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Benefit or burden? Unraveling the effect of economic freedom on subjective well-being

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Abstract:

Does economic freedom increase the utility of an average citizen? Public choice theory in particular has emphasized the shortcomings of governments and voting processes, and the advantages of relying on markets and individual decision making. However, an increasing amount of people are refusing to accept classical measures like GDP as signs of improvements in welfare. Data on subjective well-being allow economists to test if economic freedom really does improve the overall quality of life. However, existing studies have either failed to control for necessary control variables or lacked theoretical foundation. This paper explains economic and psychological reasons why the influence of economic freedom reaches beyond material well-being.

Empirical results from a panel of 86 countries over the 1990-2005 period suggest that economic freedom indeed has a positive effect on happiness. Specifically legal security and property rights, access to sound money, and freedom from excessive regulation are significantly positive throughout the analysis. Regarding freedom to trade, the results show that particularly regulatory trade barriers have a significant negative effect. The positive effect depends on socio-demographic characteristics and is, on average, stronger for poorer countries and left-wing voters, and varies with age.

JEL Codes: A13, D60, H11
Keywords: economic freedom, happiness, life Satisfaction, government size

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1. Introduction:

Does economic freedom increase the utility of an average citizen? Ever since Adam Smith, economists have argued that despite some shortcomings, the market economy is the best way to organize the bulk of economic activity. Public choice theory in particular has emphasized the shortcomings of governments and voting processes, and the advantages of relying on markets and individual decision making. However, increasing shares of the public, as well as several government officials, are refusing to accept classical measures like GDP as signs of improvements in welfare. Therefore, economic analyses need to test if economic freedom can indeed improve the overall quality of life. Data on subjective well-being allow economists to test this hypothesis, and this study is the first to examine this with an adequate set of control variables, a large sample of countries, and an appropriate analysis of the distinct effects that individual components of economic freedom exert on well-being.

It is important to assess how economic freedom (EF) affects well-being, "so that we can estimate the opportunity cost of constraining these freedoms" (Stroup 2007, p.53). In general, there have only been a limited number of studies on institutional influences on subjective well-being (SWB), and these have mostly focused on political variables (Dolan et al. 2008). This paper adds to the literature in several ways. First, it derives a sound economic and psychological framework to support the hypothesis that EF affects SWB through numerous channels besides its pure effect on material well-being. Second, the empirical estimations are run for numerous specifications, estimation methods and measures of SWB, and remain robust throughout. It also expands on existing studies by carefully selecting the appropriate index for EF, identifying control variables through replications of existing studies, and using a larger data set. Third, detailed studies for sub-components of the Economic Freedom Index provide much more detailed information about the proposed effect. Further sensitivity checks reveal the heterogeneity of some effects depending on socio-economic criteria.

There is a long tradition in economics that links EF to prosperity and other positive effects such as higher literacy rates. In the psychological literature, Inglehart et al. (2008) have found that a feeling of freedom is strongly related to higher SWB, and Verme (2009) suggested that self-perceived freedom and control are the strongest predictors of SWB. A number of studies have found a positive effect of decentralization (Bjørnskov et al. 2008), a lower share of government spending as a percentage of GDP (Bjørnskov et al. 2007), and the quality of institutions (Bjørnskov et al. 2010). A study by Frey & Stutzer (2000) on political participation suggests that the freedom to decide independently and participate in decisions raises SWB regardless of the actual outcome. Two studies have also found a positive effect of EF for small samples and a number of SWB measures (Ovaska & Takashima 2006; Gropper et al. 2011).

Akerlof & Shiller (2010) regarded the existence of irrational or boundedly rational behavior as an additional argument for more government intervention. The recent failure of some financial institutions has also lead to a widespread call for more and tighter regulation. However, behavioral economics provides neither clear support for more EF, nor for more government intervention. While consumers do not always act rationally, it should also be acknowledged that people are not necessarily more rational in their role as voters or government agents. Moreover, public choice theory has established that politicians and bureaucrats are also maximizing their own utility and do not simply act as selfless enforcers of aggregated preferences (Niskanen 1971).

Given differing theoretical predictions, SWB data provide an opportunity to examine the effect of EF on an average citizen beyond mere material well-being or GDP. This study uses the Economic Freedom of the World Index from the Fraser Institute as a proxy for EF, which it is the most widely

used indicator in economic research for this purpose. Data from the World Value Surveys (WVS) are used to derive three distinct happiness measures, similar to Bjørnskov et al. (2010); Helliwell (2006) and Ovaska & Takashima (2006). In total, the results from 86 countries between 1990 and 2005 are included in the panel data set. Overall, there is a robust positive effect of aggregate EF on SWB. However, not all components enhance well-being equally. In addition, the relevance of some components depends on socio-economic criteria like age or social-class.

The structure of the study is as follows: In section **two**, I shortly explain the usage and validity of happiness data for economic research and explain the concept and importance of Economic Freedom, its measurement and empirical studies on its effects. Section **three** derives hypotheses about the effect of economic freedom on subjective well-being. Section **four** explains the data set, as well as deriving control variables via a replication of previous studies and the adequate estimation method. Section **five** comprises two parts. First, I show the effect of economic freedom, its components, and all sub-items in the Fraser Index on three separate SWB variables. Then, I run sensitivity checks for different socio-economic variables like age, gender, social status and political orientation. The sample is divided into high and low GDP countries for further evaluations. In section **six,** I draw conclusions from the empirical findings and summarize the implications.

2. Theory

2.1. Happiness

Subjective well-being (SWB) data are a "valuable alternative, but complementary, approach to the revealed-preference framework that dominates the discipline of economics" (Clark et al. 2008, p.56). Satisfaction with life as a whole includes "past, present and anticipated experiences" (Veenhoven 2009, p.5). This means that SWB today is still influenced by past experiences and by expectations for the future. It does not refer to an optimal life, but rather to a degree of satisfaction which is always a subjective appreciation of life.[1]

For psychologists, SWB generally means a "combination of feeling good and functioning effectively" (Huppert 2008). This is associated with having control over one's own life and having the freedom to build efficiently on one's potential. Especially when using panel data, economists should keep in mind the existence of adaption effects. Rabin (1998) highlights how people "tend to underestimate how quickly and how fully we will adjust to changes, not foreseeing that our reference points will change" (Rabin 1998, pp. 33-34). For example, Van Praag & Frijters (1999) conclude that adaption to a different level of income within two years is high, but still far from complete. If aspirations rise with increased well-being, the positive effect of institutional improvements might also diminish.[2]

Comprehensive overviews about factors associated with EF can be found in Frey & Stutzer (2002), and more recently in Dolan et al. (2008). With regards to the effect of income, Clark et al. (2008) provide a detailed summary. Scholars are divided over the question of whether SWB has remained constant over time (Di Tella & MacCulloch 2008; Easterlin 2010, 1995; Veenhoven & Hagerty 2006). It seems plausible that relative income effects or social comparison, as well as adaption effects, are partly responsible for this. Lykken and Tellegen (1996) concluded that 30% of the **variation** in SWB is genetically-determined, while Diener (2009) added that about 30% is caused by mood and affect.

[1] Making a judgment about life satisfaction (LS) requires cognitive work; accordingly, the person who makes such a statement needs the ability to assess his or her own life.

[2] In a matching pennies games, satisfaction depends negatively on the initial aspiration level (McBride 2010).

Thus, there remains about 40% of the variance in SWB that is influenced by measures like improvements in institutional quality, or increases in GDP. It seems to be the design of processes and the institutional design of societies which have an influence on their own, over and above outcomes. People experience increases in well-being "from living and acting under institutionalized processes (…) addressing innate needs of autonomy, relatedness and competence" (Frey & Stutzer 2010, p.567).

2.2. Economic Freedom

For a clear definition of Economic Freedom (EF), it is assumed that "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" (Gwartney et al. 1996). Stigler (1978, p.214) emphasizes "the ability of a man to make his own plans of action (…) not manipulated by other men". This definition does not rule out a role for governments, nor does it justify it. The question is, therefore, if, on average, a larger or smaller scope of EF leads to better results in terms of increases in utility.

What distinguishes EF from similar and related concepts? It does not equal political freedom, as political freedom differs in emphasizing political rights and democracy more strongly than the importance of markets. Milton Friedman stated that in most politically free societies, "something comparable to a free market to organize the bulk of economic activity is used" (Friedman & Friedman 2002). However, there are states like Singapore (or China) that provide extensive EF, but not much political freedom. Nor is EF always equivalent to wealth, as Stigler (1978) has claimed.[3] Emphasizing EF means to assume that individuals themselves, when allowed to interact in market transactions, are, on average, best-suited to decide what is best for them. Historically, increases in EF seem to go along with progress, growth and increased choice (Easton & Walker 1992, Jay 2000).[4]

2.3. Derivation of Hypotheses

This section outlines what this study adds to the existing literature and how EF is linked to SWB beyond the indirect effect it has via changes in GDP. Publicly, growing criticism against equating economic growth with a better quality of life can be observed. For this reason, "there is also the need to expand the investigation of freedom's impact beyond that which it has on economic growth (…) we recognize that one cannot justify economic freedom without showing that it also positively affects a set of specific variables which a consensus identifies as indicators of human progress" (Esposto & Zaleski 1999, pp.185-190). Regarding wealth, most studies examined in the review by Berggren (2003) found a significant positive effect of EF on GDP growth. The main reason cited is that sound institutional frameworks can encourage productive behavior and stimulate economic growth (North 1990). There is in no clear relationship between EF and income inequality (Ashby & Sobel 2007), or even a positive relation between EF and income equality (Berggren 1999; Scully 2002).[5]

[3] In the Soviet Union, especially after World War 1, overall output increased heavily between 1913 and 1938, and might even have outpaced other free economies (Nutter 1962). Growth was especially significant in areas like the steel and armaments industry, mainly for military purposes. Arguably, soviet citizens would have gained more utility from investment in agriculture and consumer products, because at the same time there was a severe lack of daily life products, especially food.

