an illusion based on a misspecification of wealth. In particular, GDP per capita is an inappropriate measure for wealth since it is heavily skewed. In 2005, the fifth quintile of income recipients received half of US national income. Second, income per capita ignores effort required to produce wealth, and is therefore an inappropriate measure for happiness. That is, happiness tends to arise as a consequence of being successful, not from being born in a wealthy environment. Once controlled for these variables, the Easterlin Paradox disappears.

Although more recent contributions to the happiness literature focus on other variables, by far the largest extent of it has focused on the effect of income per capita. As illustrated above, somewhat confusingly, there are many who found evidence in favor of the income paradox, and many who argue against. Easterlin (2011) and Di Tella and MucCullogh (2008) both have written papers on the Easterlin (or income) paradox that take away the confusion. The major conclusion is that income does enter regression equations positively and significantly within countries and among countries (i.e. at the macro and at the micro level) at a specific moment in time, but significance disappears in the long run (i.e. 10 years). Easterlin argues that Stevenson and Wolfers wrongfully disapprove the existence of the income paradox as they focus on a period of time that is too short. Indeed, Easterlin acknowledges that in the short run life satisfaction varies with income. The effect of higher levels of income per capita is temporary, i.e. habit formation explains why over longer periods of time, higher levels of income per capita do not imply higher levels of subjective well-being. Also, Di Tella and MucCulloch (2008) find that it takes time to adapt to changes in income. On average, they find that it takes roughly five years before income adaption is fully reached, i.e. income does not buy more happiness anymore. Hence, one may conclude, the effect of increases in income per capita on subjective well-being are not permanent, but still are relatively long-lasting.

Economic growth

Ovaska and Takashima (2006) find that economic growth positively enters the happiness and life satisfaction regression. On the contrary, Deaton (2008) remarks that somewhat surprisingly, economic growth enters happiness equations with a negative sign, which he refers to as being one of the paper's major contributions to the literature. Many other studies have found economic growth not to be significantly related to life satisfaction, once corrected for income per capita.

Unemployment

The fact that unemployment has a strong detrimental effect on life satisfaction is well documented and generally accepted in economic literature. Typically, micro studies reveal that the unemployed report to feel less part of the society as they are unable to contribute to it (Frey and Stutzer, 2000). Also Ouweneel (2002) found that the unemployed are less happy than the employed.

An intriguing question left unanswered is whether there is a relation between free market operation and unemployment. In other words, if there are higher levels of unemployment in free market economies, then people would report lower levels of life satisfaction. Horst Feldmann addresses this question in 2006, using panel data over the period 1985 – 2002. For 19 industrial countries he finds that bigger governments are likely to increase unemployment. Strikingly, bigger governments are likely to worsen the career perspectives of women and the low skilled, and substantially contribute to the long term level of unemployment. As explaining factors Feldmann points at big state-owned enterprises, high shares of public investment, high top marginal tax rates, and low income thresholds. For example, state-owned enterprises are often used as a mean to decrease unemployment by employing too much staff. Therefore state-owned enterprises tend to work inefficiently and hence reduce growth and increase

unemployment. As to high tax rates and low income thresholds, Feldmann notes that these are likely to reduce investment and work incentives, which both give rise to unemployment.

Feldmann repeats his analysis in 2009 for a panel of 58 developing countries covering a time period of 23 years, and finds comparable results. More specifically, high government consumption relative to total output, and a high share of transfers and subsidies tend to increase unemployment. However, contrary to the industrial countries, the developing countries' share of investment, nor the existence of dominant state owned enterprises prove to affect developing countries' level of unemployment. Feldmann attributes part of the difference in results between the industrial and developing countries to a different set of control variables that stem from data limitations.

Social capital

Having family or friends with whom one can share one's feelings may have a strong impact on reported life satisfaction. Following this analogy, Helliwell, Barrington-Leigh, Harris, and Huang (2009), and Helliwell and Barrington-Leigh (2010) studied the importance of these variables on the micro level in explaining happiness.

Helliwell and Barrington-Leigh find that social variables are more important than economic variables for explaining life satisfaction. Using data from the 2003 Canadian general social survey (an individually based cross country study), they find that measures of trust, family, friendship, and belonging yield twice as large coefficient estimates than the ones on economic variables. Moreover, the trust variable is more important than income in explaining life satisfaction. Particularly important explanatory variables are i) trust in one's neighbors and colleagues, ii) having family and friends, and iii) feelings of belonging to a specific community, province, or country. People value the feeling of belonging to a community considerably higher than feelings of belonging to respectively a province or country (which reports the lowest coefficient estimate).

Additionally, Helliwell and Barrington-Leigh explored the determinants of feelings of belongings and found that measures of trust, as well as measures of friendship explain the extent to which one experiences feeling of belonging. In other words, it is the fact that one trusts his neighbor and colleague, and has family and friends in the direct neighborhood that make him feel belong to the community. The direction of this relationship however is unclear; as with all cross country analysis, no causal interpretation can be made.

Bjørnskov (2005) argues that the concept of social capital as introduced by Putnam in his 1993 classic work 'Making Democracies Work' appeals to many, however lacks a clear and concise definition required for academic research. Bjørnskov argues that Putnam's measure of social capital can be subdivided into 'social trust', ' civic norms' and 'associational activity'. Interestingly, Bjørnskov finds that only social trust has significant explanatory power in explaining life satisfaction.

Health

Not surprisingly, health is found to be positively correlated with subjective well-being measures. Both physical en mental health are important, though mental health is more highly correlated with subjective well-being. Strokes and heart attacks are found to negatively impact subjective well-being. Also, evidence has been found that handicapped individuals adapt to their disability (Dolan, Peasgood, and White, 2008).

Religion

Next to the relevance of economic and institutional variables, in explaining the self-reported level of happiness, other factors may also be important. Religion may play a special role in one's evaluation of life as it may guide people through periods in which they find themselves in trouble. For example, Moghaddam (2008) stresses the importance of religion in explaining happiness. He finds that for the 1998 United States survey non pecuniary variables (with a particular focus on religion and emotional variables) primarily explain happiness.

Clarck and Lelkes (2009) find that, ceteris paribus, the religious are more satisfied with their lives than the non-religious. Studying a dataset of 90,000 Protestant and Catholic Europeans, they find that both 'churchgoing' and 'prayer' significantly contribute to one's reported level life satisfaction. Clarck and Lelkes also study spillover effects, finding that there are positive spillover effects from religious activities to the atheists. That is, in a certain region that is dominated by the religious, on average higher levels of life satisfaction are found. The fact that the non-religious report higher levels of life satisfaction in areas dominated by the religious remains after controlling for trust, social capital, and crime.

Entrepreneurial activity

Blanchflower and Oswald find that entrepreneurs i) experience significantly higher levels of job satisfaction, as well as ii) higher levels of life satisfaction (Van Praag and Versloot, 2007). Benz and Frey (2003) conclude that entrepreneurs are more satisfied since they have more interesting jobs, and are more autonomous than employees. However, both papers cautiously note that these findings may reflect a bias as entrepreneurs may be naturally more optimistic than employees (Van Praag, Versloot, 2007). Benz and Frey address this possible bias by studying changes in the employment status. They find that employees that become self-employed report higher levels of job- and life satisfaction, suggesting that the bias is unimportant.

A second issue addressed is the interaction between economic freedom and entrepreneurial activity. As higher levels of economic freedom involve less government regulation, one may expect economic freedom to foster entrepreneurial activity. This is exactly the theme of research conducted by Bjørnskov and Foss (2007), who for a cross country of 29 countries find that higher levels of 'sound money' significantly promote entrepreneurial activity, and that larger governments negatively affect entrepreneurial activity. Other sub-indices of the index of economic freedom are not found to influence entrepreneurship. Conducting a more advanced panel data analysis, Nyström (2007) finds that i) a smaller government, ii) a

well-developed legal system that protects property rights and enforces contracts, and iii) less regulation of business, credit, and labor markets promote entrepreneurial activity.

Criticism on happiness studies

Ed Diener and Eunkook Suh (1997) doubt the usefulness of subjective well-being, arguing that economic-, social-, and subjective indicators should be used in conjunction to understand the concept of 'quality of life', which is complex and multifaceted. Each type of indicator contains worthwhile, but complementary information on the quality of life; hence SWB alone should not be used to study a nation's state of social welfare. Following the same analogy, additional criticism on well-being measures stem from Lane (2000), who argues that philosophical arguments and intuition are in favor of the idea that the quality of life cannot be modeled in one single variable (e.g. subjective well-being). Lane refers to the 'classical trinity' the good, the true, and the beautiful, arguing that the quality of life involves 'subjective well-being', 'human development', and 'justice', elements that cannot be ranked nor compared. Hence, subjective well-being alone portrays only part of the concept quality of life.

Andrew Oswald (1997) defends his position by noting that 'measures of happiness such as self-reported well-being may be questionable from a methodological perspective, but they are probably the only ones available to us, and, interestingly, they do raise doubts about routine beliefs'.

