

Who Benefits from Economic Freedom? Unraveling the Effect of Economic Freedom on Subjective Well-Being

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Summary. — Who benefits from economic freedom? Results from a panel of 86 countries over the 1990–2005 period suggest that overall economic freedom has a significant positive effect on subjective well-being. Its dimensions legal security and property rights, sound money, and regulation are in particular strong predictors of higher well-being. The overall positive effect is not affected by socio-demographics; the effects of individual dimensions vary, however. Developing countries profit more from higher economic freedom, in particular from reducing the regulatory burden. Culture moderates the effect: societies that are more tolerant and have a positive attitude toward the market economy profit the most.

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Key words — economic freedom, happiness, life satisfaction, government size, institutions

1. INTRODUCTION

Are the citizens of countries that rely more on Economic Freedom (EF) than on government intervention on average happier? 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. Regarding development aid, the Washington consensus in particular has strongly emphasized liberal reforms and free markets. While most economists and the empirical literature support a positive effect of EF on growth rates, it is much less clear how EF affects life satisfaction, once we control for the level of income per capita. Who benefits from EF? Does the effect differ for developed and developing countries? How does it depend on the culture of the societies, and their socio-demographic characteristics?

Globalization critics, as well as some economists (e.g., Akerlof & Shiller, 2010; Klein, 2007; Streeten, 1979), have argued that the growth enhancing effect of EF comes at the price of lower life satisfaction. Reasons for this might be increased pressure at work due to higher competition, irrational decisions of consumers, or negative market externalities. Most of the time, this disapproval has only come from a handful of notorious globalization critics. Recently, however, increasing shares of the public as well as several government leaders and economists do not seem to accept higher GDP as a sign of improved welfare. Several commissions have already been created across the world to explore the use of alternative measures of welfare, one of which is survey data on subjective well-being. In some cases, these attempts by politicians have been driven by the assumption that looking at these measures would provide support for their particular political agenda (like more regulation), because classical measures do not capture the negative effects of free markets adequately.

Nevertheless, to introduce more regulation and government control over the economy without clear empirical support could be overly hasty. In development politics, there is already

a shift away from the Washington Consensus focus on liberalization. Development aid agencies have been criticized by some economists (e.g., Easterly, 2008) for using central planning and government driven approaches instead of relying on market mechanisms to achieve development targets. In developed countries, governments act swiftly in restricting Economic Freedom and interfering in markets since the outbreak of the subprime crisis in 2008.¹ It is important to assess the effects of Economic Freedom on subjective well-being (SWB) empirically, “so that we can estimate the opportunity cost of constraining these freedoms” (Stroup, 2007, p. 53). With regard to economic growth, the empirical literature reports a positive effect of increases in EF on subsequent growth (e.g., Berggren, 2003). What about the effect on SWB once we close that channel, and control for the level of income? First empirical results supported a positive effect; but might be perceived as only preliminary evidence due to data and methodological limitations. Moreover, it is unlikely that all societies are affected by EF to the same degree.

Hence, this study examines this hypothesis in much more detail. First, I use panel data from 86 countries between 1990 and 2005. The sample of countries is larger than the ones used in previous studies and panel data allow a better identification of causal effects. Second, I start with an established set of control variables and proceed carefully by checking the reliability of the data, picking the adequate panel estimator, and employing a correction for serial correlation. Third, with this preferred specification, I decompose the effect by looking at the effect of individual dimensions of EF on the three measures of SWB. The results support a robust positive effect of EF on SWB. Several robustness checks are provided.

* I would like to thank seminar participants at the economics department of the University of Heidelberg, at the BBQ 2012 conference in Groningen, in a particular Christian Bjørnskov, Jacob de Haan and Jan-Egbert Sturm. Special thanks go to Roland Vaubel and Axel Dreher for many helpful comments and improvements. I thank Jamie Parsons, Scott Jobson, and Lisa Oberländer for proofreading and other improvements. All remaining errors are mine. Final revision accepted: May 14, 2013.

All dimensions of EF are associated with higher subjective well-being, except the component measuring government size. The robustness checks reveal that the positive effect is robust and does not differ significantly for socio-economic groups distinguished by gender, age, income, or social class. When looking at developing and developed countries separately, the overall effect of higher EF is larger in developing countries. The positive effect of reducing regulation, in particular, is higher for developing countries. This might be a consequence of higher corruption and regulatory capture in these countries. On the other hand, the positive effect of an impartial legal system and secure property rights is larger in developed countries, but still positive in developing countries. Culture further moderates the positive effect. Those societies that have a positive attitude toward the market economy profit more from higher EF. In particular, those with a strong preference for private ownership of companies over state ownership experience a larger benefit. Tolerance toward other members of the society also increases the positive effect, whereas higher trust in fellow citizens does not.

The structure of the paper is as follows: In Section 2, I shortly explain the usage and validity of SWB data for economic research and explain the concept and importance of EF, its measurement, and empirical studies on its effects. Section 3 derives hypotheses about the effect of EF on SWB. Section 4 explains the data set, as well as the preferred specification for the main estimations. Section 5 comprises two parts. First, I show the effect of EF and its individual components 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 developing and developed countries for further evaluations. In Section 6, I draw conclusions from the empirical findings and summarize the implications of these results.

2. THEORY

(a) *Happiness*

Subjective well-being data are a “valuable alternative, but complementary, approach to the revealed-preference framework that dominates the discipline of economics” (Frey & Stutzer, 2009, 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. 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. For psychologists, SWB generally means a “combination of feeling good and functioning effectively” (Huppert, 2008, p. 137). This is associated with having control over one’s own life and having the freedom to build efficiently on one’s potential.

When evaluating long-term effects on subjective well-being it is important to keep the existence of adaption effects in mind. 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” (pp. 33–34). For example, Van Praag and 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.