[4] As a simple example, in medieval Europe the choice of spices available consisted very often only of salt (if lucky) and some local herbs (Keay, 2005). Imagine that there is a fixed sum X spent on spices, that was spent solely on salt. Now with free trade, X is divided up between all available spices. While the amount of money spent measured in GDP is equal, the utility of consumers has heavily increased. For a modern attempt to model how free trade changes the composition of goods available in an economy, see Romer (1994).

[5] One reason could be that economic freedom might reduce unemployment, which is among the major reasons for income inequality. Some authors postulate an inverse U-shaped relationship between GDP per capita and income inequality, known as the Kuznets curve.

Regarding other welfare measures, Esposto and Zaleski (1999) find in 6 out of 8 regressions that the quality of life, in terms of literacy rates and life expectancy, increases with more EF compared within and between nations. Norton (1998) shows for about 70 countries that stronger protection of private property, as measured in the EFI, leads to a higher ranking in the United Nations Human Development Index (HDI). Goldsmith (1997) uses the EFI and shows that developing countries which protect economic rights have a higher level of human well-being measured by the HDI. Stroup (2007) shows empirically that EF increases the quality of life, specifically health, education and disease prevention, using a balanced panel data set of up to 104 countries.[6] EF is important in addition to political freedom, because "when democratic political procedures and civil liberties stand as the sole gauge of freedom the door is always left open for the authority of a winning majority to inflict on the losing minority restrictive rules that reduce their economic liberties" (Stroup 2007, p.188).

One of two other studies that specifically regarded EF and SWB was Ovaska & Takashima (2006), who estimated pooled OLS regressions with two SWB measures, happiness and LS. The first is supposed to measure the emotional component and the latter the cognitive component. They showed a mostly negative effect of government size and a consistent positive effect of EF for a smaller sample of countries. Their explanation for this positive effect is that "(…) a higher level of economic freedom increases the chances of individuals to make their preferred choices with less interference by third parties and in particular by those who hold power, to be freer citizens more in charge of their own fate" (Ovaska & Takashima 2006). Gropper et al. (2011) also find a positive effect of EF on a number of SWB measures. The results of their study could be questioned as they relied on GDP as their sole control variable and their computed SWB measure is disputable.

There is an economic and a psychological linkage between EF and SWB. In essence, I want to test whether Adam Smith's insight that certain conditions enabling everyone to pursue his own self-interest really do maximize the general welfare of a society (Frey & Stutzer 2009). Dolan et al.'s (2008) review has shown the very limited evidence surrounding institutional influences on SWB. Economic reasoning positively linking EF and SWB argues that with EF, individuals "(1) exploit a greater selection of beneficial consumer choices that enable them to live longer, healthier lives, (2) attain higher levels of human capital to empower them for exploiting a greater set of potentially profitable productive activities" (Stroup 2007, p.54). Theoretically, it is plausible that EF might have beneficial effects besides increasing material prosperity. In the tradition of Friedman and Hayek, any centralization of resource allocation decisions "diminishes the scope of opportunities available for both consumers and producers in society to adapt and thrive within a dynamic economic environment" (Stroup 2007, p.54).

Well-known economic arguments for limiting EF and promoting government intervention include public goods or the regulation of natural monopolies. These arguments are supplemented by objections from the quality of life perspective (Streeten 1979), which states that: (1) especially with regards to nutrition and health, people do often not act as efficient optimizers; (2) EF might increase growth, but at the price of more pressure at work, more working hours and deteriorating working conditions; (3) Some unable- or disabled people are left out of society, at least in the absence of

With increasing GDP, governments might be forced to increase redistribution and welfare measures to gain votes. Barro (2000) concludes that income inequality slows down growth in poor countries, but bolsters growth in developed countries.

[6] Alesina et al. (2004) also found a positive effect of self-employment on SWB. One reason could be that self-employed people have more perceived freedom and control over their life. Bjørnskov et al. (2007) have used the World Value Survey (WVS) data to show that the effect of share government share as a percentage of GDP is mostly negative. This effect is stronger for poorer countries where governments are more likely to be corrupt. It is alleviated if the government is perceived to be effective and is moderated by socio-economic criteria like gender and political orientation. Private investment as a share of GDP increases with EF (Gwartney 2009).

transfer payments.[7] Akerlof & Shiller added that "(capitalism) does not automatically produce what people really need; it produces what they think they need" (Akerlof & Shiller 2010p. 26). They argue for a larger role for the government because consumption decisions are not made after a fully rational examination of all circumstances, but rather because they 'feel right'.

Without doubt, decisions in markets are far from perfect, but nor are governments or democracies. While not turning "a blind eye to the limitations of human rationality" (Krugman 2009, p.2), it must be acknowledged that people are not necessarily more rational in their role as voters than they are as consumers.[8] People seem to get along quite well with their misperceptions and biases in their daily life (Caplan 2001b, Cosmides& Tooby 1992), but "in a democracy, voters who may have misconceptions about economics can vote for politicians who will implement erroneous and costly policies" (Rubin 2003, p.167). In addition, public choice theory has established that politicians and bureaucrats are also maximizing their own utility (Niskanen 1971) and are subject to political capture, lobbying efforts, and other distorting influences.

A psychologically sound theoretical foundation regarding the mode of action through which influencing variables are related to SWB is necessary to construct a convincing model. In contrast to a classical pessimistic view of freedom (Fromm 1941), modern psychologists mainly assume that freedom has a positive influence on SWB. In fact, Inglehart et al. find "that a growing feeling that one has free choice was by far the most important influence on whether SWB rose or fell" (Inglehart et al. 2008, p.270). They empirically show in a structural equation model that an increase in perceived freedom increases SWB. It was shown that control "acts as a regulator of the intrinsic value that people attribute to freedom of choice" (Verme 2009, p.148). Psychologically, we can conclude that freedom & control is not simply a proxy for happiness, but an upstream construct that causes happiness[9], with people obtaining intrinsic rewards when they engage in freely chosen activities. Besides increasing perceived freedom, EF might also contribute to developments like tertiary education (Esposto & Zaleski 1999), which are supposed to increase control. Another psychological factor that is of importance for SWB is uncertainty (Di Tella & MacCulloch 2008), which could be affected by the legal system, monetary stability, or the degree of regulation.

In summary, there are valid arguments for both views. The results of the few studies so far have been inconclusive and lacking in terms of sample size or consistency in the SWB measures applied. This study uses an enlarged data set with unambiguous SWB measures, rigorously testing for the appropriate econometric approach. It might well be the case that democracies have just the right level of public policy, public good provision and regulation, which is in line with neo-classical equilibrium theory. The second perspective (1a) that is supported by public choice literature assumes that too much government intervention causes problems; and that restricting economic freedom is detrimental to well-being. In addition, there might be an intrinsic psychological value of higher perceived freedom (Inglehart et al. 2008). The third perspective (1b) hypothesizes that there is too much EF and governments need to restrict it to correct market failures (e.g. Akerlof & Shiller 2010). Therefore I summarize the three positions and posit the following three hypotheses up for testing (also displayed in figure 1):

H0: SWB does not depend on economic freedom (the current level being the equilibrium)

H1a: SWB positively depends on economic freedom (the public choice view)

[7] This is an interesting objection because if the absence of poverty is a public good, the effect of transfer payments might not be linear. A basic level of transfers could be SWB enhancing.

[8] http://economix.blogs.nytimes.com/2009/06/09/a-failure-of-regulation-not-capitalism/

[9] In response to claims that freedom and control is simply a proxy for happiness, he makes "freedom& control" the dependent variable, with happiness an independent variable, and repeats the regression. In doing so, ten of the nineteen variables change sign and four of the remaining appropriately signed variables lose their significance. Verme concludes that "freedom& control" is not a proxy for happiness."

Pro-freedom reasoning: Positive value of free decisions, flexibility of decentralized decisions

Contra-intervention reasoning: Public choice reasons against government intervention

H1b: SWB negatively depends on economic freedom (the interventionist view)

Contra-freedom reasoning: Classical market failures (e.g., public goods), irrational consumers

Pro-intervention reasoning: Fairness of democratic decisions and elected governments

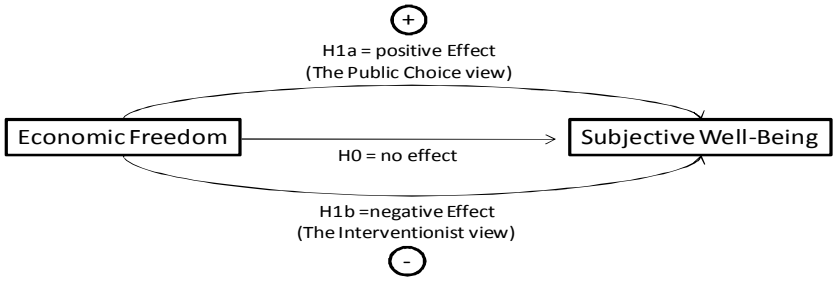

Figure 1: Hypotheses on the effect of economic freedom

3. Data and method

This section pursues three purposes. At first, I describe both the main dependent variable, subjective well-being (SWB), and the main independent variable, the Economic Freedom Index (EFI). Then, I replicate previous studies to establish necessary control variables. Regarding the estimation method, I test if random or fixed effects models are adequate, correct for serial-correlation, and show that the results are robust to different estimation methods.

3.1. Main variables

3.1.1. Dependent variable: Subjective Well-being

For the happiness variables, I use the World Value Surveys (WVS), as they appear to be a good proxy for subjective well-being (SWB).[10] The WVS data are available for 1981, 1990, 1995, 2000, and 2005[11], and are extended by adding data from the European Value Surveys (EVS).[12] In total, there are 356,313 individual observations that are aggregated at the country level. Due to the availability of control variables, up to 227 observations are used for the replication, and 180 for the main regression. "All five waves of surveys included two widely used indicators of SWB—**overall LS** and **happiness**—administered in the same format in equivalent translations in every wave" (Inglehart et al. 2008).[13] Both relate to appreciation of life results, but average happiness **(Mean Hap)** reflects more of a short-term view (Inglehart et al. 2008).