Few years later, Daniel Kahneman and Alan Krueger (2006) argue that reports on subjective well-being may be a useful indicator of social welfare, but only if it can be measured in a credible way, which may cause troubles. To name a few, the interpretation of response categories, the respondent's current mood and memory, and the context wherein the questionnaire is conducted, may cause trouble when it comes to credibly measuring subjective well-being. Hence, Kahneman and Krueger conclude, subjective well-being loses relevance in portraying an accurate picture of a nation's average level of the quality of life.

For example, as to the problem of giving different interpretations to response categories, person A might consider himself 'fairly satisfied' whilst person B might consider himself 'very satisfied', however this might be because person A rarely uses superlatives, or person B has a tendency to exaggerate. Therefore, Kahneman and Krueger propose the U-index, which measures the proportion of time that people spend in an unpleasant state. This index has the advantage that researchers don't have to give (arguably arbitrary) numerical values to response categories.

However, there is also lots of convincing evidence supporting the use of subjective well-being data. Helliwell, Barrington-Leigh, Harris, and Huang (2010) conclude that, despite the cultural differences, people value the same (relatively small) set of variables in comparable ways across the globe. Layard (2010) finds that subjective well-being data are highly correlated with i) the reports of friends, ii) plausible causes of well-being, iii) plausible effects of well-being, iv) psychological function, and v) brain activity. As to the plausible factors explaining well-being, Layard notes that both across time and across nations, physical health, employment, family status, income and age are always highly correlated with levels of subjective well-being.

Also Oswald and Wu (2010), using a sample of 1,3 million Americans, find that subjective well-being data are highly correlated (significant at the 1% level) to objective measures as temperature, wind speed, sunshine, coastal land, inland water, public land, etcetera across the United States. Hence, the authors conclude that subjective well-being data contain genuine information about individual's life satisfaction.

2.2 Economic Growth

The table below summarizes the factors that influence economic growth. Though the empirical analysis captures more control variables, for convenience only the most influential factors are discussed below.

Table 2: Overview of factors influencing economic growth.

Variables	BL	D	DLS	GLLS	GHL	J	KK	P	ZK
Economic Freedom - Changes		+	+			+			
Economic Freedom - Levels		+	0		+	+			
Political Rights	-	0	0					-	
Educational Attainment	+ / -4	+		+	+		+		
Fertility	-								
Social Trust							+		+
Initial GDP	-	-	-	-	-		-		-

BL: Barro and Lee (1994), D: Dawson (1998), DLS: De Haan, Lundström, and Sturm (2006), GLLS: Glaeser, La Porta, Lopez-de-Silanes, and Schleifer (2004), GHL: Gwartney, Holcombe, and Lawson (2004), J: Justesen (2008), KK: Knack and Keefer (1997), P: Przeworski (2008), ZK: Zak and Knack (2001).

Economic freedom

Economic growth is particularly interesting in light of this paper as economic growth provides an important potential link between economic freedom and happiness. Gwartney, Holcombe, and Lawson (2004) summarize that the economic growth literature distinguishes three streams that explain differences in countries' income level and growth rates. First, there is the production function approach introduced by famous economist Solow in 1956. Second, there are scholars that emphasize the importance of institutional quality (North, 1990; and Landes, 1998). Finally there are scholars that stress the importance of geographical location, paying special attention to the presence of a tropical climate, an ocean harbor, and the distance to the world's major trading centers (Sachs, 2003). The institutional

[4] The school enrollment rate for males enters positively, for women it does so negatively.

approach addresses the importance of economic freedom in generating economic growth and hence is of special interest here.

Gwartney, Holcombe, and Lawson (2004) find that differences between countries in terms of income and economic growth can be attributed to differences in institutional quality (measured by the index of economic freedom) to a considerable extent. The authors conclude that economic freedom matters as more professional economic institutions tend to allocate resources more efficiently (i.e. foster productivity), and stimulate investment by protecting property rights and promoting free trade.

Using a neoclassical framework, Dawson (1998) makes a distinction between political-, civil-, and economic freedom to analyze whether these types of freedom affect economic growth. Dawson hypothesizes that institutions can either indirectly affect economic growth via investment, directly via total factor productivity, or both. One can test for this by including measures of economic freedom in a growth function that already controls for capital accumulation. Hence, if adding measures (i.e. the level and/or the change) does not impact the coefficient size or significance of the proxy for capital accumulation (for instance the savings rate, or the investment ratio), economic freedom does not work through the investment channel. If adding measures of economic freedom does improve the adjusted R^2 of the model, and lowers the coefficient size of capital accumulation, economic freedom stimulates economic growth through both the investment channel and total factor productivity (Dawson, 1998).

As to the investment channel, Dawson refers to Belsey (1995) who gives two explanations of the fashion in which institutions may affect economic growth. First, secure property rights make sure that the gains from the trade flow to the investor. Second, the enforcement of contracts makes it easier to access credit markets, which clearly fosters investment. Regarding the productivity channel, institutions may directly affect economic growth by providing the infrastructure needed to efficiently expand. This explains the fact that countries with abundance of natural resources sometimes fail to increase their standards of living.

Using panel data to overcome the problem of reverse causation, Dawson finds that for both the investment specification and the productivity specification economic freedom positively enters the regression equation. The results on political- and civil freedom are mixed however, as they do not enter the regression equation significantly. Dawson also finds that growth in economic freedom positively attributes to the level of human capital invested.

Also De Haan, Lundström, and Sturm (2006) discuss theoretical arguments of how economic freedom would benefit economic growth. First, economic freedom fosters market competition, which in turn fosters economic growth as inefficient firms are outcompeted by efficient ones. Second, economic growth stemming from entrepreneurial discoveries is more likely to occur in economies with high levels of economic freedom. Third, savings are expected to flow to their most productive uses in free markets, thereby stimulating economic growth. De Haan et al. (2006) review a great number of studies, concluding that, though a lot of these studies lack some kind of robustness analyses, there is compelling evidence that economic freedom fosters economic growth.

Justesen (2008) focuses on a number of questions left unanswered by De Haan et al. In particular, the direction in which the variables affect each other (causality) is studied, as economic freedom may affect economic growth directly, or indirectly through investment. Justesen finds that economic freedom causes economic growth, and not vice versa. Additionally, Justesen studies the five specific components of the aggregate index of economic freedom, finding that 'government size' and 'regulation' significantly affect economic growth and investment positively. That is, policies that stimulate free market operation and involve less government intervention have been found to have a positive impact on both economic growth and investment.

Educational attainment

Glaeser, La Porta, Lopez-de-Silanes, and Schleifer (2004) also study the institution – growth literature. The authors outline that amongst a vast majority of scholars[5] there is almost a consensus favouring the idea that institutions cause growth. However, a small group of scholars [6] claim the reverse; in their view it is human capital accumulation that causes the economy to grow, which in turn has positive repercussions on the development of institutions. Glaeser, La Porta, Lopez-de-Silanes, and Schleifer conclude that the latter holds, as human capital accumulation proves to be a major source of growth, and that institutions do not matter for growth. The authors conclude that previous findings of the institutions - growth literature are based on conceptual flaws. That is, researchers should focus more on the consequences of institutional changes, with a particular focus on the consequences for actual laws, rules, and compliance procedures. Glaeser, La Porta, Lopez-de-Silanes, and Schleifer claim that countries that escape poverty typically do so through decent policies (although often conducted by dictators). Consequently, as countries grow richer, institutions typically develop themselves. As an example, the authors refer to South Korea and China, where human capital accumulation caused economic growth, which in turn positively affected economic institutions.

Social trust

Knack and Keefer (1997) study the importance of trust by focusing on the relationship between social trust, civic cooperation, and economic growth. Contrary to Putnam (1993), Knack and Keefer find no correlation between associational activity and economic growth. According to Putnam, who compared economic performance and government performance of Northern and Southern Italy, values as cooperation, solidarity, and public-spiritedness are stimulated in associations. These values would supposedly leave a positive footprint on the economy. However, Knack and Keefer find no significance of group membership in either the growth or investment equations. They mention that rent seeking behavior by groups may possibly counteract the positive values on economic growth as proposed by Putnam.

[5] notably Knack and Keefer, Mauro, Hall and Jones, Acemoglu, Johnson and Robinson, Easterly and Levine, Dollar and Kraay, and Rodrik (pp. 2)

[6] Lipset, Przeworski, and Barro

Knack and Keefer provide arguments of how trust would stimulate economic growth. Most importantly, screening and monitoring costs are higher in low trust countries. In countries where one should constantly check whether employees, business partners, and/or governments stick to the contracts, less time and effort is left for production. This may have negative repercussions on a wide variety of factors that drive economic growth. For example, innovation may fall as there is simply less time and money to spend when these production inputs are needed for screening and monitoring. Apart from the screening and monitoring argument, investment may also be higher in high trust countries, as government officials are expected to stick to their statements (Knack and Keefer, 1997). For example, the presence of trust worthy central bankers implies a better investment climate, as this may take away uncertainty about the interest rate.