Frey and Stutzer (2002), and more recently Dolan, Peasgood, and White (2008) provide extensive overviews about the literature on subjective well-being. With regard to the effect of income, Clark, Frijters, and Shields (2008) provide a detailed summary. Scholars are divided over the question of whether SWB remains constant over time, regardless of increasing incomes (Easterlin, 1995, 2010; Sacks, Stevenson, & Wolfers, 2010; Stevenson & Wolfers, 2008; Di Tella & MacCulloch, 2008; Veenhoven & Hagerty, 2006). It seems plausible that relative income effects, as well as adaption effects, are partly responsible for diminishing returns to income. Lykken and Tellegen (1996) concluded that 30% of the variation in SWB is genetically-determined; Diener (2009) added that about 30% is caused by mood and affect. With regard to the effect of institutional quality on subjective well-being, it was shown that the design of processes and the institutional design of societies, has an influence on its 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), i.e., money that you earned yourself in a job of your own choice might create higher utility than money from charity.

(b) *Economic freedom*

It is assumed that “individuals have EF 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, Lawson, & Block, 1996, p. 12). Stigler (1978) emphasizes “the ability of a man to make his own plans of action (...) not manipulated by other men” (p. 214). This definition neither rules out an active role for governments, nor does it justify it. Therefore, the question is, whether 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? Political freedom differs in emphasizing political rights and democracy more strongly. 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, though not much political freedom. Nor is EF always equivalent to wealth, as Stigler (1978) has claimed.² Historically, increases in EF seem to go along with progress, growth, and increased choice (Easton & Walker, 1992; Jay, 2000).³ The degree of EF within a country seems to be determined by its history and institutional design, and Dreher and Gehring (2012) suggest that it is very hard to influence by external interference (like development aid).

(c) *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 EF 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).

Regarding other welfare measures, Esposto and Zaleski (1999) find in six out of eight regressions that the quality of life, in terms of literacy rates and life expectancy, increases with more EF both within and across countries. Norton (1998) shows for about 70 countries that stronger protection of private property, as measured in the Fraser Economic Freedom Index (EFI), leads to a higher ranking in the United Nations Human Development Index (HDI). Goldsmith (1997) uses the EFI and shows for 90 developing countries in the 1985–94 period, that those who protect economic rights have a higher level of human well-being measured by the HDI. Caplan and Cowen (2004) argue that the freedom to trade has a positive effect on cultural diversity. 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 for the 1980–2000 period.⁴ EF is important beyond 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 the other studies that specifically analyzed EF and SWB at the country level is Ovaska and Takashima (2006), who estimated pooled OLS regressions for a sample of up to 68 countries over the 1990s with two SWB measures: happiness and LS. They report a mostly negative effect of government size and a consistent positive effect of EF for a smaller sample of countries. However, their results cannot be interpreted as causal, due to the pure cross-sectional nature of the data. Gropper, Lawson, and Thorne (2011) also find a positive effect of EF on a number of SWB measures. Their study uses GDP as the sole control variable. While the study suggests that the positive effects, on average, prevail the potential omitted variable bias and the omission of regional dummies makes a causal interpretation difficult. Moreover, their dependent variable mixes results from the WVS and Gallup World Poll, though Bjørnskov (2008) shows that both measure different concepts. At the US state-level, Hafer and Belasen (2012) also find a positive relation between improvements in EF (the state-level data only covers a small dimension of EF) and higher SWB in their cross-sectional estimations.

There is an economic and psychological linkage between EF and SWB. Very broadly speaking we test if enabling everyone to pursue their own self-interest maximizes the SWB of a society, even when controlling for material well-being (Frey & Stutzer, 2009). Economically, with more 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). Moreover, there are several theoretical arguments stating that it is quite plausible that EF has 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). Decentralized purchasing decisions, i.e., in this case by consumers in markets instead of centralized governments, above their effect on output, also tailor decision-outcomes better to people’s preferences⁵.

Well-known economic arguments for promoting government intervention and therefore lower EF are the provision of 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 regard 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 transfer payments.⁶ There are also arguments grounded in behavioral economics which add that “(capitalism) does not automatically produce what people really need; it produces what they think they need” (Akerlof & Shiller, 2010, p. 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, however, 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. People seem to get along quite well with their misperceptions and biases in their daily life (Caplan, 2001b, 2007; 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 also maximize their own utility (Niskanen, 1971; Tullock, 1998) and are subject to political capture, lobbying efforts, and other distorting influences. Decision mechanisms in political processes have several severe short-comings (Buchanan & Tullock, 1962; Tideman & Tullock, 1976; Tullock, 1959).

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, Foa, Peterson, and Welzel (2008) find “that a growing feeling that one has free choice was by far the most important influence on whether SWB rose or fell” (p. 270). In a structural equation model, they show empirically 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, with people obtaining intrinsic rewards when they engage in freely chosen activities. In response to claims that “freedom & control” is simply a proxy for happiness, he uses it as the dependent variable, with happiness an independent variable, and repeats the regression. In doing so, 10 of the 19 variables change sign and four of the remaining appropriately signed variables lose their significance. 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 for example be affected by the legal system and monetary stability.

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 a larger data set, calculates three clearly defined SWB measures (without relying on imputed data), and rigorously tests for the appropriate econometric approach. The null hypothesis assumes that overall there is no significant effect of EF. The reason might be that there is no direct relation to SWB once we control for the income level. Alternatively, the positive and negative effects might cancel each other out. H1a posits an on average positive effect of more EF. This would confirm the positions taken in public choice literature, and as well as those taken by behavioral economists who consider the irrationality of political actors. Following this view, too much government intervention in the economy is distortive and detrimental to well-being. In addition, modern psychology shows an intrinsic psychological value of higher perceived freedom (Inglehart *et al.*, 2008). H1b posits the opposite; that there is too much EF and governments need to interfere to a larger degree to correct market failures. This view is supported by the sociological “quality of life perspective” economic theory of market failures and the behavioral economics literature that focuses on the shortcomings and irrationalities of consumers in market decisions (e.g., Akerlof & Shiller, 2010). Therefore, I put up the following three hypotheses for empirical testing. Detailed sensitivity analysis will also test how the effect of EF depends on socio-demographics, development status of a country, and on culture.