Regarding the aggregation at the country level, while Helliwell (2006) used an arithmetic average, Bjørnskov et al. (2008, 2007) used the percentage of "really happy" people answering in one of the top three categories.[14] While this **Top Three LS** is less prone to outliers and alleviates specific

[10] In contrast to other measures, they provide a clear and simple construct and not a combination that is difficult to interpret like happy life years. Inglehart (2008) has used a combined indicator of happiness and LS. I found it more appropriate to use both separately, distinguishing between differences in the effects on both indicators directly. The New Economic Foundation data generated more data points through imputation. The Gallup data use a different measuring scale that could be more sensitive to cultural influences (Bjørnskov 2008). If studies with imputed or combined SWB variables yield different results (e.g., Ram, 2008), it seems plausible to relate this to the variables they used.

[11] The specific gathering of data took place in 1981 (1981-1984), 1990 (1989-1993), 1995 (1994-1999), 2000 (1999-2004), 2005 (2005-2007). Some countries or observations had to be excluded, either due to irregularities or inconsistencies in data. Official GDP and growth numbers for China seemed to be especially implausible (Bjornkov 2010, 2008). PWT has now measured its own numbers in version 6.3.. I recognized no obvious irregularities in these data. Excluding China did not substantially change any of the following results.

[12] In the data set available on the WVS homepage, some data from the European Value Surveys (EVS) are not included due to legal reasons.

[13] "Life satisfaction was assessed by asking respondents to indicate 'how satisfied, all things considered, they were with their life as a whole these days?', using a scale that ranged from 1 (not at all satisfied) to 10 (very satisfied). Happiness was assessed by asking respondents to indicate how happy they were, using four categories: very happy, rather happy, not very happy, and not at all happy."

[14] Aggregating data might lead to false conclusions if there is an "ecological fallacy". However, such a fallacy is not plausible regarding economic freedom and SWB. Focusing on institutional determinants of SWB, Bjørnskov et al. (2010) show that ecological fallacy did not

cultural differences, it might create a bias by over-weighting wealthier people that tend to be happier, on average. Mean Life Satisfaction (**Mean LS**) is more representative in a sense that it reduces this selection bias, yet there are potential problems regarding outliers. In accordance with Bjørnskov et al. (2010), I avoid this problem by displaying most results for both measures[15].

3.1.2. Independent variable: The Economic Freedom Index

Two institutions have stood out in the past for trying to compose a comprehensive Economic Freedom Index (EFI). The Heritage Foundation has published its "Index of Economic Freedom" since 1995 and the Fraser Institute has published annual "Economic Freedom of the World" reports since 1990 for a considerable number of countries. The composition of the index is based on intensive and documented scientific work (Easton & Walker 1992). I decided to use the Fraser Index, particularly because of its wide usage in the related literature, and because it "is preferable on methodological grounds (…and) methodologically more transparent to the reader" (Cummings 2000, p.63).[16] In contrast to other indexes, it tries to use objective data instead of surveys and value judgments wherever possible, and the authors assert to never subjectively alter raw data themselves (Gwartney & Lawson 2001). Most recent studies have used this Index (e.g. Faria & Montesinos 2009; Justesen 2008; Stroup 2007), with ones that have used both finding results which were similar in direction (e.g. Goldsmith 1997; Norton 1998).

It has been available since 1990 for a considerable and increasing number of countries. All raw data are transformed into a 1-10 scale for each item, and are then combined with aggregated components. A society scores high on an item if "economic activity is coordinated by personal choice, voluntary exchange, open markets, and clearly defined and enforced property rights" (Gwartney 2009, p.939). The ideal situation in this rating is a society with a limited government that mainly protects property rights and assures the arrangement of public goods and a sound money system. Here, I am impartial about which factors are positive or negative. Figure 3 shows the bivariate relation of the aggregate index with Mean LS and Top Three LS, providing the first impression of a seemingly positive relationship with SWB.

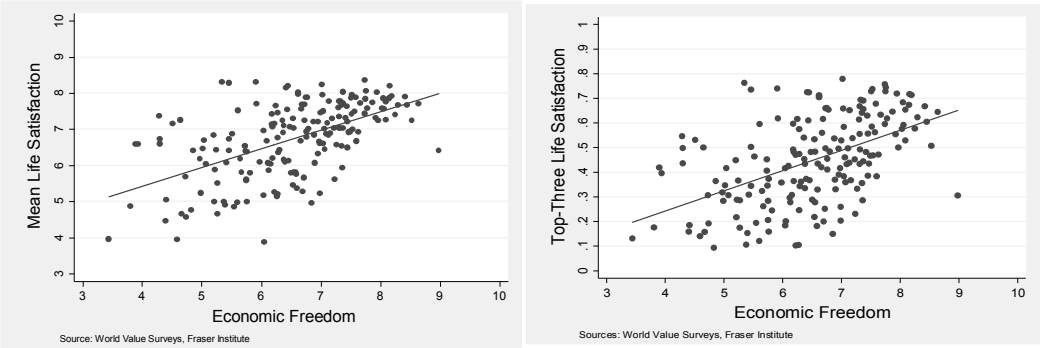

Figure 2: Bivariate relation Economic Freedom and Mean Life Satisfaction/ Top Three Life Satisfaction

3.2. Replication of former studies to derive control variables

To assure that there are no data errors and to derive the appropriate control variables for the main estimations, I replicate a previous study by Bjørnskov et al. (2007) using my larger data set. Ram (2008) has recently challenged their results that happiness decreases with an increasing **government share** of GDP. However, he expanded his data set by aggregating SWB variables from various data

pose a problem; individual and aggregate results were very highly correlated. Fischer (2009) suggests that aggregate measures "appear more robust to differences in national cultures".

[15] Ferrer-i-Carbonell & Frijters (2004) show that treating LS data as cardinal or ordinal does not affect the direction and significance of influential explanatory variables. It seems that the length of the rating-scale is the most important factor for producing reliable results (Kroh 2009; Saris et al. 1998). The reliability of panels appears to be higher than using pure cross-sectional studies (Fischer 2009).

[16] The overall correlation with the Heritage Foundation index is s considerably high at 0.8259.

sources that include averaged and imputed data from the New Economics Foundation. I start using pooled OLS estimations to re-examine the issue.

As control variables, I first used the logarithm of GDP per capita (**Log GDP**)[17], derived from the Penn World Table (PWT), Mark 6.3 in constant prices using a Laspeyres-index. The PWT data are especially useful because all figures are given in international PPP prices. The effect of **Log GDP** is clearly positive and highly significant for all subjective well-being (SWB) variables. **Belief in God**[18] is used following Helliwell (2006), who applied a measure of the intensity of religious beliefs. **Social Trust**[19] is an important control for honesty and trustworthiness, since many studies indicate it affects the quality of formal institutions (Bjørnskov et al. 2010). It is supposed to reduce the uncertainty and complexity people face when making everyday decisions (Luhmann 1979). Economically, this reduction increases the efficiency of markets via lower transaction and information costs.

In accordance with the literature, I also include **Openness to trade,** which is measured as the sum of exports and imports as a percentage of GDP.[20] The **Investment price level** relative to the US investment price level "proxies for a country's business climate as higher values reflect a stronger domestic demand for investment goods" (Bjørnskov et al. 2007, p.273). I add period fixed effects to the model to "take care of joint macro trends over time, such as business cycles, which also alleviates some effects of the changing country composition of our sample across waves" (Bjørnskov et al. 2010, p.422). Regional dummies for South America, Asia and post-communist countries have been shown to exhibit distinguished characteristics only partly absorbed through the controls, and constitute a good way of accounting for unobserved effects (Fischer 2010).

Test	Government Share and interactions				
Dependent variable	Mean LS	Top 3 LS	Mean Hap	Top3 LS	Top3 LS
Social Trust	1.6494*** (.4269)	.4000*** (.0797)	.2947** (.1382)	.4453*** (.0749)	.4453*** (.0749)
Believe in God	.0896** (.0374)	.0176*** (.0065)	.0409*** (.0104)	.0305*** (.0062)	.0305 (.0002)
Openness to trade	.0005 (.0015)	.0001 (.0002)	.0002 (.0004)	.0003 (.0002)	.0003 (.0002)
Investment Price Level	.0083*** (.0020)	.0016*** (.0003)	.0044*** (.0005)	.0015*** (.0003)	.0015*** (.0003)
Log GDP per capita	.4663*** (.0852)	.0684*** (.0122)	.0451* (.0269)	.0607*** (.0126)	.0572*** (.0133)
Government Share / GDP	-.0261*** (.0086)	-.0040*** (.0013)	-.0081*** (.0024)	-.0097*** (.0020)	-.0032** (.0014)
Government Share * World Bank Democracy Index				.0027*** (.0007)	
Government Share * World Bank Government Effectiveness					.0030*** (.0007)
Regional and Period Dummies	Yes	Yes	Yes	Yes	Yes
Observations	227	227	227	207	207
Countries	93	93	93	85	85
R squared	0.6409	0.6337	0.5370	0.6743	0.6795
F statistic	36.54	40.93	20.21	44.32	49.90
RMSE	.64931	.11275	.19081	.10473	.10371

Table 1: Pooled OLS Regression testing the effect of Government Share Robust standard errors are in parentheses. All coefficients rounded to four decimals places. * (**)[*] denotes significance at p <.01 (p <.05) [p <.10]. Government effectiveness averaged over time**

[17] Figure A2 in the appendix shows a much clearer linear relationship between SWB and the logarithm than with the untransformed numbers. A linear relation between the dependent and independent variables is an underlying assumption of regression analysis.

[18] The question was "How important is god in your life", with 10 being very high and 0 very low. It seems to be relatively unimportant which kind of religion people belong to.

[19] The percentage of people answering 'Yes' to the WVS question: "Do you think in general most people can be trusted?"

[20] It was mentioned that this measure might be correlated with population size. Because it is not at the heart of this analysis, this is not further examined. The factor is not robustly significant in the following regressions.