Knack and Keefer find that social trust is strongly and positively related to economic growth. Additionally, Knack and Keefer find that trust is more important in countries with low initial levels of GDP per capita, since the interaction of trust with GDP enters negative and significantly. This finding supports the theoretical argument that countries with less developed financial systems and less reliable protection of property rights depend more heavily on trust when making transactions. Next to this finding, trust loses its significance in the growth regression when controlled for capital accumulation, suggesting that the savings channel is more important than interpersonal trust.

Also Zak and Knack (2001) focus on the importance of social trust (which is measured by the percentage of the population that indicates that 'most people can be trusted') in explaining economic growth. Following Zak and Keefer (1997), they argue that high levels of trust is beneficial for a country's rate of growth, since trust reduces transaction costs, thereby increasing investment, which pays off in terms of higher growth rates. Proxies for population heterogeneity (for which a distinction is made between social distance and discrimination) such as income inequality, land inequality, and economic discrimination, are all negatively and significantly related to economic growth. Proxies for formal institutions are the corruption index, the contract enforceability index, and the investor rights index. However, when controlled for trust, the coefficient estimates on population heterogeneity and formal institutions fall by about one fifth, but remain significant. Zak and Knack conclude that the finding that trust is significantly positively related to growth supports the view that institutions and population heterogeneity are channels through which trust affects economic growth.

2.3 Social Trust

The table below summarizes the factors that influence social trust. Though the empirical analysis captures more control variables, for convenience only the most influential factors are discussed below.

Table 3: The determinants of social trust (macro-level data)

Variables	**BJ**	**KK**	**ZK**	**T**	**BB**
Economic Freedom	+				

Religiosity				+	-
Group Membership		0			
Income Inequality		-	-		-
Land Inequality			-		
Ethnic Homogeneity		+	+		
Property Rights		+	+		
Other Formal Institutions		+7	+8		
Per Capita Income		+	+		
Primary Education		-			
Secondary Education		+			
Mean years of Schooling			+		
Religion					-

BJ: Berggren and Jordahl (2006), KK: Knack and Keefer (1997), ZK: Zak and Knack (2001), T: Torgler (2006), BB: Berggren and Bjørnskov (2011).

Economic freedom

A piece of work that combines the aspects of trust and institutions stem from the hands of Berggen and Jordahl (2006), who stress the importance of economic institutions and policies. Generally, they hypothesize that economic freedom is positively related to trust. Berggren and Jordahl introduce a framework that introduces the mechanisms through which social trust (trust in people one does not know) is achieved in a free economy. They argue that a priori it is not clear how institutions affect social trust. On the one hand, higher government expenses (on education, health care, police, defense, infrastructure, etc.) can be expected to yield more trust. On the other hand, there are arguments that call for less government intervention in free markets, as a well-developed legal system that protects property rights and enforces contracts in a free economy stimulates social trust. Second, a mechanism through which free international trade can enhance generalized trust was introduced by Montesquie in his Doux Commerce thesis;

'Trade and commerce has a civilizing effect on the manners and mores: people who trade with strangers realize that they can be trusted too'.

Third, regulation of credit-and labor markets may be beneficial in that they for example may create jobs, but may also have a countervailing effect since they intervene in voluntary transactions or may restrict

[7] 'Executive Constraints', and 'Independence of Courts'.
[8] 'Corruption Index', Contract Enforceability', and Investor Rights Index'.

competition. Since arguments in favor and against economic freedom seem reasonable, empirical analysis should clarify the matter.

Running a cross country regression of 51 countries, Berggren and Jordahl find that especially the second element of the index, legal structure and the protection of property rights, the third element (access to sound money) and the fifth (regulation of credit, labor and business) enter significantly and positively in trust – freedom regressions.

Formal institutions and inequality

Knack and Keefer (1997) assess the importance of a number of variables, including group membership, income equality, formal institutions, per capita income, ethnic homogeneity, and the protection of property rights in explaining trust. For a cross country study of 29 countries, the authors find that ceteris paribus people in countries with low social polarization, low income inequality, high levels of the protection of property rights, high income, and high education levels experience higher levels of social trust.

Zak and Knack (2001) employ a number of proxies in an effort to determine the size, significance and robustness of the variables affecting trust. In line with the findings by Knack and Keefer, the observed factors that impact trust can be categorized into 'formal institutions' and 'population heterogeneity'. Proxies for formal institutions (the property rights index, contract enforceability, and the corruption index) are significantly positively related to trust.

Beugelsdijk, De Groot, and Van Schaik (2004) critically asses the findings of both Knack and Keefer (1997) and Zak and Knack (2001) with a particular focus on robustness. They study the robustness of the empirical results in terms of significance, the size of the effect, changes in the set of control variables, and finally in changes in the composition of the sample.

Beugelsdijk, De Groot, and Van Schaik find that particularly the results obtained by Zak and Knack (2001) are highly robust in terms of significance, and fairly robust in terms of the size of the effect. The results found by Knack and Keefer (1997) are less robust. As Zak and Knack extended the sample with 12 countries, Beugelsdijk, De Groot, and Van Schaik suggest the robustness derived by Zak and Knack can be attributed to the inclusion of low trust countries, particularly The Philippines and Peru. Contrary to Durlauf (2002 b), who criticized the empirical trust growth literature arguing that the results found by Knack and Keefer are questionable since they are likely to suffer from an omitted variable bias, Beugelsdijk, De Groot, and Van Schaik therefore conclude that the literature is more disturbed by data limitations than by econometric shortfalls.

Religiosity

Torgler (2006) studies the relationship between religiosity and tax morale, arguing that 30 countries that participated in the 1995-1997 World Values Survey report high levels of tax compliance despite the fact that the probability of being caught is so low that it would be rational to evade tax. Torgler argues that

religiosity contributes to a higher tax morale, as religion (e.g. church attendance and trust in the church) unites people by prescribing rituals, habits, and ways of thought.

More importantly, Torgler hypothesizes that there might be a strong correlation between religiosity and social trust. He therefore checks for interaction between religiosity and social trust, finding that indeed at higher levels of religiosity, social trust is significantly higher. However, the coefficients are so small that religiosity is expected to affect tax morale directly as well as indirectly through trust.

In sharp contrast with the latter finding of Torgler, Berggren and Bjørnskov (2011) conclude that religion is negatively associated with social trust. Using data from the World Gallup Poll, the authors conduct an elaborate cross country analysis, as well as a cross state analysis for the United States of America. The authors find that states with high religious fractionalization exhibit low social trust. Even after controlling for the size of the government and ethnic homogeneity, two factors that economic literature has suggested to be correlated with social trust, Berggren and Bjørnskov still find that religion is an important factor explaining social trust. The authors suggest that religion gives rise to distrust among people of different religions as their beliefs about god and religious rituals do not coincide. Also, according to the authors, non-religious people have a tendency to treat religious people with suspicion.

2.4 Income Inequality

The table below briefly summarizes the relationships found by previous empirical literature.

Table 4: Determinants of income inequality

Variables	**Berggren**	**Glaeser**	**Goldberg and Pavcnik**
Changes in Economic Freedom	-		+
Income per Capita		+	
Income per Capita Squared		-	
Ethnic Homogeneity		-	
Discrepancy in Education levels		+	

B: Berggren (1999), Glaeser (2005), Goldberg and Pavcnik (2006).

Economic freedom

Berggren (1999) points at a possible positive relationship between economic freedom and income equality. He argues that one cannot rightly claim that higher levels of economic freedom go hand in hand with lower levels of income equality on theoretical grounds. This relationship is unclear a priori; even

when redistribution falls, if the poor take advantage of changes in other variables of economic freedom (such as the protection of property rights, or increased trade liberalization) more so than the rich, equality may increase. Hence, the freedom – equality relationship should be empirically tested.

Using four different variables for equality, Berggren tests this hypothesis using OLS regressions controlling for wealth and the illiteracy rate. In all regressions, he finds that the lower the initial level of economic freedom and the higher the change of economic freedom, the higher the level of equality at the end of the sample. Therefore, Berggren concludes that the relatively strong income-growth effect for the poor due to a positive change in economic freedom outweighs a fall in income equality from lower redistributive policies. Berggren mentions that trade liberalization and financial mobility drive these findings, suggesting that poor people are employed in industries that benefit disproportionally large from free trade. Berggren checks his results on five dimensions; autocorrelation, multicollinearity, heteroskedasticity, endogeneity, and outliers, and finds no reason to question his results on either of these grounds.

In contrast to Berggren, Goldberg and Pavcnik (2007) find that developing countries that have opened up their domestic markets have experienced a considerable increase in income inequality in the period 1975 – 2005. Both reductions in trade barriers in the beginning of the liberalization process, and increases in capital mobility in more mature stages, have contributed to more unequal distributions of market income. Unfortunately, the authors conclude that the mechanisms through which trade liberalization affects income inequality in developing countries are time, country, and policy specific, so there are no rules of thumb that explain this observed trend.