H0: SWB does not depend on EF

H1a: SWB positively depends on EF

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

Contra-freedom reasoning: Classical market failures (e.g., public goods), irrational consumers
 Pro-intervention reasoning: Fairness of democratic decisions and elected governments

3. DATA AND RESULTS

This section consists of four parts. At first, I describe both the main dependent variable, subjective well-being (SWB), and the main independent variable, the EFI. I then control gradually how well different specifications allow us to identify a causal effect. The results support a positive and significant effect of the EFI throughout all specifications. The third part looks at the individual dimensions of EF, and part four shows who benefits most from EF.

(a) Main variables

(i) 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).⁷ The WVS data are available for 1981, 1990, 1995, 2000, and 2005⁸, and are extended by adding data from the **European Value Surveys (EVS)**.⁹ 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, p. 266). 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.” Both relate to appreciation of life results, but average happiness (**Mean Hap**) reflects a more short-term view (Inglehart *et al.*, 2008).

Regarding the aggregation at the country level, while Helliwell (2006) used an arithmetic average, Bjørnskov, Dreher, and Fischer (2007) and Bjørnskov, Dreher, and Fischer (2008) used the percentage of really happy people answering in one of the top three categories. While this **Top Three LS** is less prone to outliers and alleviates specific 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, Dreher, & Fischer, 2010, I avoid this problem by displaying most results for both measures. Ferrer-i-Carbonell and Frijters (2004) show that treating LS data as cardinal does not affect the direction and significance of influential explanatory variables. The length of the rating scale is the most important factor to ensure reliability (Kroh, 2009).

(ii) Independent variable: the Economic Freedom Index

Two institutions provide comprehensive indices: The Heritage Foundation has published its “Index of Economic Freedom” since 1995, and the Fraser Institute publishes annual “Economic Freedom of the World” reports since 1990 for a large number of countries (Gwartney, Hall, & Lawson, 2011). 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) more transparent to the reader” (Cummings, 2000, p. 63). Its composition is based on intensive and documented scientific work (Easton & Walker, 1992) and tries to use objective data instead of surveys and value judgments wherever possible. Most recent studies have used this Index (e.g., Faria & Montesinos, 2009; Justesen, 2008; Stroup, 2007), of which some have used both finding results which were similar in direction (e.g., Goldsmith, 1997; Norton, 1998).¹⁰

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 focuses on property right protection and the provision of public goods and a sound money system. Figures 1 and 2 show the bivariate relations of the aggregate index with Mean LS and Top Three LS, providing the first impression of a seemingly positive relationship with SWB. Table 1 gives simple descriptive statistics.

(b) Causality

The best empirical setup to examine the effect of Economic Freedom on SWB would be to have some exogenous event

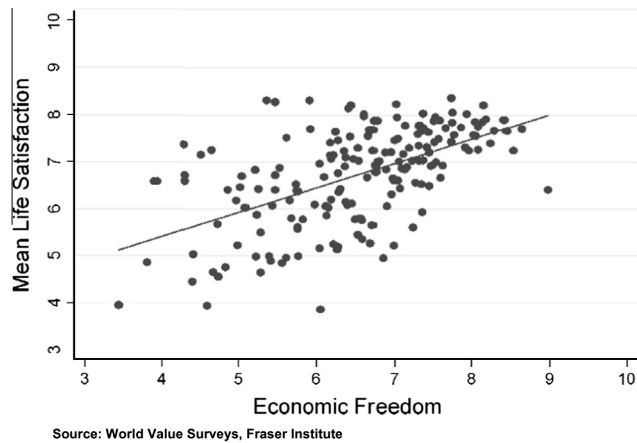


Figure 1. Bivariate relation between Economic freedom and Mean Life Satisfaction (1).

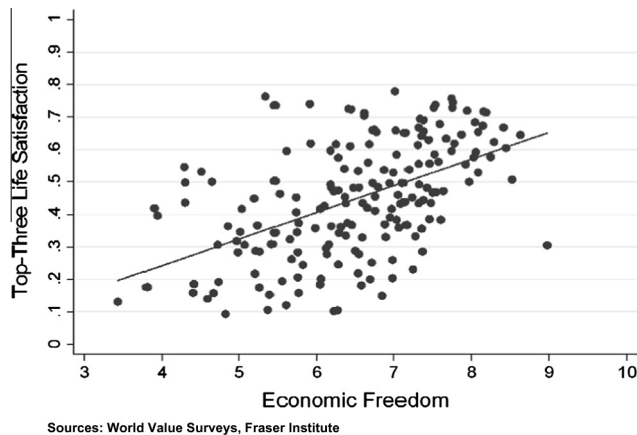


Figure 2. Bivariate relation between Economic Freedom and share of people in the top three categories of Life Satisfaction (2).

that divides a country into a part that relies more on government intervention and one that relies more on free markets. Moreover, data would need to be available for both parts before and after the breakup. For North and South Korea, data for the latter after splitting up are available. For East and

West Germany, we have SWB data for both parts after re-unification, but not before for the East. So, how convinced can we be that an approach using the existing data reveals the “true” causal effect? Though there are some caveats, the estimates should provide a convincing causal interpretation.

(i) *Reverse causality*

In general, it is possible that the degree of SWB causes EF, and not the other way around. For instance, because this is a cross-country analysis, happier people might move to countries that offer higher EF, which causes the positive relation. How realistic is this possibility? On average, migration as a share of total population is quite small and by far not large enough within the analyzed period to account for the large positive correlation. Moreover, there are no signs that happier people migrate more. Quite the opposite, migrants are quite often those that face prosecution or cannot find jobs at home.

Another possibility would be that within countries, happier people vote for policies that promise more EF. However, there is no psychological theory that predicts that happiness causes a preference for freedom. On the other hand, psychologists argue both theoretically and empirically that more freedom causes higher SWB (e.g., Verme, 2009). Moreover, also using two waves from the WVS, Rode (2012) finds no signs of reverse causality when using two sets of instrumental variables for EF and SWB. The predicted values of subjective well-being fail to be a significant predictor of EF levels in any of his regressions. Though the validity of his instruments can be questioned, there seems to be no support for this reverse direction of causality. Accordingly, from the empirical evidence and theoretically the channel from SWB to EF seems to be, if at all, only of minor importance.