The variable used here to measure the level of involvement the government has in the economy is simply the share of general government spending in GDP, identical to the one used by Bjørnskov et al. (2007). This is a simpler measure than the government size factor in the EFI. I omitted the dummy for post-communist countries due to very high collinearity[21]. Inglehart et al. (2008) have shown that the effect of communism is declining and its effect is largely captured by the other variables.[22] These results support former findings and reject the conclusions from Ram (2008). **Government Share** is consistently negative and highly significant. A higher score in a **Democracy Index** and **Government Effectiveness** attenuates the negative effect, as in Bjørnskov et al. (2007).

Overall, the results support the validity and consistency of the data set. **Log GDP** is shown to be consistently significant and will be used; likewise **Belief in God**, **Social Trust**, the **Investment Price Level, Government Share,** as well as the region dummies and period fixed effects.[23] **Openness to Trade** on the other hand did not prove to be significant in any estimation, with and without EF. It is also partly captured by a component of the EFI. Tables 2 and 3 provide an overview of the variables.

Variable	Observations	Mean	Std. Dev.	Scale	Source
Mean of Life Satisfaction	180	6.715	1.024	(0, 10)	WVS + EVS
Top 3 Life Satisfaction in %	180	0.448	0.177	(0, 1)	WVS + EVS
Mean of Happiness	180	2.051	0.269	(0, 4)	WVS + EVS
Social Trust	180	0.287	0.154	(0, 10)	WVS + EVS
Belief in God	180	7.178	2.008	(0, 10)	WVS + EVS
Investment Price level	180	66.521	26.964	(0, 100)	PWT 6.3
GDP per capita (PPP adjusted)	180	14,758.100	10,904.160	(0, ∞)	PWT 6.3
Government Share in %	180	17.015	7.016	(0, 100)	PWT 6.3
Economic Freedom Index	180	6.515	1.105	(0, 10)	Fraser Institute
(1) Size of Government	180	5.659	1.586	(0, 10)	Fraser Institute
(2) Legal System& Property Rights	180	6.501	1.699	(0, 10)	Fraser Institute
(3) Sound Money	180	7.343	2.518	(0, 10)	Fraser Institute
(4) Freedom to Trade Internationally	180	6.938	1.188	(0, 10)	Fraser Institute
(5) Regulation	180	6.137	1.169	(0, 10)	Fraser Institute
Economic Freedom Heritage	134	61.652	9.797	(0, 100)	Heritage Foundation
Only used for replication					
Openness to Trade	180	67.173	46.293	(0, 100)	PWT 6.3
Democracy Index	207	2.327	.757	(0, 4)	World Bank
Government Efficiency	207	2.290	.834	(0, 4)	World Bank

Table 2: Overview about variables in data set, numbers for main regressions with 180 observations for which all variables are available

Correlation table	1	2	3	4	5	6
1 Social Trust	1.00					
2 Belief in god	-.57	1.00				
3 Investment Price level	.42	-.27	1.00			
4 GDP per capita	.45	-.50	.46	1.00		
5 Government Share in % of GDP	-.10	-.09	-.17	-.30	1.00	
6 Economic Freedom Index	.37	-.24	.43	.63	-.33	1.00
Mean of Life Satisfaction	.37	-.11	.45	.61	-.45	.55
Top 3 Life Satisfaction in %	.42	-.10	.49	.59	-.43	.51
Mean of Happiness	.24	.10	.48	.33	-.45	.54

Table 3: Correlation structure of variables in baseline specification

[21] This dummy is strongly correlated with a high government share, a low Investment price level and little belief in god. Using the RE AR(1) model introduced later, government share is still significant even when the dummy is included. This did not change any of the main results.

[22] The strongest correlation with the dummy is bad health (0.57). The main reason for the negative effect appears to be caused by negative health effects during the time of communism. Reasons might have been inadequate nutrition or unhealthy jobs. For a study using SWB data, it is not appropriate to also use a subjective health measure. Psychologically, it is too closely related to Life Satisfaction and Bertrand & Mullainathan(2001) have shown problems when applying similar subjective latent variables on both sides of a regression equation.

[23] Regional dummies for Asia and South America. Much of the effect between regions could be due to differences in the feeling of choice: "Latin Americans ranked much higher here than did the citizens of ex-communist countries: 45% of the former said they had ''a great deal of choice'' (9 or 10 on a 10-point scale) as compared with 21% among the latter group". Economic freedom is still significant in two out of three regressions when including an ex-communist dummy.

3.3. Model Specification

Now I add the **Economic Freedom Index (EFI)** as the main independent variable to the matrix X_{jit}. Ferrer-i-Carbonell & Frijters (2004) propose a more careful selection of the adequate regression method in happiness research. To assure consistency and unbiased estimates, I test different configurations step-by-step using the **Mean LS** variable. The unbalanced panel data set allows regression analysis with both a spatial and temporal dimension. Accordingly, it might be more appropriate to estimate a fixed or random effects model instead of simple pooled OLS (Gujarati 2003). The Hausman test examines differences in the variance-covariance structures. The results show no significant difference between both models when using either **Mean LS** or **Top Three LS** (p=0.34/ 0.50). Accordingly, it is appropriate to use the more efficient **RE model.**[24]

Serial or auto-correlation has been widely neglected in the happiness literature to date. With serial correlation, OLS estimators are still efficient, but the standard errors are biased, which may cause the t and F-statistics to not be valid anymore.[25] With panel data, it seems highly plausible that SWB in period t is influenced by SWB in earlier periods. People do not just choose a new level of LS, but rather adjust their level from the last period to new circumstances. The residual plot in the regression using **Mean LS** shows signs of negative auto-correlation. The LBI test statistic from the unbalanced unequal spaced panel data (Baltagi & Wu 1999), a modified version of the Durbin-Watson test, also suggests that successive error terms are, on average, negatively correlated. This is further supported by the Wooldridge test for first-order serial correlation in panel data being significant at the 5% level (Wooldridge 2002, pp.282-283). Accordingly I append the **RE model** with an AR(1) correction for serial correlation for the following regressions.[26]

Table A2 in the appendix demonstrates that pooled OLS, random effects, and random effects with first-order autocorrelation yield nearly identical coefficients and standard errors for the main variable of interest EF. It has a significant and positive effect in all equations. A partial leverage plot reveals no significant outliers which could bias the results. Multi-collinearity does not seem to be large for the chosen model either, with all variance inflation factors (VIF) below 3.

4. Results and discussion

4.1. The effect of economic freedom

This section displays the results regarding Economic Freedom and its components for three SWB variables. **Mean LS** is the most representative, **Top Three LS** alleviates the cultural response bias, and **Mean Hap** is supposed to measure more short term satisfaction and feelings.

The **Economic Freedom Index (EFI)** is comprised of 5 components and 42 single items. A significant positive sign for the **EFI** shows that EF increases SWB. It has been argued "that the components of economic freedom work together like a team (…) If any of the key parts are absent, the overall effectiveness is undermined" (Gwartney 2009, p.940). Hence, the interpretation for the individual components and items is more subtle. Items might only exert a (positive) effect in connection with other parts. Non-significance could have several meanings: it could mean that this item or component is not important, that it is only important in combination with others, or that it

[24] The inclusion of region dummies "in a country-random effects model appears to be a sufficient substitution for omitted country fixed effects" (Fischer 2010, p.1). The only coefficient that changes significantly when using FE was the Social Trust coefficient.The coefficient of Economic Freedom is larger (more positive) when using the FE specification.

[25] With positive auto-correlation, the standard errors would be under-estimated, possibly showing significance for insignificant coefficients. With negative auto-correlation, an over-estimation of standard errors could lead to too many rejections of the null hypothesis.

[26] In the RE AR(1) model the disturbance term $\varepsilon_{it} = p_i \varepsilon_{i,t-1} + z_i$ follows a first-order Gauss-Markov process

only affects one domain of overall satisfaction. Examining all these relations exceeds the scope of this paper. Therefore, I do not interpret non-significance and focus on significant items. The Fraser Institute gives high ratings if a country provides more EF. Therefore, I interpret a significant and positive component or item as an indicator of well-being enhancing policies or institutions, and a negative effect as the opposite.

The partial correlations of the economic freedom components in table 2 show that, holding GDP constant, the indicators themselves are mostly positively related. The exception is that holding GDP constant, a positive rating in (**1) Government Size** seems to be negatively related to (**2) Legal System & Property Rights**. This is in support of Gwartney (2009), who has argued that countries with a large government can nonetheless exhibit a high degree of EF when they succeed in protecting property rights. The simple correlations with SWB are all positive except with regards to (**1) Government Size**, which seems unrelated at first sight.

Correlation Table	0	1	2	3	4	5
0 Economic Freedom Index	1.00					
1 Size of Government	0.82 (0.49)	1.00				
2 Legal System& Property Rights	0.69 (0.40)	0.51 (-0.23)	1.00			
3 Sound Money	0.87 (0.83)	0.61 (0.16)	0.49 (0.31)	1.00		
4 Freedom to Trade Internationally	0.68 (0.47)	0.45 (0.02)	0.55 (0.14)	0.54 (0.27)	1.00	
5 Regulation	0.23 (0.79)	0.27 (0.45)	-0.12 (0.22)	0.02 (0.52)	-0.32 (0.34)	1.00
Mean of Life Satisfaction (Mean LS)	0.54	-0.01	0.49	0.47	0.40	0.40
Top Three Life Satisfaction in %	0.50	-0.03	0.49	0.42	0.37	0.38
Mean of Happiness (Mean Hap)	0.52	0.16	0.34	0.46	0.25	0.48

Table 4: Correlation table for components of Economic Freedom
Partial correlations in parentheses (holding GDP constant). Calculated for 180 observations that are common to all indices.

To maintain clarity and lucidity, from now on only the coefficients and significances for the EF variables are displayed. The regression specification includes the controls and dummies as derived before. Table 3 shows the results for the **EFI** and its five components. Initially, the Economic Freedom Index is consistently significant and enhances well-being, which is in line with the results of Ovaska & Takashima (2006). It is also robustly significant for **Mean LS** and **Mean Hap,** at the 1% level, and for **Top 3 LS,** at the 10% level. According to this, we can reject **H0** that EF has no effect. We also reject **H1b** that citizens would be better off with more intervention and less EF. The evidence is in support of **H1a**, which assumed a positive effect of more EF. Log GDP remains highly significant in all regressions, showing that the positive effect is additional to mere wealth or growth effects (not displayed).