Income per capita, education, and ethnic homogeneity

Harvard economist Edward Glaeser (2004) has studied the concept of income inequality and found some striking results. First, as introduced by the famous economist Kuznets in 1955, for a cross section of countries, inequality initially rises with income, and then falls. Glaeser mentions three possible reasons for this phenomenon. First, the size of the government grows as the economy grows, leading to more redistributive policies. Second, civilians become more educated and hence politically skilled as a country develops over time, and third, development transforms farmers into clustered industrial employees who exert power via trade unions.

Compared to countries with comparable income levels, The United States has a relatively unequal income distribution. This can partly be attributed to political factors such as low marginal tax rates and weak labor unions. However, a more detailed comparison between The United States and Europe indicates that ethnic heterogeneity is an important factor explaining the difference in income equality across the Atlantic. Glaeser, as well as Lutmer (2001), and Alesina and Glaeser (2004), find that people are reluctant to transfer money to people of another race. A second explanation for rising inequality in the United States is that inequality has been driven by a growing discrepancy in the demand for skilled versus unskilled workers in the US.

3 Data and Methodology

As stated in the introduction, this paper estimates the relationship between economic freedom and i) life satisfaction, ii) per capita income growth, iii) social trust, and iv) income inequality. The primary interest is in the importance of economic freedom in explaining these variables.

The model is estimated using the method of seemingly unrelated regressions. The SUR model[9] is an application of generalized least squares (GLS), and as it assumes the error terms to be correlated among the individual equations, it gives a more accurate estimation of the standard error of the model. One can reasonably assume that the error term in the four equations is correlated, as the equations sometimes contain identical variables. As the model is estimated using generalized least squares, the interpretation of the coefficients is the same as with ordinary least squares.

The estimated model is specified as follows:

Model 1:

$$\begin{aligned} Life\ Satisfaction_i &= \beta_0 + \beta_1 LN(Income\ per\ Capita)_i + \beta_2 Economic\ Growth_i \\ &+ \beta_3 Unemployment\ Rate_i + \beta_4 Inflation\ Rate_i + \beta_5 Income\ Inequality_i \\ &+ \beta_6 Economic\ Freedom_i + \beta_7 Political\ Rights_i + \beta_8 Social\ Trust_i \\ &+ \beta_9 Ethnic\ Fractionalization_i + \beta_{10} Primary\ Education_i \\ &+ \beta_{11} Secondary\ Education_i + \beta_{12} Tertiary\ Education_i + \beta_{13} Life\ Expectancy_i \\ &+ \beta_{14} Age\ over\ 65\ years_i + \beta_{15} Fertility_i + \beta_{16} Married_i + \beta_{17} Religious_i + u_i \end{aligned}$$

$$\begin{aligned} \Delta LN\ (Income\ per\ Capita)_i &= \beta_0 + \beta_1 \Delta Unemployment\ Rate_i + \beta_2 \Delta Inflation\ Rate_i + \beta_3 Economic\ Freedom_i \\ &+ \beta_4 Political\ Rights_i + \beta_5 \Delta LN(Primary\ Education)_i \\ &+ \beta_6 \Delta LN(Secondary\ Education)_i + \beta_7 \Delta LN(Tertiary\ Education)_i \\ &+ \beta_8 \Delta LN(Life\ Expectancy)_i + \beta_9 LN(Fertility)_i + \beta_{10} Social\ Trust_i \\ &+ \beta_{11} Ethnic\ Fractionalization_i + \beta_{12} Religious_i \\ &+ \beta_{13} LN(Initial\ Income\ per\ Capita)_i + u_i \end{aligned}$$

$$\begin{aligned} Social\ Trust_i = \beta_0 &+ \beta_1 Ethnic\ Fractionalization_i + \beta_2 Estimator\ Control\ of\ Corruption_i \\ &+ \beta_3 Income\ Inequality_i + \beta_4 LN(Income\ per\ Capita)_i + \beta_5 Primary\ Education_i \\ &+ \beta_6 Secondary\ Education_i + \beta_7 Tertiary\ Education_i + \beta_8 Economic\ Freedom_i \\ &+ \beta_9 Religious_i + u_i \end{aligned}$$

$$\begin{aligned} Income\ Inequality_i &= \beta_0 + \beta_1 Ethnic\ Fractionalization_i + \beta_2 Income\ per\ Capita_i \\ &+ \beta_3 Income\ per\ Capita\ Squared_i + \beta_4 Economic\ Growth_i + \beta_5 Unemployment\ Rate_i \\ &+ \beta_6 Inflation\ Rate_i + \beta_7 Economic\ Freedom_i + \beta_8 Political\ Rights_i \\ &+ \beta_9 Primary\ Education_i + \beta_{10} Secondary\ Education_i + \beta_{11} Tertiary\ Education_i \\ &+ \beta_{12} Religious_i + u_i \end{aligned}$$

In line with previous research, the logarithm of income per capita is taken as an explanatory variable in the life satisfaction regression. The advantage of taking the logarithm as an independent variable is that the logarithmic function displays diminishing marginal returns to the dependent variable. Also, the effect

[9] introduced by Zellner, 1962

of the dependent variable on the independent variable never becomes negative, which holds on the case of income per capita. The choice of control variables rests primarily on the abundant set of control variables discussed in section 2.1.

The second equation deserves some extra attention from a methodological point of view. The dependent variable is the natural logarithm of average income per capita at the end of the sample (i.e. the average over 2007 up until 2009, minus the natural logarithm of average income per capita at the beginning of the sample (i.e. 2000 up until 2002). This approximates growth in per capita income in the first decade of the twenty first century (Wooldridge, 2009). It is regressed on the change in unemployment and inflation. These two variables indicate the extent to which the economy has been stable over this period of time, and hence are good explanatory variables for economic growth.

Following De Haan and Sturm (2000), for both economic freedom and political rights it was tested whether the level or the change significantly influences economic growth. As the change in both variables turned insignificant, the level at the end of the sample was included.

Following the production function approach, the accumulation of human capital is incorporated by including the change in the delta of the logarithm of the school enrolment rates. The same applies to life expectancy, as the growth of life expectancy reflects the amount of labor available for production. Fertility, however, is not expected to grow, hence, following Barro and Lee (1994) the logarithm of fertility at the beginning of the sample is taken. The effect of fertility on economic growth is expected to diminish as fertility increases, hence the logarithm is taken.

The remaining variables (social trust, ethnic fractionalization, the percentage indicating being religious) are included in level form. The fourth wave of the European Values Study was taken in 2008, and the fifth wave of the World Values Survey was taken in the period 2005 – 2008.

Finally, initial income per capita (i.e. the average of 2000 up until 2002) is included to check whether rich countries have significantly different growth rates than poor countries. That is, this variables checks for the existence of the 'convergence effect' (Barro and Lee, 1994). The convergence effect implies that low income countries catch up (i.e. grow faster) by for example imitating products and production processes, without bearing the research costs involved.

De Haan and Sturm (2006) discuss the advantages of using the five sub-indices of economic freedom rather than the summary based index of economic freedom. First, a weighted index is arbitrary by definition, and second, not all components relate to economic growth. Several studies of the importance of these components in explaining economic growth yield mixed results. Therefore, it is important to pay attention to the individual components rather than the aggregate index of economic freedom as they may have different impact on economic growth. Hence, model 1b is estimated with the five sub-indices of economic freedom.

Data

The dataset used for conducting the empirical analysis has been constructed using different sources, including Veenhoven's world database of happiness, the world bank, the World Values Survey, the European Values Study, the Fraser Institute, and The Freedom House.[10] All data represent country averages over the three year period 2007-2009. The reason for choosing this period of time is twofold. On the one hand it increases the number of observations (i.e. some data sources have data for 2008, but not for 2009), but on the other the measures still give a reasonably accurate picture of the state of affairs (i.e. averaging over longer periods of time would have raised the question what we are measuring).

Life satisfaction data are used in the analysis as they are less influenced by emotions or other short term influences than happiness data. Country level data on the question 'All things considered, how satisfied are you with your life as a whole these days?' on an 11 step scale are taken as the dependent variable. Additionally, the gini-coefficient was taken from Veenhoven's database.

Purely economic data, such as income per capita, annual GDP growth-, unemployment-, inflation-, and school enrollment rates, life expectancy at birth, and fertility are taken from the world bank database.