(ii) *Conditional independence/Control variables*

The simple positive correlation in Figures 1 and 2 do not reveal the causal effect because there is selection bias, or in other words, EF is not randomly assigned. We can try to avoid this bias by using control variables, and conditional on these, we can identify the average causal effect. If SWB is a function $f(EF_i)$ and conditional independence holds, the causal effect of a one point improvement in EF is $E[SWB_i(EF) - SWB_i(EF-1)|X_i]$. The selection of control variables is always arbitrary to some degree. Still, I want to avoid concerns that the variables are chosen selectively to produce a certain outcome. Hence, I choose the identical comprehensive set of control variables as Bjørnskov *et al.* (2007), who examined

Table 1. Overview about variables in data set

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	10,904	(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

Notes: Numbers for main regressions with 180 observations for which all variables are available.

the effect of government size on SWB (Simple Correlations in Table 2).¹¹

These include the logarithm of GDP per capita (**Log GDP**), derived from the Penn World Table (PWT), Mark 6.3 in constant prices using a Laspeyres-index to proxy for income. The PWT data are especially useful because all figures are given in international PPP prices. Higher income is positive and highly significant for all subjective well-being (SWB) variables. *Belief in God*¹² is used following Helliwell (2006), who applied a measure of the intensity of religious beliefs. *Social Trust*¹³ 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, 1982). Economically, this reduction increases the efficiency of markets via lower transaction and information costs.

Openness to Trade, which is measured as the sum of exports and imports as a percentage of GDP, is not significant in any regression and does not affect the EF coefficient, which is why I omit it from the main regressions.¹⁴ 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 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).

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).

Column 1 of Table 3 shows the coefficients for the control variables with simple Pooled OLS, which all have the expected direction and are in line with the existing literature. Hence, adding more countries to the sample did not change these results. In column 2, I add Economic Freedom to the specification. Its effect is comparatively large, though smaller than the one of **Log GDP** or **Social Trust** and significant at the 1% level. From the value of 0.1965, we can infer that, on average, an improvement of one point in EF increases SWB by a fifth of a point.

(iii) Omitted variables

Obviously, the assumption of conditional independence can be questioned. There is always the possibility of omitted variables, which might bias the Economic Freedom coefficient.

However, this concern is alleviated in two ways. First, let us look at the set of control variables in more detail. Table 2 provides the simple correlations with EF. We can see that EF is positively correlated with Log GDP and the Investment Price level. In particular, **Log GDP** has a strong positive effect on SWB and at the same time, former empirical studies have identified a causal effect of EF on higher growth. Hence, including Log GDP closes a channel via which EF can affect SWB and would in any case only bias the coefficient downward. Social Trust is positively related to SWB and EF, while Government Share is negatively related to both. Only Belief in God is positively related to SWB and negatively to EF. Thus, overall, conditioning on this set of control variables should provide a lower bound for the true causal effect of EF, i.e., the true effect will most likely be even larger.

Still, the set of control variables might not be complete or some variables cannot be observed. In particular, unobserved country characteristics like a specific cultural background could contribute to SWB or influence the way people perceive the rating scale. For example, reported SWB could be higher when a country has a social pressure to feel happy or unobserved environmental influences like higher than average sunshine hours affect SWB. To the best of my knowledge, most studies have simply disregarded the panel nature of the WVS and estimated Pooled OLS regressions. However, we can use the panel nature of the data to at least partly remedy this concern. By including fixed effects, we can control for unobserved time-invariant variables. The Hausman test supports the use of the efficient Random Effects model for this purpose, which assumes that country fixed effects are i.i.d. Column 3 shows that the coefficient of EF increases slightly to 0.2086, so not including these unobserved effects biases the estimate downward. With a standard Fixed Effects model, it is 0.2029 and still significant (p -value = 0.017). Accordingly, omitted variable bias does not seem to cause the positive coefficient (at least not for time-invariant factors).

(iv) Serial correlation

Using panel data might also cause problems, which have been disregarded so far. Serial correlation can bias the estimates of the standard errors and significance tests. Visual inspection of the distribution of standard errors reveals a negative correlation of the error terms. The LBI Test Statistic (Baltagi & Wu, 1999), a modified version of the Durbin–Watson test for unbalanced panel data, also points toward negative auto-correlation. Accordingly, column 4 shows the same estimations as before, only now including a correction for first-order auto-correlation. The size of the EF coefficient, as well as its standard error, increases only marginally and is still significant at the 1% level.

Table 2. Correlation structure of variables in baseline specification

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 Three Life Satisfaction in %	.42	-.10	.49	.59	-.43	.51
Mean of Happiness	.24	.10	.48	.33	-.45	.54

Table 3. *The effect of Economic freedom on SWB—various specifications*

Test	Economic Freedom					
Dependent variable	Mean LS	Mean LS	Mean LS	Mean LS	Mean LS	Top Three LS
Social Trust	1.7702*** (.4123)	1.6235*** (.3894)	-.0954 (.5642)	.8399** (.4174)	.9020** (.4158)	.2798*** (.0765)
Believe in God	.1053** (.0413)	.0942** (.0413)	.0922 (.0948)	.0537 (.0416)	.0588 (.0402)	.0133* (.0070)
Investment Price level	.0076*** (.0025)	.0051** (.0024)	.0046 (.0029)	.0046** (.0022)	.0046** (.0022)	.0011** (.0004)
Log GDP per capita	.5104*** (.0686)	.3909*** (.1016)	-.3817 (.3770)	.4248*** (.0892)	.4274*** (.0862)	.0679*** (.0154)
Government Share/GDP	-.0242*** (.0088)	-.0217** (.0091)	-.0528*** (.0176)	-.0242*** (.0086)	-.0239*** (.0084)	-.0043*** (.0015)
Economic Freedom Index		.1965*** (.0687)	.2029** (.0831)	.2086*** (.0639)	.2100*** (.0651)	.0233* (.0122)
Method	Pooled OLS (robust SE)	Pooled OLS (robust SE)	FE model	RE model	AR(1) RE model	AR(1) RE model
Regional dummies	Yes	Yes	No	Yes	Yes	Yes
Period dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	180	180	180	180	180	180
Countries	79	79	79	79	79	79
R squared	0.6514	0.6681	0.0494	0.6542	0.6565	0.6421
F statistic	31.58	33.83	5.68			
RMSE	0.6225	.6093				
Wald Chi-Square				201.06	217.38	194.95

Notes: All coefficients rounded to four decimals places. Government effectiveness averaged over time.