The (**2) Legal System & Property Rights, (3) Sound Money**, and (**5) Regulation** components are robust and positively significant for all SWB variables. A high value for (**5) Regulation** means less regulation. (**1) Size of Government** fails to show its significance, a fact that was anticipated by its low correlation with the index. However it has a significant partial correlation with (**5) Regulation**, which could mean that smaller government size is related to less regulation. (**4) Freedom to Trade Internationally** is significant for Mean LS. It is possible that after the establishment of the World Trade Organization, the level of freedom in global trade has already reached a substantially high level between most countries. Indeed, the standard deviation of the ratings in this section has decreased from 1.44 to 0.88 from 1990 to 2005. Non-significance of components or items does not mean that these are not important, i.e., they could still be in combination with other components or items (Gwartney 2009).

More EF can lead to more freedom of choice, as well as via other effects like higher tertiary education and better health, to more control. Perceived freedom & control over one's own life is the most important psychological influence of SWB. It seems more important for citizens to make

consumption choices based on their individual preferences rather than being protected from poor choices, on average. Obviously, there are public good issues, externalities or other reasons for intervention. However, despite these theoretical reasons, while government intervention and limitations of EF might increase well-being, the current level of intervention seems to be above the SWB optimizing level.

The results imply that public choice theories seem correct in their emphasis of political self-interest (Niskanen 1971), the role of bureaucracies (Luechinger et al. 2007; Vaubel 1996), rent-seeking (Tullock 1980), rational ignorance or irrationality (Caplan 2001a), and capture by lobbyists and interest groups (Downs 1957). The significance of EF can be seen as support for the notion that although it is theoretically possible that the government can improve welfare through intervention, it does not mean that it will do so (Tullock 1998).

Test	Economic Freedom		
Dependent variable	Mean LS	Top 3 LS	Mean Hap
Economic Freedom Index	.2100*** (.0651)	.0222* (.0120)	.0663*** (.0197)
1 Size of Government	-.0394 (.0353)	-.0054 (.0066)	-.0040 (.0109)
2 Legal System& Property Rights	.0983** (.0470)	.0148* (.0086)	.0302** (.0144)
3 Sound Money	.0702*** (.0213)	.0069* (.0041)	.0207*** (.0065)
4 Freedom to Trade Internationally	.0876* (.0496)	.0111 (.0091)	.0139 (.0151)
5 Regulation	.1362** (.0554)	.0186* (.0101)	.0497*** (.0167)
Method	AR(1) RE model	AR(1) RE model	AR(1) RE model

Table 5: Test of Economic Freedom and its components for three dependent SWB variables.
All regressions include region and time dummies and a constant term. Parantheses contain standard errors; * (**)[*] denotes significance at p <.01 (p <.05) [p <.10].**

4.1.1. Size of Government

De Haan (2000) has argued against the inclusion of government size and specifically taxation in an index of EF.[27] The findings here support this as the only significant item in (**1) Government Size** is transfers and subsidies. It is negative, contrary to the rating from the Fraser Institute, where a positive effect should be reflected in a higher rating. In this case, the intervention into EF might be positive as some level of welfare spending could be considered as a public good.[28]

The (**1) Government Size** component might still be important for assessing growth or other variables of interest. The idea to include a measure for government interference may be a good one, but it might not be the right measure. Even item 1A, which is supposed to measure "General government consumption as share of total consumption", fails to be significant, while using the "Government Share as percentage of GDP" variable from PWT 6.3 is robustly significant, similar to Bjørnskov et al. (2007).[29] There are good arguments for including a component for government size. Its exact composition and relationship to other components should be analyzed in more detail in

[27] Obviously looking at very disaggregate components does not provide clear evidence of a causal relationship to life satsifaction. Still it presents preliminary explanations that provide more detailed and sometimes surprising information than just looking at the aggregate index. Looking at the specific transmission mechanisms of each component would be beyond the scope of this study and should be regarded in more detail in future research

[28] For its interpretation, we should remember that the effect of GDP is being controlled for. Therefore, it is very well possible that transfers and subsides have a negative impact on GDP, but given this negative effect, they do raise average utility. Estimating the net effect of welfare measures is one of the areas that Dolan et al (2008) have identified which needs further examination.

[29] Testing with only one of both or both together always yielded the same results. The PWT variables remains significant.

further research. With regards to the effect on SWB, the measure from Bjørnskov et al. (2007) seems to capture the effect of government size more accurately.

Test	Government Size		
Dependent variable	Mean LS	Top 3 LS	Mean Hap
1 Size of Government	n.s.	n.s.	n.s.
1A General government consumption as share of total consumption	n.s.	n.s.	n.s.
1B Transfers and subsidies as a share of GDP	**- .0813*** (.0300)**	**n.s.**	**n.s.**
1C Government enterprises and investment as a share of gross investment	n.s.	n.s.	n.s.
1D Top marginal tax rate	n.s.	n.s.	n.s.
1Dii Top Marginal Income and Payroll Tax Rate	n.s.	n.s.	n.s.
1Di Top Marginal Income Tax Rate	n.s.	n.s.	n.s.
Method	AR(1) RE model	AR(1) RE model	AR(1) RE model

Table 6: Test of component 1_Size of Government
All regressions include region and time dummies and a constant term. Parantheses contain standard errors; * (**)[*] denotes significance at p <.01 (p <.05) [p <.10]. n.s. denotes a non-significant value.**

4.1.2. Legal System & Property Rights

The (**2) Legal System & Property Rights** component is robustly significant and positive, supporting hypothesis **H1a**. This is in line with Goldsmith (1997), who has shown that developing countries protecting economic rights have a higher level of human well-being. A Hobbesian line of thinking implies that without property rights "every commercial agreement is at risk. Individuals cannot enter mutually beneficial arrangements because, absent an enforcement mechanism, they cannot make binding commitments to one another (…) it is hard for anyone to gain an ample level of material comfort" (Goldsmith, 1997, p.30). Insecurity in this area can prevent people from dealing with strangers, or even if they do, leave them unsatisfied with a constant feeling of uncertainty. This is indicated by the high correlation of 0.5623 with social trust in societies. In addition, a lack of established property rights prevents Coasian solutions to problems like externalities, and is often cited as a reason for the "tragedy of the commons" (Hardin 1968). Legal security and the right to enforce one's rights should also contribute to a "feeling of freedom & control" (Verme 2009), especially increasing perceived control.

Norton (1998) stated that the Fraser Institute measures "are the most comprehensive and the most subtle" for assessing legal security and property rights. This is further validated here by the means of nearly all items being positively related to SWB, with at least two significant results. The existence of a reliable and impartial judicial system enables citizens to feel like valuable and equal members of society, who can enforce their granted rights. These two items should also serve as protection against discrimination and corruption. Tolerance and equal rights for fringe groups and minorities is positively significant for all dependent variables. Besides its importance for producers, it could also be related to a greater variety of intellectual property in society. The absence of military influence is also a strong predictor of SWB, probably because it is related to a long and stable political culture in the country.

Regarding the effect on SWB, the Fraser Institute appears to be on the right path in focusing particularly on 'protective rights' provisions, i.e., owners are free to do as they will with their own property. This is opposed to 'intrusive rights' which 'guarantee' some scarce goods such as food or health care, but often limit economic freedom through taxation, price controls or regulation.

Test	Legal System& Property Rights		
Dependent variable	Mean LS	Top 3 LS	Mean Hap
2 Legal System& Property Rights	.0983** (.0470)	.0148* (.0086)	.0302** (.0144)
2A Judiciary independence	n.s.	.0139* (.0078)	.0199* (.0117)
2B Impartial courts	n.s.	.0175** (.0079)	.0376*** (.0129)
2C Protection of intellectual property	.1656*** (.0502)	.0237** (.0093)	.0319** (.0138)
2D Military in Politics	.1034*** (.0348)	.0157** (.0063)	n.s.
2E Law and Order	n.s.	n.s.	n.s.
2F Legal enforcement of contracts*	n.s.	n.s.	n.s.
2G Regulatory restrictions on the sale of real property*	n.s.	n.s.	n.s.
Method	AR(1) RE model	AR(1) RE model	AR(1) RE model

Table 7: Test of component 2_ Legal System& Property Rights
All regressions include region and time dummies and a constant term. Parantheses contain standard errors; * (**)[*] denotes significance at p <.01 (p <.05) [p <.10]. n.s. denotes a non-significant value. * Sample size for legal enforcement of contracts only N= 52**

4.1.3. 3 Sound Money

Milton Friedman always emphasized the importance of a stable money supply, thus allowing the price movements in markets to effectively deliver relevant information. Inflation can theoretically be treated like a tax on holding money, with distorting effects on market efficiency. There have been some studies that found a negative effect of inflation on SWB, mostly comparing its impact with unemployment and a kind of Phillips-curve trade-off (Di Tella & MacCulloch 2005; Di Tella et al. 2001). In most cases, the effect was negative, yet it was smaller than that of unemployment and differed depending on political orientation and status. Ovaska & Takashima (2006) have found no significant effect of inflation with a smaller sample size than this study. They suspected that inflation volatility might be a better predictor.

The (**3) Sound Money** component is positive and very robustly significant for all SWB variables, in support of **H1a**. Low inflation is highly correlated (0.7031) with a low standard deviation (volatility) of inflation. In the sample, both annual Inflation and its standard deviation have a negative effect on SWB. This seems to be psychologically consistent because both increase uncertainty and decrease perceived control over one's life. While higher inflation has opposing effects for lenders and borrowers, most people are both. For instance, we might have a fixed rate mortgage where we profit from inflation and at the same time own a bank account where our interest gains diminish. However, the important fact is that when predictions of future inflation rates are highly uncertain, the choice between investment and credit becomes a gamble. This increase in uncertainty leads to a limitation of choice, with people excluding financing and investment options simply because they cannot assess them properly. Mutually beneficial contracts are not agreed upon because of the increase in uncertainty. Annual inflation and its volatility therefore increase uncertainty and decrease subjective well-being. The possibility of owning foreign currency bank accounts is not significant in any case. A reason for this might be that 102 countries already receive a 10, the best possible rating, for this item.