The index of economic freedom, provided by the Fraser Institute, functions as an institutional variable. As mentioned in the introduction, economic freedom indicates the extent to which citizens are free from coercion of the government in fields as personal choice, voluntary exchange, competition, and property rights. In support of a better understanding of the concept of economic freedom and its five sub-indices, the five sub-indices will be very briefly elaborated upon. The first sub-index, 'Size of the Government' is best explained by the following passage, taken from the 2011 Economic Freedom of the World Report. *'When government spending increases relative to spending by individuals, households, and businesses, government decision-making is substituted for personal choice and economic freedom is reduced .* The second sub-index relates to the design of the legal system, paying special attention to the rule of law, protection of property rights, enforcement of contracts, independent judiciary, and an impartial court system. The third element of economic freedom relates to the degree to which citizens can rely on a hard currency, as a hard currency is essential to doing business: *'Inflation erodes the value of property held in monetary instruments. When governments finance their expenditures by creating money, in effect, they are expropriating the property and violating the economic freedom of their citizens'.* Next, the fourth sub-index relates to freedom to exchange goods and services internationally, including restraints as tariffs, quotas, hidden administrative restraints, and exchange rate and capital controls'. Finally, the fifth sub-index measures the degree to which governments interfere in markets: '*The fifth area of the index focuses on regulatory restraints that limit the freedom of exchange in credit, labor, and product markets*' (Gwartney, Lawson, Hall, 2011).

[10] For an exact description of the variable measures, consult the appendix to this chapter on page 45.

The index of economic freedom is complemented by the political rights index (Freedom House), that measures the extent to which i) citizens can hold their own government accountable for their actions, ii) the rule of law prevails, iii) there is freedom of expression, religion and association, and iv) respect for minorities and women are guaranteed. Finally, the last institutional variable, the control of corruption index of the World Bank indicates the extent to which public power is exercised for private gain.

Finally, data on ethnic fractionalization is taken from the paper 'Ethnic and Cultural Diversity by Country' by James D. Fearon, which was published in the Journal of Economic Growth in 2003. Ethnic Fractionalization is defined as the probability that 2 randomly selected citizens of a country have a different ethnic background.

Some statistical considerations

During the econometrical analysis, particularly tackling the problem of multicollinearity was a challenge. One might expect multicollinearity in life satisfaction regressions as many variables more or less measure the same, namely the level of development of a country. Though education of course measures something else than life expectancy at birth, one may reasonably expect life expectancy to be higher in countries with higher school enrollment rates, as the country is more developed. In other words, countries with high levels of income can spend more on anything and are therefore expected to have higher school enrollment rates, life expectancy at birth, political rights, etcetera (Wooldridge, 2009).

However, excluding these variables will translate into biased estimators. Therefore, the variance inflation factor (VIF) has been used, to check the level of multicollinearity in the individual regressions. Variables with a variance inflation factor larger than 10 were eliminated from the model, as otherwise the explanatory variables were too much alike.

Second, and importantly, correlation does not mean causality. Hence, this research says little about the direction of the relationship between variables. Sometimes, the direction in which variables affect each other seems clear, for example, higher inflation causes lower life satisfaction as the value of property erodes. Sometimes, however, the direction is less obvious. One could wonder, for example, whether higher levels of education translate into higher levels of income, or whether the reverse holds. Hence, in line with previous research, this cross country analysis aims to identify the existence of relationships among variables at the level of correlation.

4 Empirical Results

Rather than going over each model individually, this section presents the outcomes of the two models simultaneously, as this approach allows one to look at the differences of the models. This section will briefly highlight the most important and robust findings. Tables 5 through 9 on pages 25 and 26 present the regression results of the two models.

Table 5: Results Life Satisfaction

Model	1a	1b
Life Satisfaction		
Log (Income per Capita)	.448***	.438**
GDP Growth	-.020	-.017
Unemployment	-.033***	-.027**
Inflation	-.072***	-.082***
Gini Coefficient	.009	.009
Index Economic Freedom	-.745***	
Size of the Government		-.229**
Legal Structure		-.010
Sound Money		-.235**
Freedom to Trade Int.		-.234*
Regulation		.039
Political Rights	.028	.021
Social Trust	.018***	.014**
Ethnic Fractionalization	.744*	.658
Primary Schooling	.020*	.034**
Secondary Schooling	.011*	.009
Tertiary Schooling	.010*	.014**
Life Expectancy	.038	.029
Age 65 and older	-.056**	-.063**
Fertility	.383**	.288*
Married	-.004	-.001
Religious	-.001	-.001

Table 6: Results Δ LN (Income per Capita)

Model	1a	1b
Δ LN (Income per Capita)		
Δ Unemployment	-.007	-.011
Δ Inflation	-.005	-.006*
Index Economic Freedom	.171***	
Size of the Government		-.007
Legal Structure		.113***
Sound Money		.030
Freedom to Trade Int.		.054
Regulation		-.011
Political Rights	-.025	-.022
Δ LN (Primary Education)	-.242	-.112
Δ LN (Secondary Education)	-.189	-.086
Δ LN (Tertiary Education)	.158	.116
Δ LN (Life Expectancy)	7.458***	6.561***
LN (Fertility)	-.628***	-.656***
Social Trust	.007***	.005***
Ethnic Fractionalization	.163*	.229
Religious	.005***	.005***
Initial Income per Capita	-.217***	-.249***

Table 7: Results Social Trust

Model	1a	1b
Social Trust		
Ethnic Fractionalization	-10.721	-10.960
Control of Corruption	11.033***	1.552
Gini Coefficient	-.065	-.255
Log (Income per Capita)	-4.338	-4.034
Primary Schooling	-.403	.221
Secondary Schooling	.231	.139
Tertiary Schooling	-.070	-.052
Index Economic Freedom	-5.352	
Size of the Government		-3.462
Legal Structure		6.457**
Sound Money		-3.233
Freedom to Trade Int.		-2.103
Regulation		3.635
Religious	-.257***	-.174**

Table 8: Results Income Inequality

Model	1a	1b
Income Inequality		
Ethnic Fractionalization	14.416***	13.036**
Income per Capita	-.000	-.000
(Income per Capita)^2	.000	.000
GDP Growth	.153	.211
Unemployment	-.164	-.106
Inflation	-.536**	-.731**
Index Economic Freedom	2.344	
Size of the Government		1.505
Legal Structure		1.776
Sound Money		-1.784
Freedom to Trade Int.		.021
Regulation		.521
Political Rights	-1.952***	-1.704**
Primary Schooling	.570***	.593***
Secondary Schooling	-.036	-.023
Tertiary Schooling	.134**	.148**
Religious	.087*	.084*

Table 9: Goodness of fit

Model	No. obs	Equation	R^2
1a	48	Life Satisfaction	.88
		Δ LN (Income per Capita)	.83
		Social Trust	.53
		Income Inequality	.56
1b	48	Life Satisfaction	.89
		Δ LN (Income per Capita)	.86
		Social Trust	.60
		Income Inequality	.60

As one can see from table 5, the logarithm of income per capita enters the life satisfaction regressions significantly and positively, which is in line with previous research. Moreover, the coefficient size is approximately equally large, which suggests that the estimate is robust. Other variables that enter both life satisfaction regressions significantly and with the expected sign are unemployment (-), inflation (-), social trust (+), the primary-, and tertiary school enrollment rate (+), age over 65 (-), and fertility (+).

Strikingly, the index of economic freedom enters the life satisfaction regressions strongly negatively. Ovaska and Takashima (2006) have performed a similar study, finding that economic freedom is positively related to happiness, but after controlling for a set of variables not significantly related to life satisfaction. Hence, this result gives new insight about the relationship between life satisfaction and economic freedom.

As to the second equation, per capita income growth, the results are largely in line with previous empirical findings. The index of economic freedom has a strong positive effect on growth. Importantly, the legal structure of a country seems to matter. The size of the government, sound money, freedom to trade internationally, and regulation are not found to significantly impact economic growth.

Political rights are unrelated to economic growth. Also human capital accumulation is not found to significantly explain growth. Life expectancy growth is strongly positively related to growth, however fertility is, in line with Barro and Lee (1994) found to negatively impact economic growth.

Social trust has a positive impact on economic growth. Also the level of religiousness is positively related to economic growth in both models. Finally, poor countries are found to grow faster as the logarithm of initial income per capita is negatively associated with economic growth.

The third equation, which has social trust as dependent variable, finds that control of corruption (a proxy for formal institutions) and the level of religiousness of a country have significant explanatory power. When controlling for the sub-indices of economic freedom however, control of corruption loses significance and legal structure becomes significant.

The final equation, income inequality, finds that ethnic fractionalization strongly contributes to income inequality. Inflation is found to lower the gini-coefficient. Additionally, also political rights are found to promote income equality in both models. The primary school enrollment rate contributes to income inequality, just like the tertiary school enrollment rate and the level of religiousness do.

Reduced form effect

As many variables appear in multiple equations, one may wonder what the overall effect of a specific variable on life satisfaction is. For example, the percentage of people who indicate that they are religious significantly impacts life satisfaction through social trust, which appears in the life satisfaction and the growth regression. Apart from indirectly affecting economic growth through social trust, religiousness affects economic growth directly. Only significant coefficients will be considered, so its direct impact on life satisfaction does not count. Hence, there are 3 channels through which religiousness significantly affects life satisfaction.