*** Denotes significance at $p < .01$.

** Denotes significance at $p < .05$.

* Denotes significance at $p < .10$.

(v) Aggregation

Aggregating data might lead to false conclusions if there is an “ecological fallacy.” However, focusing on institutional determinants of SWB, Bjørnskov *et al.* (2010) conclude that ecological fallacy did not pose a problem; individual and aggregate results were very highly correlated. Moreover, the validity of using aggregate measures was supported in several empirical studies (e.g., Helliwell, 2007). Fischer (2010) suggests that aggregate measures are more robust to differences in national cultures. In addition, as outlined above, I use two complementary aggregation techniques, which should avoid misinterpretations. Column 5 shows the results when using the **Top Three LS variable**. Due to the different scale of this dependent variable, all coefficients differ with regard to the other columns. Economic Freedom still has the third largest effect on SWB and is significant with a p -value of 0.056. When using the more short-term aggregate happiness measure (**Mean Hap**) as the dependent variable, it is significant at the 1% level.

(vi) Other caveats

A partial leverage plot revealed two significant outliers that could bias the results. These were excluded from the analysis. Moreover, the SWB data for China in 1990 were unusually high, compared to other countries as well as the successive values for China, which is why they were also omitted. Multi-collinearity does not seem to be large for the chosen model either, with all variance inflation factors (VIF) below 3. Hence, the positive effect of Economic Freedom seems to be the average “causal” effect. This leads us to reject H0 and H1b, and accept H1a: There is a positive effect of the aggregate EFI on SWB. The next sections will unravel this effect further to look at the dimensions of EF and examine how the effect depends on socio-demographics, development status, and culture.

(c) Dimensions of economic freedom

Having established that the average effect of the aggregate **Economic Freedom Index (EFI)** is positive is the most important finding, we still need to consider that the EFI consists of five dimensions (42 single items), which are quite heterogeneous. Some are quite clear in their interpretation, like Freedom to Trade, which can be easily measured. For the government size dimension, on the other hand, its composition and measurement is quite controversial (De Haan & Sturm, 2000). Therefore, it adds important information, which enables us to look at the dimensions individually and thus to identify which ones seem to be the most relevant. This section displays the results for the 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.

It is straightforward that a significant positive sign for the **EFI** shows the positive effect on SWB. On the other hand, 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 if a dimension or an individual item is insignificant is more subtle. They might only exert a (positive) effect in connection with other parts. Non-significance could have several meanings: it could mean that this item or dimension is not important, that it is only important in combination with others, or that it only affects one domain of overall satisfaction. Examining all these relations exceeds the scope of this paper. I examine the effect for the dimensions individually by adding each one to the regression specification one at a time.

Putting all of them together in one regression does not produce meaningful results due to their high correlation (Table 4).

Table 4. *Correlation table for dimensions of economic freedom*

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

Notes: Partial correlations in parentheses (holding GDP constant). Calculated for 180 observations that are common to all indices.

The partial correlations of the Economic Freedom dimensions in parentheses show that, holding GDP constant, the indicators themselves are mostly positively related. The exception is that, holding GDP constant, a positive rating in **Government Size** seems to be negatively related to **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 **Government Size**, which seems unrelated at first sight.

As a reminder, the Fraser Institute gives high ratings if a country provides more EF. Hence, a high value for **Regulation** means less regulation. Therefore, a significant and positive dimension coefficient is an indicator that more EF/less government intervention in this dimension increases SWB, and vice versa for a negative coefficient.

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 5 shows the results for the **EFI** and its five dimensions. Initially, the **EFI** is consistently significant and enhances well-being, which is in line with the results of Ovaska and 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 **Legal System & Property Rights**, **Sound Money**, and **Regulation** dimensions are robust and positively significant for all SWB variables. A high value for **Regulation** means less regulation. **Size of Government** fails to show any significance, a fact that was anticipated by its low correlation with the index. However, it has a significant partial correlation with **Regulation**, which could mean that smaller government size is related to less regulation. **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.

As outlined in the theory section, higher EF can lead to more freedom of choice, as well as via other effects like higher tertiary education and better health, to more control. Hence, this finding is in line with psychological reasoning that perceived freedom & control over one's own life is the most important influence on SWB. Economically, it could be seen as support for the importance of free choice with regard to

Table 5. *Separate tests of economic freedom and its dimensions for three dependent SWB variables*

Test	Economic Freedom		
	Mean LS	Top 3 LS	Mean Hap
Economic Freedom Index	.2100*** (.0651)	.0233* (.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

Notes: All regressions include control variables, region and time dummies, and a constant term. Each row constitutes a separate regression. Parentheses contain standard errors.

*** Denotes significance at $p < .01$.

** Denotes significance at $p < .05$.

* Denotes significance at $p < .10$.

consumption and savings, based on individual preferences. Obviously, there are public good issues, externalities, or other reasons for intervention. However, despite these reasons, while government intervention and limitations of EF can theoretically increase well-being, the current level of intervention seems to be above the SWB optimizing level. The results also imply that public choice theories seem correct in emphasizing political self-interest (Niskanen, 1971), the role of bureaucracies (Luechinger, Meier, & Stutzer, 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 a government can improve welfare through intervention, it does not mean that it will do so (Tullock, 1998).

All dimensions of EF consist of several subcomponents and individual items. Because the items are within the dimension of EF are highly related and cannot be disentangled easily, we cannot infer well-specified causal effects from looking at regression results for each item. Still, conducting separate regressions for all sub-dimensions and items reveals some interesting correlations. It also reveals how well the measurement of EF by the Fraser Institute captures the factors that contribute to SWB. Detailed results here are available from the author.