Test	Sound Money		
Dependent variable	Mean LS	Top 3 LS	Mean Hap
3 Sound Money	.0702*** (.0213)	.0069* (.0041)	.0207*** (.0065)
3A Avg. growth of money (last 5 yrs) minus growth of real GDP (last 10 yrs)	.0318** (.0149)	n.s.	.0111** (.0047)
3B Standard deviation of annual inflation (last 5 yrs)	.0408*** (.0142)	.0057** (.0027)	.0145*** (.0043)
3C Annual inflation (most recent yr)	.0576*** (.0160)	.0058* (.0031)	.0134*** (.0049)
3D Freedom of citizens to own foreign currency bank accounts	n.s.	n.s.	n.s.
Method	AR(1) RE model	AR(1) RE model	AR(1) RE model

Table 8: Test of component 3 Sound Money
All regressions include region and time dummies and a constant term. Parantheses contain standard errors; * (**)[*] denotes significance at p <.01 (p <.05) [p <.10]. n.s. denotes a non-significant value. 3B/ C – High rating = low sd/ inflation**

4.1.4. Freedom to Trade Internationally

Historically, increases in trade freedom have probably been the biggest boost to global wealth and prosperity. However, critics of globalization point to negative effects like decreasing wages for low-skilled labor, increased competitive pressure for workers in industrial countries, and a loss of cultural sovereignty. Friedman (1962), on the other hand, highlighted the importance of open markets. This is not only to assure maximum consumer choice, but also optimum producer innovation by allowing domestic and foreign competition (Stroup 2007). The results support a positive effect of (**4) Freedom to Trade** for **Mean LS**. The reason for the insignificance of **Top Three LS** could be twofold. First, it is possible that trade freedom has reached such a high level after the establishment of the WTO that the differences do not prove to be significant. The second reason could be that the interest groups profiting from trade restrictions are more often represented in the top three, with loosened restrictions having a partly negative effect on them because they lose their preferential treatment.

However, while tariffs in general are not significant, lower regulatory trade barriers are highly significant and positive. Following the first GATT agreement and the establishment of the WTO, a steady decrease in direct trade barriers like tariffs has been observed. At the same time, hidden barriers increased heavily (Hanson 2009). These can be slow bureaucracies, complicated procedures and high effort needed regarding documentation, or an artificial reduction in capacity available for importation purposes, among others. The results here could be interpreted as support for these observations and the negative effect of these informal barriers. There is also a significant positive effect of a low standard deviation of tariff rates (solely) on the happiness measure, for which I have no clear theoretical explanation at hand. The only other item with at least two significant results is the actual vs. expected size of the trade sector. A high rating here is interpreted by the authors at the Fraser Institute as an indicator of a trade friendly policy regime. Besides enhancing growth, this might enhance consumer surplus above its effect on GDP by offering a more valuable variety of goods to choose from.

Test	Freedom to Trade Internationally		
Dependent variable	Mean LS	Top 3 LS	Mean Hap
4 Freedom to Trade Internationally	.0876* (.0496)	n.s.	n.s.
4A Tariffs	n.s.	n.s.	n.s.
4Ai International trade tax revenues	n.s.	n.s.	n.s.
4Aii Mean tariff rate	n.s.	n.s.	n.s.
4Aiii Standard deviation of tariff rates	n.s.	n.s.	.01527* (.0090)
4B Regulatory Trade Barriers	.1450*** (.0531)	.0194** (.0097)	n.s.
4Bi Hidden import barriers	.1327*** (.0467)	n.s.	n.s.
4Bii Costs of importing	n.s.	n.s.	n.s.
4C Actual vs. expected size of trade sector	.0469* (.0255)	.0103** (.0044)	n.s.
4D Difference between official and black market exchange rates	n.s.	n.s.	n.s.
4E International Capital Market Controls	n.s.	n.s.	.0093* (.0054)
4Ei Access of Citizens to foreign capital markets/foreign access to domestic capital markets	n.s.	n.s.	n.s.
4Eii Restrictions in Foreign Capital Market Exchange/ capital controls	n.s.	n.s.	n.s.
Method	AR(1) RE model	AR(1) RE model	AR(1) RE model

Table 9: Test of component 4_Freedom to Trade Internationally
All regressions include region and time dummies and a constant term. Parentheses contain standard errors; * (**)[*] denotes significance at p <.01 (p <.05) [p <.10]. n.s. denotes a non-significant value.**

4.1.5. Regulation

Regulation is a very complex and controversial topic in economics. It has been established that regulation could be helpful in alleviating problems like natural monopolies, positive and negative externalities, or imbalanced power in labor markets. However, the failure of many banking regulations in the financial crisis shows how well-meant interventions can lead to adverse effects. Theories of optimal regulation are unfortunately not always sufficient as in reality logrolling in political voting processes, badly paid regulators or capture by interest groups prevents it from functioning correctly (Boehm 2007). Politicians and interest groups can try to misuse regulation to extract rents (Brennan & Buchanan 1984), which can lead to excessive and harmful regulation.

As with all government failure, the problem is not primarily the incompetence or lack of knowledge of regulators. However, they have to work in an area of contradictory and conflicting interests. Stigler implies that "…as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefits" (Stigler 1971, p.3), while Yandle concludes that regulation is often required "…as protection from competition, from technological change, and from losses that threaten profits and jobs" (Yandle 1983, p.13). Behavioral economics is divided on this issue. Akerlof & Shiller (2010) call for more regulation, while Hirshleifer explains that "the behavioral approach in some ways strengthens the case for laissez-faire, and raises some new doubts about the value of regulation" (Hirshleifer, 2008, p.856). The Fraser Index measures regulation in three categories. For all items in (**5) Regulation,** high ratings from the Fraser Institute reflect less regulation. Therefore, a

higher rating for (**5) Regulation** is clearly associated with a higher SWB. The coefficient size is quite large and the results robust for all SWB variables. However, they differ between categories.

Despite repeated calls for more regulation of credit markets, current regulation does not seem to support the SWB of an average citizen. The results in table 15 show that a high rating in **Credit Market Regulation**, i.e., less credit regulation, is positive at the 1% level for all SWB variables. Competition in domestic banking and the absence of interest regulation especially stand out as positive factors. This seems to be plausible as competition should assure that the variety of banking services offered to customers is increased; more attention is paid to customer needs, most likely at a lower price.

Interest rate regulation is a good example of the so-called Peltzman effect. Well-meant regulation often fails when regulated companies circumvent it by changing their behavior. This offsetting behavior will counter the intended effects of regulation (Peltzman 2010).Interest regulation is economically unsound in trying to establish an artificial equilibrium. Price ceilings, for instance, aim to keep interest rates low and help people in need of money. In reality, however, ceilings limit the amount of total loanable funds available. People with the least prior access to funds are likely to suffer most from this shrinkage in credit supply (Hubbard 1999). If inflation were sufficiently high, a ceiling might lead to negative interest rates, causing capital flight into offshore markets (Dooley 1988). Artificially low rates might be seen as a way to achieve investment considered as socially more desirable (Drees & Pazarbaşioğlu 1998). However, they also convey misleading information and lead to a misallocation of resources, for example over-investment in speculative projects.

Labor market regulations are not significant for any dependent variable. The reason can be detected by a closer look at its components. There are contradictory effects, with some items being positive but insignificant, and others even having a negative coefficient. High values for 'Labor force share with wages set by centralized collective bargaining', 'Unemployment insurance mandated hiring costs' and 'Mandated dismissal costs' are all related to a lower SWB. The reason for the first could well be due to many employees' unwillingness to negotiate their own wage, perhaps because of unequal bargaining power, unwillingness to contradict their boss, and/or a lack of negotiation skills. By relieving employees of this burden, centralized bargaining seems to be a good alternative. The result for unemployment insurance is a hint that the higher costs are outweighed by its positive effect of cushioning the negative effect of unemployment (Alesina et al. 2004; Di Tella et al. 2003). With regards to dismissal costs, it is obvious that these are costs to the employer, but benefits to the employee. However, both items could have a negative effect on the employment level that cannot be examined here.

For **Business Regulations,** only one component is robustly positive. Time spent with a government bureaucracy severely reduces SWB, as would be expected. The ease of starting a business and the absence of irregular payments as a sign of corruption are also significant for one SWB variable each. Alesina (2010) also finds a positive effect of having your own business for parts of the population. It is only significant for the happiness variable, however, which might mean that the positive effect is more short-term and diminishes over time. The absence of irregular payments is a sign of less corruption. Low corruption was also considered important in the principal component analysis by Bjørnskov et al. (2010). Other regulations seem to have no direct single effect on SWB.