One way to find out the importance of this difference in dimensions is to simply calculate the impact a variables has trough different channels on life satisfaction. As to the first channel, through social trust

which in turn has a direct effect on life satisfaction, the effect is -0.174 * 0.014 = -0.002436 (using the results of model 1b). Through the second channel, social trust that in turn affects economic growth, the effect is -0,174*0,005*0,438 = -0,00038106. Through the third channel, religiousness that effects economic growth directly, the effect is 0,005 * 0,438 =0,00219. Summing the results, one may conclude that the overall net effect of religiousness on life satisfaction is -0.0006. Hence, a 1 unit change in the level of religiousness decreases life satisfaction with 0.0006.

The table below is constructed following the same line of reasoning.

Table 10: Reduced form effect on Life Satisfaction

Variable	Overall Net Effect on Life Satisfaction
Δ Inflation	-0.0026
Index of Economic Freedom	-0.6684 (model 1a)
Legal Structure (EF_2)	0.1540
Life Expectancy Growth	0.0287
Fertility	0.2814
Social Trust	0.0162
Religiousness	-0.0006
Initial Income per Capita	-0.1090

As one can see, the negative effect of economic freedom on life satisfaction is partly compensated by its positive effect on economic growth. Importantly, legal structure (the second element of economic freedom) has a significant positive impact on life satisfaction (that is economically relevant) through social trust and economic growth. Also life expectancy indirectly has a positive effect on life satisfaction. The positive effect of fertility falls as it negatively affects economic growth. Social trust gains importance as it also indirectly affects life satisfaction positively through economic growth. Finally, the convergence effect implies a deterioration of life satisfaction in rich countries as their living standards have grown relatively slowly.

5 Discussion

This section discusses the empirical findings by relating them to the literature discussed in section 2.

Life Satisfaction

Income per capita has a small but positive effect on life satisfaction, which is in line with the broad range of previous analysis. As the logarithm is taken from income per capita, one should interpret this as an approximate increase in life satisfaction with 0.00448 (regression 1a) for a 1 percent increase in income per capita.

In contrast to Deaton (2008), who found a negative effect. and Ovaska and Takashima (2006), who found a positive effect, no significant relationship was found between economic growth and life satisfaction. The small, but more importantly, insignificant coefficients on GDP growth suggest that increases in standards of living are unimportant to one's evaluation of life.

The results on the relation between unemployment and life satisfaction are clear: the effect is negative, but small. An increase of the unemployment rate with 1 unit causes a decline in life satisfaction of .033 on average. Inflation, which has a somewhat bigger impact, is found to negatively impact life satisfaction, and is significant in both models. This is an important finding, as earlier research (Dolan, Peasgood, and White, 2008) sometimes was inconclusive about the relationship between inflation and life satisfaction.

The gini-coefficient turns out inconclusive in this study, which is line with earlier research. Some studies find that life satisfaction falls when income inequality rises. Notably, some studies find the reverse, life satisfaction rises as income inequality rises. This contradictory finding is explained by the fact that different studies include different countries (Dolan, Peasgood, and White, 2008). Particularly, it turns out that Latin American countries, despite the fact that they have a relatively unequal income distribution, are relatively satisfied with their lives. On the contrary, former communistic countries, that have a relatively equal income distribution, are relatively dissatisfied with their lives. Hence, the inclusion of particular countries may significantly impact the result.

Higher levels of economic freedom are associated with lower levels of life satisfaction, i.e. more freedom in personal choice, more freedom to compete, and more freedom to voluntary exchange are associated with lower levels of life satisfaction. Moreover, though the coefficients are not standardized (one cannot compare the importance of explanatory variables in explaining life satisfaction as they are measured in different units), economic freedom is meaningful considering the size of its coefficients. If the index of economic freedom rises with one unit, life satisfaction decreases with .745. Hence, this study supports the idea that institutional variables are more important than income per capita, a finding earlier proposed by (Ovaska and Takshima, 2006). Helliwell, and Barington-Leigh (2009) reach a similar conclusion regarding the relative importance of social capital.

A possible explanation for economic freedom negatively contributing to life satisfaction stems from the fact that economic freedom stimulates competition, which implies a need for improvement of either the product of the production process. This involves for example more stress as employment protection, low public health care, and tensions in social relationships are put under pressure by economic forces (Graafland, 2010).

Furthermore, market competition may adversely affect virtues, which in turn negatively affect life satisfaction. Graafland (2010) provides a detailed overview of theoretical and empirical literature on the relationship between market competition and virtues. For example, Macintyre (1985) argues that the concept of virtues might seriously deteriorate the more materialistic (i.e. protection of private property) the society becomes. A fairly substantial number of these virtues, notably excessive consumption, concern

for status, jealously, generosity, social capital, fraud, and stress are negatively affected by market competition. Also Hirsch (1977) notes that i) increased levels of self-interest and ii) greater mobility are two important factors inherent to capitalism that explain eroding levels of virtues. Finally, Layard (2003) claims that greater geographical mobility, praised by proponents of the free market as it contributes to an efficiently functioning economy negatively affects family relations. Hence, the idea that market competition has a significant effect on virtues has deserved much attention among social scientists. However, a more elaborate discussion of how market competition affects virtues is not within the scope of this paper.

Model 1b presents the elements of economic freedom that are found to be negatively correlated with life satisfaction. As can be seen in the third column, the size of the government, sound money, and freedom to trade internationally are negatively and significantly related to life satisfaction. Note that the value attached by the Fraser Institute to elements of the index of economic freedom rises with freedom, hence the result implies that life satisfaction is estimated to be lower in countries with smaller governments (in terms of expenditures, taxes, and government enterprises), in which sound money is readily accessible, and in countries who rely heavily on free international trade.

Especially the fact that smaller governments are associated with lower levels of happiness supports the idea that people are looking for security, which is more likely to be found in societies with a bigger government (i.e. bigger social safety nets). Greenspan notes that market competition conflicts with the human desire for security and stability, most notably poses an ongoing threat of becoming unemployed. Competition leads to negative feelings of stress and uneasiness, which people like to avoid[11].

As to the importance of sound money, though it is found to be negatively correlated with life satisfaction, this does not mean that the reverse holds; as one can see from table 5. That is, access to sound money (which involves low levels of monetary financing) has a negative effect on life satisfaction. Inflation, on the other hand, also negatively affects life satisfaction, most likely as it contributes to uncertainty, thereby discouraging investment, and eroding the value of savings. Apparently, the problems arising from inflation have a negative impact on people's life satisfaction, but at the same time a stable currency comes at a price as well.

Life satisfaction is negatively affected by policies that stimulate freedom to trade internationally. A country has to compete with other countries in order in order to remain in operation, which may require working more hours. Too much work load may negatively affect life satisfaction, as there is less leisure time.

Welsch (2003) concluded that income per capita functions as a mediator for political rights. Also in this analysis, political rights positively but insignificantly enter the life satisfaction regressions. This supports the idea that political rights 'work through income', rather than being an independent explanatory variable itself. Hence, political rights are expected to be high in rich countries.

[11] Greenspan, A. 2007, chapter 13, pp. 327-329

Opposed to political rights, social trust does directly matter for life satisfaction, as it positively and significantly enters the life satisfaction regressions. These findings are in line with earlier work of Helliwell and Bjornskov, who have also found that higher levels of social trust go hand in hand with higher levels of life satisfaction[12] .

Perhaps somewhat surprisingly, ethnic fractionalization is significantly and positively correlated to life satisfaction in model a. Surprisingly, because to the best of the author's knowledge, though there has been research on the importance of ethnic background in explaining happiness, ethnic fractionalization has primarily been used as an explanatory variable in economic growth regressions (rather than life satisfaction regressions). Apparently, countries with higher scores on ethnic fractionalization are ceteris paribus more satisfied with their lives. However, one should be careful making conclusions about the effect of ethnic fractionalization on life satisfaction as it loses significance when the model is estimated with the five sub-indices of economic freedom.

The remainder of the significant variables of the life satisfaction regression are intuitive and in line with previous research. For example, the positive coefficients on school enrollment rates suggest that education is positively related to life satisfaction, as education enables one to develop skills that stimulate one's self-esteem and are valuable in encountering problems.

Also, elderly are less satisfied with their lives. This is in line with empirical results of Deaton (2008), who found that in most countries, life satisfaction declines with age. Deaton finds however, that life satisfaction is U shaped with age in rich countries, a finding earlier suggested by Blanchflower and Oswald (2004).

In line with Smith (Dolan, Peasgood, and White, 2008) no direct significant relationship is found between being religion and life satisfaction. This may be explained by the nature of the data. As illustrated in table 1 and discussed in section 2, individual level data do better at explaining the importance of religion and marriage. Potentially, marriage and religion are not significant in the first regression as individual fixed effects are not controlled for in this macro study. Finally, fertility (i.e. having children) has a significant, positive, and rather large impact on life satisfaction, which is in line with previous research[13].

Per capita income growth

First of all, note that the dependent variable of the per capita growth function, and also some independent variables are specified in logarithmic form, whilst other independent variables are not. The independent variables that are specified in a logarithmic form represent the elasticities with respect to per capita income growth, and the variables that are not specified in logarithmic form represent the semi-elasticities with respect to income per capita growth.