Within the first dimension, i.e., **Government Size**, out of seven items and for the three dependent SWB variables, only one is significant, which, for all intents and purposes, might be statistical coincidence. De Haan and Sturm (2000) have argued against the inclusion of government size as a dimension at all and specifically against the way taxation is included in the index. The idea to include a measure for government interference may be a good one, but it might not be the right measure. The much simpler measure "Government Share as percentage of GDP" from PWT 6.3 is robustly significant and exerts a negative effect on SWB, in line with the results in Bjørnskov *et al.* (2007).¹⁵ The **Legal System & Property Rights** dimension, on the other hand, seems to capture the relevant factors very well. Four of the seven items are also individually significant for at least two of the SWB measures. Overall, this dimension is a robust and highly significant predictor of SWB. 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). In addition, a lack of established property rights prevents Coasian solutions to problems like externalities, and is, among other reasons, causing the "tragedy of the commons" (Hardin, 1968). The findings support the Fraser Institute's particular focus 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 EF through taxation, price controls, or regulation.

Within the third dimension, **Sound Money**, four out of the five items are also significant and positive individually. The size of inflation, as well as the closely related monetary growth rate, have already been shown to be negatively related to SWB by Di Tella and MacCulloch (2005) and Di Tella, MacCulloch, and Oswald (2001). Ovaska and Takashima (2006), on the contrary, found no significant effect of inflation in their smaller sample. They suspected that inflation volatility might be a better predictor, but did not test for it. This is supported by the item measuring the standard deviation of inflation,

which is also significant individually, at least at the 5% level. Though this is obviously not a conclusive result, future research might look more carefully into the question of whether the size of inflation or the volatility of inflation has a more negative effect on SWB. Psychologically, volatility might be worse as it increases uncertainty and decreases perceived control over one's life. People might become accustomed to high inflation, yet high uncertainty over future inflation rates leads to a limitation of choice, and people have to exclude financing and investment options simply because they cannot assess them properly.

It is somehow surprising that **Freedom to Trade** was only significant for one of the three dependent variables. Rather exceptionally, this is one of the few areas where economists usually agree on a beneficial effect. Historically, increases in trade freedom have probably been the biggest boost to global wealth and prosperity. In this case as well, a more detailed look at the individual components reveals that this might be due to measurement problems or misconceptions. In particular, the sub-components Tariffs, Difference between official and black market exchange rates, and International Capital Market Controls fail to be significant individually. It seems as if these components are no longer meaningful today. Following the first GATT agreement and the establishment of the WTO, a steady decrease in direct trade barriers like tariffs has been observed. On the other hand, a component measuring lower regulatory trade barriers is large, positive and highly significant individually. Hidden barriers like slow bureaucracies, complicated procedures, and high effort needed regarding documentation, or an artificial reduction in the capacity available for importation purposes, have increased heavily in the last few decades (Hanson, 2009). Though only tentative, the measurement of Freedom to Trade should perhaps be reconsidered in the future.

The last dimension, **Regulation**, has the largest single impact on SWB and is significant for all three dependent variables. Regulation is a very complex and controversial topic in economics. It can be helpful in alleviating problems like natural monopolies, positive and negative externalities, or imbalanced power in labor markets. On the other hand, skeptics like Stigler imply that "...as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefits" (Stigler, 1971, p. 3). In addition to what is seen, regulation always has impacts, which remain hidden at first, yet can ultimately reduce welfare. Theories of optimal regulation are unfortunately not 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.

The Fraser Institute splits regulation into **credit market regulations**, **labor market regulations**, and **business regulations**. When regressing these individually on EF, the results are somehow controversial given the current political agenda. Less credit market regulation is robustly related to higher SWB at the 1% level, whereas labor market regulation and business regulations have no significant individual effect. How can lower credit market regulation cause higher SWB? The financial industry is particularly prone to lobbying and regulatory capture. Moreover, financial regulation is highly complex and provides good examples of unseen or unintended effects. The offsetting behavior of regulated companies will counter the intended effects of regulation (Peltzman, 2010). Interest regulation, for instance, is economically unsound in trying to establish an artificial equilibrium. Price ceilings 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 lowest prior access to funds are likely to suffer most from this shrinkage in the credit supply (Hubbard, 2008). Artificially low rates also convey misleading information and lead to a misallocation of resources, for example through over-investment in speculative projects or housing bubbles.

We should keep in mind that all the effects of the individual dimensions controlling for GDP, and obviously, regulation, affect GDP as well. Still, the analysis of the individual dimensions has revealed some interesting insights. The measurement of the dimensions **Legal System & Property Rights**, **Sound Money** and **Regulation** seems to capture the factors related to SWB well. On the other hand, the dimension **Government Size** conveys no relevant information. Within **Freedom to Trade**, regulatory trade barriers seem to be more important than tariffs. Overall, lower regulation has the largest individual effect. In this area in particular, economists have to distinguish between the real effects of a policy measure and its intended effects. This result in particular suggests that attempts to introduce more regulation in order to remedy assumed market failures should be evaluated carefully and comprehensively.

(d) *Sensitivity analysis*

(i) *Socio-demographic*

So far, I have established that there is a robust positive effect of EF on SWB, and how the dimensions of EF contribute to that positive effect. The next step is to employ several sensitivity analyses to examine in more detail how the positive effect depends on societal characteristics. This makes particular sense as “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 EF. 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, Haiken-De New, & MacCulloch, 2010). For this purpose, the sample was split into the subgroups before the aggregation at the country level. The analysis can 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 (cf. Bjørnskov *et al.*, 2007). 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 countries 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 and MacCulloch (2005) and Alesina, Di Tella, and MacCulloch (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 6 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.

Overall, the results for the composite index are not affected by socio-demographics. The effect remains positive and significant at least at the 5%-level. For **Age**, there are two plausible

differences in its dimensions. **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 **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 **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 **Legal System & Property Rights** and **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 **Freedom to Trade** and **Sound Money** dimensions are equally positive for all social classes. Overall, the composite Index shows that EF benefits both high and low social classes.