Test	Regulation		
Dependent variable	Mean LS	Top 3 LS	Mean Hap
5 Regulation — Adjusted	.1362** (.0554)	.0186* (.0101)	.0497*** (.0167)
5A Credit Market Regulation	.0818*** (.0260)	.0133*** (.0049)	.0232*** (.0081)
5Ai Ownership of banks	n.s.	n.s.	.0133*** (.0048)
5Aii Competition in domestic banking	.0726* (.0397)	.0154** (.0073)	.0228** (.0100)
5Aiii Extension of credit	.0397* (.0213)	n.s.	n.s.
5Aiv Interest rate regulations (leading to neg. rates)	.0386*** (.0148)	.0057** (.0029)	.0109** (.0047)
5Av Interest rate controls	n.s.	n.s.	n.s.
5B Labor Market Regulations	n.s.	n.s.	n.s.
5Bi Impact of minimum wage	n.s.	n.s.	n.s.
5Bii Hiring and firing practices	n.s.	n.s.	n.s.
5Biii Labor force share with wages set by centralized collective bargaining	-.0941*** (.0349)	-.0148** (.0063)	-.0214** (.0099)
5Biv Unemployment insurance mandated hiring costs	-.0661* (.0362)	n.s.	n.s.
5Bv Mandated dismissal costs[x]	-.0815** (.0313)	-.0171** (.0064)	-.0180* (.0095)
5Bvi Use of conscripts	n.s.	n.s.	.0072* (.0037)
5C Business Regulations	n.s.	n.s.	n.s.
5Ci Price controls	n.s.	n.s.	n.s.
5Cii Administrative Conditions	n.s.	n.s.	n.s.
5Ciii Time with government bureaucracy	.1000** (.0436)	.0159** (.0080)	.0211* (.0114)
5Civ Starting a new business	n.s.	n.s.	.0208** (.0101)
5Cv Irregular payments	.0689* (.0400)	n.s.	n.s.
5Cvi Licensing restrictions	n.s.	n.s.	n.s.
5Cvii Tax compliance	n.s.	n.s.	n.s.
Method	AR(1) RE model	AR(1) RE model	AR(1) RE model

Table 10: Test of component 5_Regulation
All regressions include region and time dummies and a constant term. Parantheses contain standard errors; * (**)[*] denotes significance at p <.01 (p <.05) [p <.10]. n.s. denotes a non-significant value. [x] Only 51 observations from WVS wave 5 and OLS estimation with robust standard errors.**

4.2. Sensitivity analysis

4.2.1. Socio-demographic

Bjørnskov et al. (2007) have begun to employ sensitivity analyses to shed further light on the results of earlier regressions. This makes sense for this study because „the appreciation of freedom of choice and the utility derived from freedom of choice may depend on individual preferences" (Verme 2009, p.147). Some people may appreciate freedom of choice more than others. By using socio-economic variables, I test how different subgroups of the population are affected by economic freedom. In addition to established sensitivity checks like **Age**, **Gender** or **Political Orientation**, I also introduce

self-perceived **Social Class** as a proxy for status (Di Tella et al. 2010). For this purpose, the sample was split into the subgroups before the aggregation at the country level. The analysis can basically be understood as running separate regressions for each subgroup and SWB variable, e.g., one with country-aggregate **Mean LS** values for all males, and one for all females. The specification is the same as before regarding the control variables and the estimation method.

For **Age,** I used the median age per country to ensure comparability across nations with a differing demographic structure. For **Political Orientation,** persons were asked to rate themselves on a scale of 0 (very left) to 10 (very right). I split the sample at 5, similar to Di Tella & MacCulloch (2005) and Alesina et al. (2004). **Social Class** is based on a self-assessment where people put themselves in one of five social classes. Lower class, working class and lower middle class are assigned to the low social class, while upper middle class and upper class are assigned to the high social class. The coefficients in table 9 are provided for regressions using **Mean LS**. **Top Three LS** might be biased by including an over-proportionate share of wealthy people. Wealth is also related to age, gender and status, which leads to ambiguous results.

For **Age,** there are two obvious but plausible differences. (**2) Legal Security & Property Rights** is only significant for older people. A possible explanation is that people who have worked throughout their life and invested time and money to gain their status have a higher aversion to loss (Kahneman 1991) in an instable legal environment. The other difference is that (**4) Freedom to Trade** is only significant for younger people. It might be that younger people have a higher aspiration and desire for an increase in the variety of products offered. Older people might relate positive emotions with traditional products and established companies that might disappear in the midst of tougher international competition. Moreover, younger people are, on average, better educated and more open to change and international mobility, whereas older people might perceive this as a threat to their established status. Maybe surprisingly, there appears to be little difference based on gender. The one exception is (**4) Freedom to Trade**, which is only significant and positive for males. A possible explanation could again be that more freedom could also mean more uncertainty. More competitive pressure and quicker changes and adjustment processes can be considered a threat and women are generally assumed to be more risk-averse than men (Jianakoplos & Bernasek 1998).

For **Social Class,** there are two interesting differences in (**2) Legal System & Property Rights** and (**5) Regulation**. High ratings here are only significantly positive for people with a perceived high social status. It could be argued that EF mainly benefits people who are already in a comfortable position. However, there is still no negative effect on lower classes, just no significance. The (**4) Freedom to Trade** and (**3) Sound Money** component are equally positive for all social classes. Overall, the composite Economic Freedom Index shows that EF benefits both high and low social classes.

This check for **Political Orientation** is highly interesting because there has been past research which is at least partly related (cf. Dolan et al. 2008). However, the data show no clear differences regarding the effect on SWB. The only noticeable difference is for (**5) Regulation**, where the positive coefficient is nearly twice as large for right wing orientation, with a comparable standard error. The reason could be that people with a politically right ideology are generally less positive about regulation than people who lean to the left. Di Tella & MacCulloch (2005) have shown that regardless of results, people are happier when their party is in control. Similarly, they seem to be happier when the circumstances are closer to their ideal conception.

Test		Socio-demographic characteristics					
Index		EFI	1	2	3	4	5
Age	Younger than median	.2014*** (.0644)	-.0396 (.0348)	.0656 (.0462)	.0665*** (.0210)	.1141** (.0482)	.1325** (.0545)
	Older than median	.2165 (.0707)***	-.0425 (.0382)	.1094** (.0499)	.0753*** (.0230)	.0628 (.0537)	.1355** (.0597)
Gender	Female	.2122*** (.0665)	-.0524 (.0357)	.0910* (.0474)	.0756*** (.0215)	.0819 (.0505)	.1415** (.0561)
	Male	.2029*** (.0684)	-.0301 (.0372)	.0862* (.0487)	.0653*** (.0225)	.0973* (.0516)	.1272** (.0579)
Social Class	Low	.1834** (.0744)	-.0511 (.0470)	.0689 (.0612)	.0682*** (.0250)	.1408** (.0637)	.0877 (.0612)
	High	.2141*** (.0779)	-.0803 (.0492)	.1235* (.0638)	.0734*** (.0262)	.1650** (.0668)	.1308** (.0639)
Political Orientation	Left	.2053*** (.0638)	.0393 (.0352)	.0908** (.0457)	.0736*** (.0211)	.0909* (.0485)	.0971* (.0547)
	Right	.1878*** (.0700)	-.0485 (.0376)	.0845* (.0497)	.0564** (.0233)	.1044** (.0527)	.1606*** (.0585)
Method		AR(1) RE model					

Table 11: Sensitivity checks for socio-economic characteristics
All regressions include region and time dummies and a constant term. Parantheses contain standard errors; * (**)[*] denotes significance at p <.01 (p <.05) [p <.10].**

4.2.2. GDP per capita

The sensitivity analysis for GDP in table 10 is different in its nature. Now, we are comparing aggregate country data again, but instead we want to examine if the effects differ for high and low income countries. Bjørnskov et al. (2010) have used principal component analysis to extract an economic factor that is supposed to capture the quality of economic and judicial institutions. They have further examined the effect of this factor on SWB. It was significantly positive for **Mean LS** but not for **Top Three LS**. Obviously, this factor is not equivalent to the Fraser Index, but the results are still worth comparing.

I have chosen to split the sample at $10.500 because this is almost the exact median income ($10.449) in the sample. It is close to the $10.000 for which most studies "find that average income ceases being associated with SWB" (Bjørnskov et al. 2010, p.422). At first, all coefficients fall in significance, which is not surprising as the sample size is reduced by half. In addition, some results differ between the rich and poor sample. Even with the limited sample size, the **EFI** is still significantly positive for the poor country sample. On the other hand, (**2) Legal System& Property Rights** is only significant for the rich sample. This is in line with the finding that countries need to reach a certain income level to appreciate the institutions of democratic decision making (Bjørnskov et al. 2010). In a similar vein, richer countries might have a more positive appreciation of sound legal institutions beyond their mere positive effect on growth. This does not mean that legal security is not important for poor countries, as it has been shown to be highly relevant for growth (Carlsson & Lundström 2002).

3 Sound Money can only be shown to be significant in the poor sample. This is unlikely to be due to the fact that citizens in rich countries do not care about inflation. Instead, it seems that most rich countries in this sample receive such a high rating (mean= 8.65, Std.dev.= 1.61) that there is no major problem with inflation and stability. Indeed, during the time period the sample covers, there have been no periods of major inflation or hyperinflation in developed countries. In addition, adaption

effects might cause people in countries with a long tradition of sound money to take this achievement as self-evident. In the poor sample, (**3) Sound Money** is considerably lower and yet more volatile (mean= 5.95, Std.dev= 2.53). For (**4) Freedom to Trade Internationally,** the effect does not seem to be robust enough for such a big reduction in sample size. Both samples are similarly significant and positive with regards to the absence of excessive regulation, signaled by a high value in (**5) Regulation**. This is theoretically plausible as regulatory capture and corruption are likely to exist independent of the level of material wealth in a country. However, the effect seems to be stronger in poor countries when we look at the coefficient size and significance. It could well be the case that due to weaker legal structures and lower wages, regulation might be exploited more by companies and interest groups compared to richer countries with more democratic control.

The non-significance of economic Freedom for the rich sample might be due to the reduced sample size. A look at the sub-panel structure reveals that in the rich group, the share of countries with three or more observations is 22/49 = 0.45. In the poor group, this is only 15/58 = 0.25. As a consequence, adaption effects might have more influence in the rich sample. People in rich countries might get used to high degrees of freedom (Mean= 7.20) over time. Adjusted aspirations might mean that people in developed countries simply expect high levels of freedom (c.f. Ovaska & Takashima 2006). The positive effect is stronger for poor countries where EF is generally lower (Mean= 5.83). Another explanation could be that there are diminishing returns of EF. In contrast to Bjørnskov et al. (2010), the effect of Log GDP remains significant almost throughout all equations in both the rich and the poor sample (not displayed). We can conclude that for wealthier countries, a well-functioning legal system and no excessive regulation are of outstanding importance. Poor countries profit from EF in general, as well from a sound monetary system, and especially from limited and lower regulations.