[12] Additionally, additionally Helliwell and Putnam have found that higher levels of trust lower the probability of suicide.
[13] Although having children is found to negatively impact happiness.

Second, as economic freedom is significantly and positively related to per capita income growth, one may conclude that the institutional approach (as illustrated by Gwartney, Holcome and Lawson (2004)), is valid in this case.

With respect to the importance of the explanatory variables, the change in unemployment, is not found to be significantly related to economic growth. However, the change in inflation is, which supports the idea that volatile inflation rates slow down investment. Unfortunately however, inflation is insignificant when estimated in conjunction with the index of economic freedom, suggesting that inflation and the index of economic freedom are (significantly) correlated.

The index of economic freedom significantly contributes to growth, an intuitive result and also in line with previous research (notably Dawson, 1998), De Haan et al. (2000, 2006), Gwartney, Holcombe, and Lawson (2004) and Justensen (2008). The results of model 1a call for a further investigation about the specific sub-indices that are related to economic growth.

Justesen (2008) provides theoretical arguments of how the size of the government may affect growth. The level of taxation is the most important element of the first sub-index of economic freedom, as high taxes decrease return on private investment and hence may in the longer term lead to a preference shift to leisure over work. However, as the level of the size of the government turned insignificant in regressions, none such evidence is found in this empirical study.

It can be derived from the third column that per capita income growth increases when the level of a countries' legal system increases. As the protection of property rights is one of the three pillars of capitalism[14], this result suggest that capitalistic societies grow faster.

Economic theory states that the effect of inflation on economic growth depends on whether inflation was anticipated or not. Unanticipated inflation has a detrimental effect on economic growth, as it discourages long term investment. However, after controlling for the change in inflation, this analysis finds no significant relation between the level of sound money and economic growth.

Per capita income growth and freedom to trade are found to be positively correlated, though insignificantly. Theoretically, opening up to free trade enables countries to benefit from their comparative- and or competitive advantage (s). Belsey argues that freedom to trade internationally enhances the gains from trade (hence, returns on investment are higher). Though there is weak evidence supporting this view, no significant relationships have been found.

Justesen (2008) found that increases in regulation (the fifth element of economic freedom) stimulates growth. Theoretically, the effect of regulation on business is not clear. Justesen (2008) points out that liberalizing markets may have a positive effect on economic growth, as less regulation lowers the costs to enterprises. On the other hand, there are scholars who have found that regulation does stimulate economic growth as labor market regulations and the regulation of industrial relations both have been found to have stimulated growth. Using Granger causality tests, the empirical findings of Justesen shows

[14] The other two being the pursuit of profit and market competition (Saunders, 1995).

that less regulation of labor, credit, and business boosts economic growth. However, this cross country analysis does not provide evidence in support of this claim.

As noted by De Haan et al (2006), many previous studies have found political rights to be insignificantly related to economic growth. However, Barro and Lee (1994) find that political freedom is negatively and significantly related to growth, and suggest further research on this topic. Przeworski (2008) presents a model in which political rights give rise to redistributive policies (i.e. holders of political rights defend their income) that retard economic growth. Particularly, Przeworski argues that, historically, property rights (Przeworski uses the right to vote) were held by the rich, who used them to protect their wealth. As the middle class got access to political rights, economic growth accelerated first, but declined later on. This decline stems from the fact that the poor who also got hold to political rights defend their deprived position through redistribution. As the poor depend on the rich when it comes to investment decisions, growth slowed down moderately. An interesting hypothesis, however this analysis fails to detect any significant relationship between political rights and economic growth, a conclusion which is in line with findings of De Haan et al (2006).

Human capital accumulation was not found to significantly affect economic growth. Education however is likely correlated with observable factors such as per capita income and life expectancy at birth, but also with unobservable factors such as ability, ambition, and effort. In particular, the human capital accumulation variables lost significance when controlled for initial income per capita, suggesting that human capital accumulation has been high in countries with a relatively low initial income per capita.

Life expectancy growth is associated with economic growth. Barro and Lee (1994) note that life expectancy proxies for other aspects than good health that fosters economic growth, such as better work habits and/or higher levels of skills. Indeed, life expectancy growth reflects a rising standard in the level of health care available, hence individuals are expected to recover earlier from illness, or individuals are able to work despite the fact that they are handicapped. One may argue that the question of causality is particularly unclear in this respect, i.e. economic growth may also raise the level of health care and hence increase life expectancy.

Fertility negatively affects economic growth. This finding is in line with earlier findings of Barro and Barro and Lee (Ciconne and Jarocinski, 2008), who argue that there are significant costs involved with raising children. Moreover, one may argue that fertility negatively affects economic growth as it on the hand reduces the level of human capital accumulated by woman, but also reduces female labor participation. Both Knack and Keefer (1997) and Zak and Knack (2001) found that social trust has a positive effect on economic growth. Particularly, social trust remained significant in regressions controlling for population homogeneity and formal institutions. Also these empirical findings suggest that countries with high levels of social trust grow faster, as economic growth is expected to rise with approximately 0,7% for a one unit increase in social trust.

The level of religiousness positively enters both models and is significant at the 1% level. Barro and McClearly (2003) suggest that religious beliefs, irrespective of the religion, promote economic growth as they contribute to the formation of individual characteristics such as thrift, work ethic, honesty, and openness to strangers, all factors that promote growth. They find that practicing religious activities negatively impacts economic growth, however that religious beliefs such as beliefs in heaven and hell positively affects economic growth.

Finally, a high initial level of income per capita slows down economic growth considerably, which confirms the convergence effect. Developing countries catch up with the developed countries as enterprises in developed countries expand or move to developing countries, where the markets still leave room for expansion. The results find that countries whose GDP per capita ceteris paribus rises with 1 percent see their income per capita growth fall by approximately 0,25 percent.

Social Trust

Only two variables enter the social trust equation significantly, control of corruption and religion. Control of corruption here functions as a proxy for the quality of formal institutions. As can be seen from table 5, as the level of control of corruption increases, the level of social trust increases as well. Moreover, when controlled for the five sub-indices of economic freedom, the legal structure turns positive and significant, whilst control of corruption loses significance. These findings are perfectly in line with Knack and Keefer, who refer to the following passage of Hardin:

'In a Hobbesian view . . . trust is underwritten by a strong government to enforce contracts and to punish theft. Without such a government, cooperation would be nearly impossible and trust would be irrational'(Hardin 1992, p. 161).

Note that also Berggren and Jordahl (2006) found a significant positive relationship between economic freedom and trust, though they also found additional elements of economic freedom (access to sound money, and regulation of labor, credit, and business) to be important.

Interestingly, both models suggest that religiousness is an important explanatory variable for social trust. According to model 1a, higher levels of religiousness are associated with lower levels of social trust. The result can easily be explained, for instance from a Calvinistic perspective, which has a negative impression of mankind. Moreover, the finding is perfectly in line with those of Berggren and Bjørnskov (2011), who conclude that amongst others, the negative relationship between social trust and religiosity is due to the fact that religious people distrust those who do not share their beliefs.

The indirect effect of the legal system on life satisfaction

The second sub-index of economic freedom positively affects life satisfaction through social trust and economic growth. That is, social trust is higher in countries with legal systems that defend private property and enforce contracts. Higher levels of social trust have positive repercussions on economic

growth as transactions costs fall. Additionally, economic freedom with respect to a countries' legal structure also stimulates economic growth by attracting capital. Higher levels of income per capita have a positive (although temporary) effect on life satisfaction.

Income Inequality

Higher levels of ethnic fractionalization increase income inequality, a finding completely in line with the findings of Glaeser (2004), who argued that people are reluctant to transfer money to people of another race. Glaeser also found that income inequality initially rises with income, but then falls with income (i.e. the Kuznets curve), however none of such evidence is found in this study. Also, GDP growth is not found to contribute to income inequality significantly. Unemployment seems to lower income inequality, however no statistical conclusions can be derived as the coefficients are insignificant.

Inflation however, lowers income inequality. This finding contradicts with earlier findings of Scully (2002), who found that unexpected inflation gave rise to income inequality. However, Scully mentions that conventional wisdom would expect unexpected inflation to lower the gini-coefficient, as it redistributes money from the rich (i.e. the bondholders) to the poor. Scully refers to previous literature that indeed has found a significant negative relationship between inflation and income inequality[15].

Previous literature has also found significant relationships between economic freedom and income inequality. Berggren (1999) found that positive changes in i) freedom to trade and ii) regulation of credit had a positive impact on income inequality. Goldberg and Pavcnik (2007) found that freedom to trade internationally and capital mobility increase income inequality in developing countries. None of such evidence was found in this empirical study.

Political rights, on the other hand, lowers the gini-coefficient, i.e. the higher the level of political rights, the lower income inequality. Hence, in countries where governments are held accountable for their actions by the public, where minorities are respected, where the rule of law prevails, and freedom to expression and association is guaranteed, income inequality is lower. This finding is in support of the model of Przeworski (2008).