This check for **Political Orientation** is related to past research, that has identified it as a relevant factor (cf. Dolan *et al.*, 2008). However, the data show no clear differences regarding the effect on SWB. The only noticeable difference is for **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 and 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.¹⁶

(ii) *Development level*

The sensitivity analysis for GDP in Table 7 compares aggregate country data again, but now examines if the effects differ for developed and developing countries. For this purpose, I split the sample at \$10 500 (the median income). Though somehow arbitrary, this is close to the \$10 000 level for which most studies “find that average income ceases being associated with SWB” (Bjørnskov *et al.*, 2010, p. 422). As the sample size is reduced by half, all coefficients exhibit lower significance levels due to larger standard errors. Furthermore, developing countries do significantly differ for some dimensions, which is indicated by bold coefficients.

The effect of **Government size** differs significantly in a nested model, however it is never significant. **Legal System & Property Rights** is only significant for developed countries, and the coefficients in the two subsamples are significantly different at the 10% level. This is in line with the finding that societies need to reach a certain income level to appreciate the institutions of democratic or judicial decision making as values in themselves, i.e., going beyond their effect on material

Table 6. *Sensitivity checks for socio-economic characteristics*

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					

Notes: All regressions include control variables, region and time dummies, and a constant term. The numbers refer to the dimensions 1 = Size of Government, 2 = Legal System & Property Rights, 3 = Sound Money, 4 = Freedom to Trade, 5 = Regulation. Each cell represents the coefficient of interest in a separate regression. Bold coefficients signal that the coefficients differ. Parentheses contain standard errors.

*** Denotes significance at $p < .01$.

** Denotes significance at $p < .05$.

* Denotes significance at $p < .10$.

Table 7. *Sensitivity checks for high and low GDP countries.*

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

Notes: All regressions include control variables, region and time dummies, and a constant term. Parentheses contain standard errors. Bold coefficients differ significantly between the two samples at least at the 10%-level.

* Denotes significance at $p < .10$.

** Denotes significance at $p < .05$.

well-being (Bjørnskov *et al.*, 2010). This does not mean that legal security is not important for poor countries, however, as it has been shown to be highly relevant for economic growth (Carlsson & Lundström, 2002).

Sound Money is only significant in the developing countries sample, but the coefficients are not significantly different at conventional levels. It is unlikely 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 in these countries. 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 developing countries, **Sound Money** is considerably lower and yet more volatile (mean = 5.95, Std. Dev. = 2.53).

In accordance with theories of regulatory capture, the negative effect of high regulation is significantly larger in developing countries, and the coefficient is nearly double the size than in developed countries. Though regulatory capture and corruption exist at all income levels, we would expect the effect to be stronger in poor countries. Due to weaker legal structures and lower wages for bureaucrats and government officials, regulation is exploited to a higher degree by lobbyists and interest groups, while politicians are, on average, subject to less democratic control.

Looking at the overall EFI the effect of EF is positive, though only significant for developing countries. A look at the sub-panel structure reveals that in developed countries, nearly half of the countries have three or more observations; consequently, we would expect stronger adaption effects. Developing countries have a lower average (mean = 5.83), but in developed countries people could become accustomed to high degrees of freedom or adjust their aspirations to a higher level (mean = 7.20, c.f. *Ovaska & Takashima, 2006*) and more observations per country. In contrast to *Bjørnskov et al. (2010)*, the effect of Log GDP remains significant almost throughout all equations in both samples (not displayed).

In developed as well as in developing countries EF seems to benefit subjective well-being, beyond its effect on material well-being. No specification yielded a significant negative effect. People in developing countries suffer the most from high regulation (and the associated negative effects), whereas those in developed countries profit in particular from a well-functioning legal system and secure property rights.

(iii) Culture

So far, we have established that there is a robust positive effect of EF that does not differ significantly for different socio-demographic groups. The legal system and property rights are more important in developed countries, whereas the positive effect of less regulation is more pronounced in developing countries. In a different context, *Bjørnskov, Dreher, Fischer, Schnellenbach and Gehring (2013)* show, for example, that people with a higher fairness perception are less negatively affected by income inequality. In addition, the effect of EF might be influenced by culture. Because we measure the effect of EF beyond material well-being, it is plausible to assume that its effect is moderated by people's attitude. This might be particularly true for two groups of cultural variables; first, the attitude toward other people. It seems plausible that we perceive freedom as less positive if we think other people will misuse that freedom for actions that we dislike; second, the attitude toward the market economy. EF fosters competition and reliance on free markets. People who perceive competition as negative or do not understand/trust market mechanisms should benefit less from EF.

Hence, in this section, I test if, and to what extent, the positive effect of EF is moderated by or depends on these attitudes. To measure attitude toward other people I use tolerance toward other people and trust in other people. **Tolerance** should capture if people expect to be negatively affected by the free choices of others because they might deviate from their own preferences. Societies that are more tolerant should profit more from EF because people accept differences in taste or preferences. **Trust** should capture if people expect others to misuse freedom to their disadvantage.

To measure attitudes toward the market economy, I use the answers to three questions in the WVS. The first question asks people about their perception of **competition**. Answers range

from 1 for "competition is harmful, brings out the worst in people" to 10 for "competition is good, stimulates new ideas."¹⁷ In countries where **competition** is perceived as something positive, the positive effect of EF should be more pronounced. The second question asks people about the **preferred ownership of companies**. Answers range from 1 for "more state owned companies" to 10 for "more private owned companies." Countries with a preference for more state owned companies should benefit less from EF. Another important factor for the attitude toward the market economy is the degree to which people believe that effort is rewarded with success. Hence, I also use the answer to the question "Do you think hard work brings success," with answers ranging from 1 for "strongly disagree" to 10 for "strongly agree." Societies with a higher belief that **hard work pays off** should benefit more from EF.

To ensure a clearly arranged presentation, I focus on those results with the average SWB dependent variable. I ran regressions piece by piece, by adding one culture variable and its interaction with EF at a time to the main specification. With the exception of trust, which is in the main specification, none of the main effects of the other culture variables is significant. *Table 8* shows that four out of five interaction terms have the predicted sign, i.e., higher values are associated with higher benefits from EF. Only one is statistically significant, at the 5% level, which is private ownership of companies preferred. Merely looking at the statistical significance (at the average) of interaction effect might not tell the whole story. It is still possible that for a substantial proportion of the distribution of the cultural variables the marginal effect of EF is affected (*Brambor, Clark, & Golder, 2006*). Plotting marginal effects with confidence intervals reveals the moderating effect of the culture variables in more detail. Thus, *Figure 3* shows the interaction plots for the five culture variables.