Test	Low GDP			High GDP		
Dependent variable	Mean LS	Top 3 LS	Mean Hap	Mean LS	Top 3 LS	Mean Hap
Economic Freedom Index	.2307**	.0199	.0718**	.1123	.0141	.0127
	(.0982)	(.0163)	(.0308)	(.0858)	(.0200)	(.0271)
1 Size of Government	**-.0317**	-.0135	-.0045	**.0150**	.0040	-.0045
	(.0597)	(.0097)	(.0191)	**(.0402)**	(.0092)	(.0118)
2 Legal System& Property	**.0108**	**-.0026**	**.0187**	**.1421****	**.0335****	**.0196**
Rights	**(.0689)**	**(.0113)**	**(.0215)**	**(.0636)**	**(.0146)**	**(.0208)**
3 Sound Money	.0767**	.0085	.0232**	.0241	-.0019	-.0018
	(.0314)	(.0053)	(.0099)	(.0324)	(.0076)	(.0092)
4 Freedom to Trade	.0872	.0159	.0231	.0788	.0086	.0218
Internationally	(.0784	(.0125)	(.0245)	(.0600)	(.0141)	(.0184)
5 Regulation	**.2017****	.0242*	.0473*	**.1135***	.0184	.0334*
	(.0857)	(.0144)	(.0275)	**(.0667)**	(.0150)	(.0203)
Observations	90	90	90	90	90	90
Countries	58	58	58	49	49	49
Method	AR(1) RE model					

Table 12: Sensitivity checks for high and low GDP countries
All regressions include region and time dummies and a constant term. Parantheses contain standard errors; * (**)[*] denotes significance at p <.01 (p <.05) [p <.10]. Bold coefficents differ significantly between the two samples at least at the 10%-level.**

5. Conclusion

While Economic Freedom (EF) is mostly assumed to increase GDP growth (Berggren 2003), its effect on well-being is controversial. Among the negative effects that have been attributed to EF are unaccounted negative externalities, more pressure at work, and the negative effects of limited consumer rationality when choosing consumption bundles. Subjective Well-Being (SWB) data

provided the opportunity to test if EF is not only linked to higher GDP, but has an additional SWB enhancing effect. This is an important endeavor, as both publicly and scientifically mere material well-being is often not accepted as a sign of an improved quality of life any more (Stroup 2007).

There are well known theoretical reasons why many government guided attempts to improve well-being by correcting externalities, public good problems, or natural monopolies are not successful. Since Brennan & Buchanan (1984) and Buchanan & Tullock (1962), public choice theory has emphasized that the government is not simply a benevolent executor of aggregated preferences. Utility might be lost due to deficiencies in majority voting (Tullock 1959), rationally ignorant or irrational voters (Caplan 2001a), or the self-interest of politicians (Niskanen 1971). Inefficient bureaucracies and lobbyism (Downs 1957) might explain divergences from theoretical optima in trade or regulation policies. On the other hand, EF allows people to participate in the economy based on safe property rights. It ensures the possibility of trading and conducting business without excessive regulations that restrict free choice. While political freedom is mostly carried out in rare voting procedures that many people fail to understand, EF affects daily life more directly. Psychological research has clearly shown that a feeling of freedom and control over one's own life is the most important predictor of a higher SWB (Verme 2009, Inglehart et al. 2008).

The empirical results using the Fraser **Economic Freedom Index** show that EF enhances SWB, a finding that is robust to different estimation methods and for all three SWB measures. A more detailed examination of sub-components of economic freedom, however, revealed some specific differences. **Size of government** fails to be significant, while at the same time a simpler variable measuring the share of government spending as a percentage of GDP is strictly negative. This supports Bjørnskov et al. (2007) and contradicts the results of Ram (2008). **Legal System & Property Rights**, **Sound Money** and less **Regulation** are robustly positive and significant at least at the 10% level for all measures. The effect of **Freedom to Trade** is significant at the 10% level using an arithmetic average measure of SWB.

Within **Freedom to Trade,** regulatory trade barriers, rather than tariffs, have a significant negative effect. In spite of recent suggestions to increase regulation, the absence of excessive credit market regulation is the strongest predictor for a positive SWB within the **Regulation** component. This is in line with views that examine regulatory capture (Boehm 2007), which for the most part regard regulation as a protection of particular interest groups (Yandle 1983, Stigler 1971, Downs 1957) or emphasize its adverse effects (Peltzman 2010). However, a high EF value is not always related to a higher SWB. With regards to **Labor Market Regulations,** centralized wage bargaining and unemployment protection seem to have a positive effect on SWB. This might be because they equalize the unbalanced power in wage negotiations, relieving employees of this burden and decreasing uncertainty.

Further sensitivity checks that divided the sample based on socio-economic characteristics revealed a differing impact of the economic freedom components. **Legal Security & Property Rights** are only significantly positive for the older part of the population, possibly reflecting an increased aversion to loss (Kahneman 1991) and fears of losing what has been earned (Rabin 1998). On the other hand, **Freedom to Trade** is only significantly positive for younger people, who might have higher expectations regarding product variety, be better educated and more open towards competition and international mobility. While there appear to be no differences due to gender and political orientation, being in a high social class appears to attenuate the positive effect of legal security and the absence of excessive regulation. Overall, the positive effect is stronger in low income countries.

I acknowledge the limitations in this research. I was mainly able to show that, given its current level, providing more EF seems to be beneficial for SWB. The data series are still rather brief and the composition of the sample has changed over time. Doubts over the usage of subjective well-being data in general are exaggerated, however. The results of this study imply that, in most cases, limitations of EF are harmful because they decrease the well-being of the average citizen by limiting the functioning of markets, personal freedom and free choice. Hence, increasing the scope of individual EF and limiting the scope of government activities might be a way of increasing the utility and well-being of an average citizen beyond any effects on material well-being.

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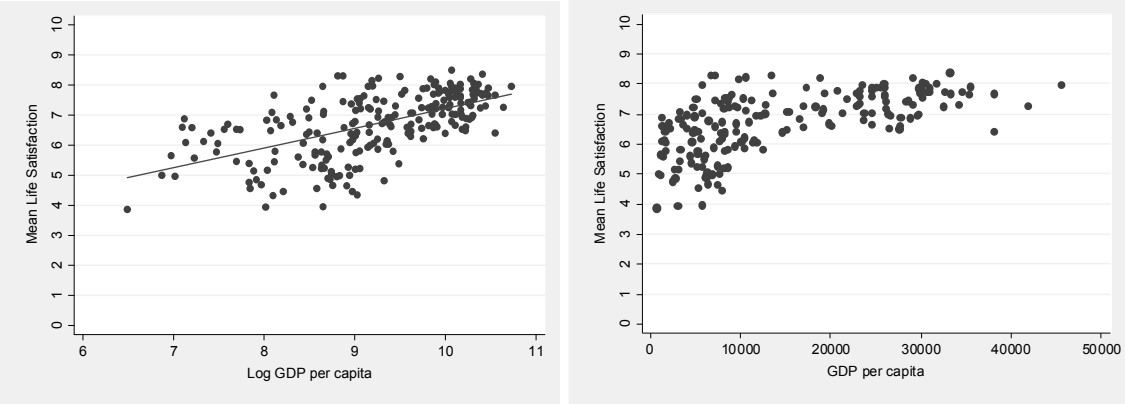
7. Appendix

7.1. Appendix A1: Relation GDP and Log GDP to Mean Life Satisfaction



The logarithm of GDP per capita exhibits a clearer linear relation to Mean Life Satisfaction.

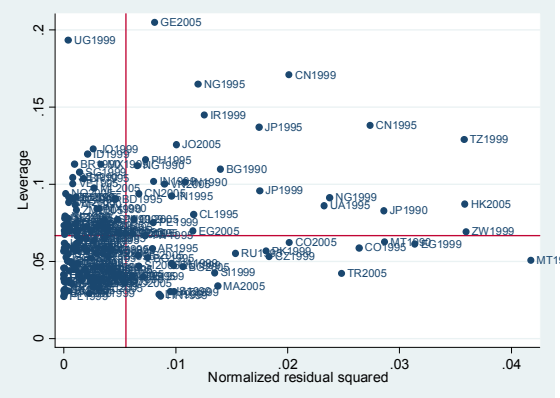
7.2. Appendix A3: Results with Economic Freedom and Mean LS for five methods

Test	Economic Freedom			
Dependent variable	Mean LS	Mean LS	Mean LS	Mean LS
Social Trust	1.6235*** (.3894)	.8399** (.4174)	.9020** (.4158)	1.6443*** (.3468)
Believe in God	.0942** (.0413)	.0537 (.0416)	.0588 (.0402)	.0937** (.0378)
Investment Price Level	.0051** (.0024)	.0046** (.0022)	.0046** (.0022)	.0050** (.0024)
Log GDP per capita	.3909*** (.1016)	.4248*** (.0892)	.4274*** (.0862)	-.0219** (.0087)
Government Share / GDP	-.0217** (.0091)	-.0242*** (.0086)	-.0239*** (.0084)	.3869** (.0957)
Economic Freedom Index	.1965*** (.0687)	.2086*** (.0639)	.2100*** (.0651)	.1988*** (.0653)
Method	Pooled OLS (robust SE)	RE model	AR(1) RE model	Prais-Winsten regression, heteroskedastic panels corrected standard errors
Regional Dummies	Yes	Yes	Yes	Yes
Period Dummies	Yes	Yes	Yes	Yes
Observations	180	180	180	180
Countries	79	79	79	79
R squared	0.6681	0.6542	0.6565	0.6672
F statistic	33.83			
RMSE	.60927			
Wald Chi-Square		201.06	217.38	405.31

The results are mainly insignificant to the choice of estimation method. Especially with regards to important variables like Log GDP and Economic Freedom both the coefficients and the standard errors and nearly identical. The FGLS model (Parks 1967) allows heteroscedastic errors, but there are doubts about its reliability. "The Parks estimator may understate variability by between 50% and 300% in practical research situations" (Beck& Katz 2011, p.634). Nonetheless, and even with only 79 observations, Economic Freedom is still highly significant and positive in this model.

For Pooled OLS OLS Cameron and Trivedi's decomposition of the IM-test shows that Heteroscedasticity is likely with p = 0.0590. The Beusch-Pagan/ Cook-Weißberg test is also significant with p =0.0071. This is why the White-Huber correction for robust standard errors was used. Panel-corrected standard errors yield results with higher significance levels for most variables.

7.3. Appendix A3: Leverage Plot for the regression using Pooled OLS and Mean Sat.



Leaving out the most influencing observations did not change any results or significances of important variables.