Both primary school enrollment rates and those of tertiary education are associated with higher levels of income inequality. This can be explained by the findings of Gleaser, who found that inequality in the United States is relative high as there is a growing discrepancy in the demand for high skilled versus low skilled workers. A lack of education promotes income inequality in an industrial economy, as the high skilled are in the minority and hence have more bargaining power.

In both models, religiousness is positively and significantly related to income inequality, which supports the idea that religion may serve as a guide in terms of various forms of (and including financial)

[15] Blinder and Esaki (1978), Scully and Slottje (1989).

uncertainty. This finding is interesting in light of the findings of Clarck and Lelkes (2005), who found that subjective well-being of religious people dropped less hard than those of non-religious when they faced a fall in income or became unemployed.

Discussion

Thinking about the importance of life satisfaction research, the thought experiment of Frey and Stutzer (2010) might help. Frey and Stutzer reconsider the very purpose of happiness studies. In contrast to the Stiglitz-Sen-Fitoussi commission, Frey and Stutzer argue that happiness studies should solely contribute to improve the political process in which individuals can express their view on the good life, rather than pursuing the 'old dream of maximizing social welfare'.

Frey and Stutzer's argumentation is fourfold. First, they argue that informational shortcomings, and private interests of legislators or executives may cause harm to aggregate well-being. Second, Frey and Stutzer note that people have preferences for processes over the outcomes; a phenomena that they refer to as procedural utility. For example, the case where the benevolent dictator would maximize a social happiness function, would disregard the procedural utility that individuals derive from participating in the political process, and individuals would experience significant losses in subjective well-being. Third, gross national happiness is not desirable because voters may 'play the system' by stating lower levels of individual subjective well-being once they know that it will influence the outcome of certain political processes. Finally, happiness does not necessarily need to be one's ultimate goal, which may vary from for instance responsibility, freedom, self-esteem, loyalty, or personal development, depending on one's life circumstances.

The negative impact of (sub-indices of) economic freedom on life satisfaction is, given previous research, surprising to say the least. Therefore, this paper is an invitation to further investigate the relationship between life satisfaction and economic freedom. After all, the research on economic freedom has primarily relied on its relation with economic growth rather than on subjective well-being. Moreover, as has become clear from the Easterlin paradox, sometimes it is necessary to dug deeper in the relationship between two economic variables. Further research may include for example more countries, other countries, individual level data, a time dimension, or a different set of control variables to check the robustness of the results.

6 Conclusion

This paper empirically addresses the question whether market competition affects life satisfaction, economic growth, social trust, and income inequality. It contributes to the existing literature by covering more recent data, estimating the relationships simultaneously, and exploring the relationship between economic freedom and life satisfaction, which has had little attention yet.

The most important message of this paper is that higher levels of economic freedom are associated with i) lower levels of life satisfaction, ii) higher levels of economic growth, and iii) higher levels of social trust. Hence, this paper suggests that there is a trade of between economic growth and life satisfaction.

The paper finds that the level of economic freedom is significantly negatively related to life satisfaction. Particularly, the sub-indices 'size of the government', 'sound money', and 'freedom to trade internationally' are found to negatively affect life satisfaction. This may be explained by the fact that market competition leads to higher levels of stress as there is an ongoing need for improvement. Moreover, market competition may negatively affect virtues, which in turn negatively affect one's satisfaction of life, as has been described by Graafland (2010).

Second, this paper finds that the level of economic freedom is significantly positively related to economic growth, a finding in line with Carlson and Lundstrom, Dawson, and Heckelman (Justesen, 2008). Economic freedom promotes economic growth directly via the productivity channel by providing the infrastructure required for economic growth, and indirectly through the investment channel by attracting (foreign) capital (Dawson, 1998; De Haan et al, 2006). This paper finds that especially the legal structure is strongly related to economic growth, suggesting that entrepreneurs favor a business climate in which they can reap the returns on investment.

The positive effect of per capita income on life satisfaction is small compared to the negative effect of economic freedom on life satisfaction. Moreover, both Easterlin (2011) and Di Tella and MucCulloch (2008) find that the positive effect of income per capita on life satisfaction disappears in the long run (which may be explained by habit formation). Hence, one may conclude, the overall effect of economic freedom on life satisfaction is negative.

Third, in line with Knack and Keefer (1997), Zak and Knack (2001), and Berggren and Jordahl (2006), higher levels of formal institutions go hand in hand with higher levels of social trust. This finding is in support of the idea that people trust each other because there is a government that protects private property and enforces contracts in case one breaks with the contract. Hence, one may conclude, a countries' legal structure is found to positively affect life satisfaction, although it does so indirectly through social trust and economic growth.

Moreover, in line with Berggren and Bjørnskov (2011), this paper finds that the percentage of people who indicate that they are religious is negatively correlated with social trust. This may be explained by the fact that they have a tendency to distrust people who do not share the same beliefs. The net effect of religion on life satisfaction appears neutral, however, because this negative effect on trust is compensated by a positive effect of religion on economic growth.

Fourth, no significant relationship was found between economic freedom and income inequality. However, political rights were found to significantly reduce income inequality, just as inflation. In line with Glaeser (2004), ethnic fractionalization adds to income inequality, which is likely to stem from the fact that people are reluctant to transfer money to people of another race. Also the discrepancy between the demand for low- and high skilled add to income inequality, as employers are fighting over the small pool of high skilled employees. Finally, the level of religiousness was found to be positively related to

income inequality, which suggests that an environment in which income is unevenly distributed depends on beliefs in god more so than a society with a developed welfare state.

One may conclude that the opposing views on market competition as illustrated in the introduction both hold. On the one hand, economic freedom indeed fosters economic growth; countries grow richer as they embrace policies that involve more reliance on market competition. The rapid growth of particularly Asian countries (as illustrated by Andrei Schleiffer) are indeed good examples of the fruits of economic freedom. However, in the long run, people do not report higher levels of life satisfaction stemming from higher standard of living, as they get acquainted to more wealth. Importantly, factors relating to social capital or institutional design are more important in explaining measures of well-being.

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Appendix

3A List of Countries

North America	United States
	Mexico
South America	Argentina
	Brazil
	Chile
Western-Europe	United Kingdom
	Spain
	Sweden
	Portugal
	Netherlands
	Norway
	Ireland
	Italy
	Greece
	Finland
	France
	Denmark
	Belgium
	Austria
Eastern-Europe	Ukraine
	Romania
	Russia
	Slovakia
	Slovenia
	Poland
	Moldova
	Latvia
	Lithuania
	Macedonia
	Hungary
	Estonia
	Croatia
	Czech Republic
	Azerbaijan
	Armenia
Africa	Morocco
	Jordan
	Iran
	Ethiopia
Asia	Turkey
	Thailand
	Malaysia
	Korea (South)
	Japan
	Indonesia
	Georgia
	China
Australia	Australia

3B Variables Description

Table #: Variable Description

Variable	Measure	Source
Economic		
Income per Capita	GDP per capita (current US$)	World Bank WDI
Economic Growth	GDP growth (annual %)	World Bank WDI
Unemployment	Unemployment, total (% of total labor force)	World Bank WDI
Inflation	Inflation, GDP deflator (annual %)	World Bank WDI
Income Inequality	Gini coefficient	Veenhoven
Social Capital		
Social Trust	Percentage of people indicating that 'Most people can be trusted'	WVS 5th wave and EVS 4th wave
Married	Percentage of people that are married or living together as married	WVS 5th wave and EVS 4th wave
Religious	% of people indicating that they are religious	WVS 5th wave and EVS 4th wave
Institutional		
Index of Economic Freedom	Index of Economic Freedom and its five individual sub-indices	Fraser Institute
Index of Economic Freedom Growth	Growth rates of Index of Economic Freedom and its five individual sub-indices. Growth rates represent the growth of the average of 2000, 2001, and 2002, with respect to the average of 2007, 2008, and 2009.	Fraser Institute, own calculations
Control of corruption	The index of Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	World Bank WGI
Political Rights	Measures the extent to which i) citizens can hold their own government accountable for their actions, ii) the rule of law prevails, iii) there is freedom of expression, religion and association, and iv) respect for minorities and women are guaranteed.	Freedom House
Other		
Life expectancy	Life expectancy at birth, total (years)	World Bank WDI

at birth		
Ethnic Fractionalization	Probability that 2 randomly selected individuals from a country are of different ethnic groups	Fearon, James D., (2003), 'Ethnic and Cultural Diversity by Country', *Journal of Economic Growth*, Vol. 8, pp. 195-222.
School Enrollment Rate (gross)	i) Primary Education, ii) Secondary Education, iii) Tertiary Education Gross school enrollment rates give the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown.	World Bank WDI
School Enrollment Rate Growth	Growth rate of i) primary education, ii) secondary education, and tertiary education. Growth rates represent the growth of the average of 2000, 2001, and 2002, with respect to the average of 2007, 2008, and 2009.	World Bank WDI, own calculations
Age	Percentage of people in age category '65 and more'	World Bank WDI
Fertility	Fertility Rate, total births per woman	World Bank WDI