As predicted, societies that are, on average, more tolerant toward their neighbors also appreciate EF more. Still, even for those that are less tolerant, the effect never becomes negative, and for most tolerance levels, the effect of EF is positive and significant, at the 5% level. How we value freedom really seems to depend on how we value and respect the free choices of others. Trust, on the other hand, shows a surprising negative relationship, yet the effect of EF always remains positive. All the variables that are related to the attitude toward the market economy show the expected positive relationship.

The strongest moderator is the preference for private ownership of companies. Societies that expect hard work to be rewarded also benefit more from EF. Though small, a better perception of competition has the same positive effect. Why might the preference over company ownership have the strongest moderating influence? It is the clearest indicator of how much trust people have in the trustworthiness and capability of the government relative to private companies. If people had experiences with managers of private companies misusing their power for private enrichment, or treating their employees badly, their fear may have negative side effects of giving private companies more freedom. This is exemplified for the one country and point in time where we find a negative effect of EF, which is Russia in 1995. Russians at that time had just experienced a series of badly perceived privatizations, which might explain their strong aversion to private ownership. Even in Russia, this was only a temporary effect, and in 2000 and 2005, the preference for private ownership increased, and the effect of EF became positive.

Hence, we can conclude that the positive effect of EF is surprisingly robust across cultural dimensions. As a further robustness test, I calculated for which share of the countries along the five cultural dimensions the EF-coefficient remains

Table 8. *Moderating effect of culture*

Interaction of EF with culture variables (Scale 1–10)	Attitude toward other people		Attitude toward the market economy		
	“Tolerant toward other people”	“Trust in other people”	“Prefer private ownership over companies”	“Competition is good”	“Hard Work brings success”
Interaction coefficient	.0217 (.0341)	–.2253 (.3187)	.1111** (.0464)	.0127 (.0770)	.0206 (.0567)
Cut-off value of culture variable where Economic freedom turns significant	3.5	4.6	4.2	5.3	3
Share of countries for which the EF-coefficient is positive and significant	93.2%	85.6%	78.0%	95.9%	90.1%
Observations	148	180	177	172	171
Countries	64	79	77	49	70
Method	AR(1) RE model		AR(1) RE model		

Notes: Dependent variable is average SWB. All regressions include the control variables, region and time dummies, and a constant term. Parentheses contain standard errors. Regressions conducted separately for each culture variable and interaction term. Sample size varies due to the availability of the culture variables.

** Denotes significance at $p < .05$.

Sensitivity Analysis- How does culture influence the effect of economic freedom on SWB
(Marginal effect and 95%-confidence intervals):

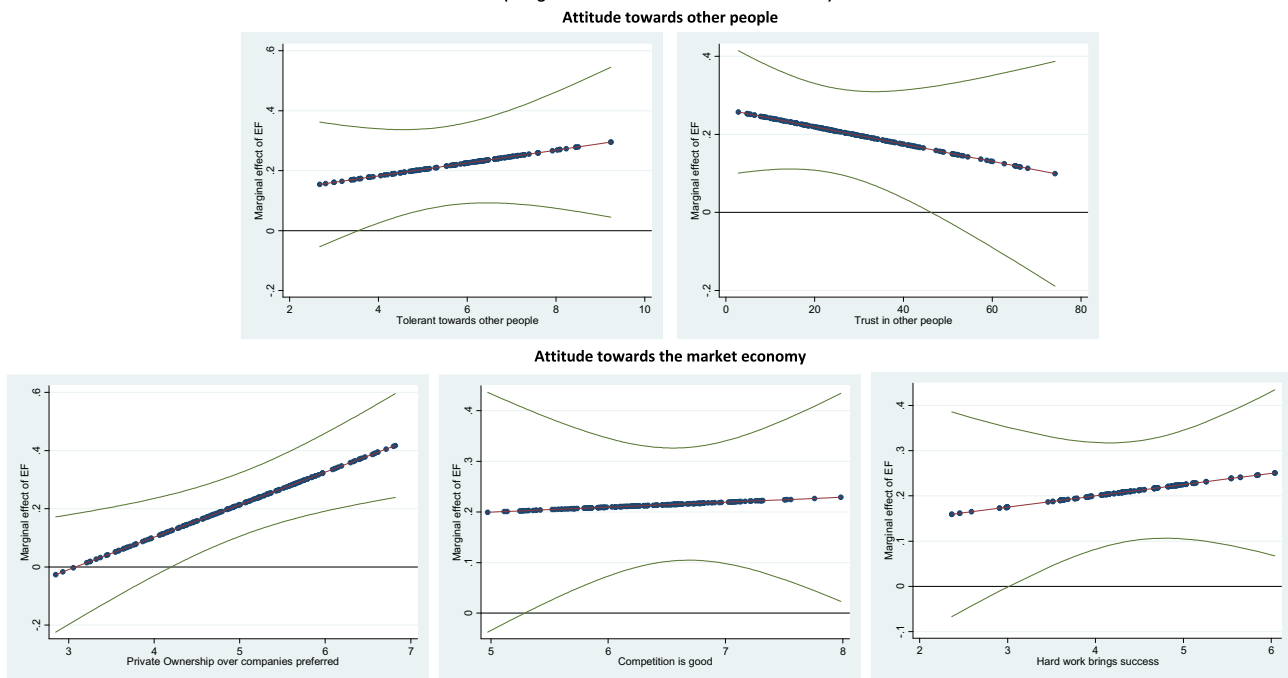


Figure 3. *Moderating effect of culture. Notes: Marginal effects of economic freedom on SWB with 95%-confidence intervals.*

positive and significant for each regression. The lowest share is 78%, and across three cultural dimensions the coefficient is significant for over 90% of the countries. This suggests that for the large majority of countries, regardless of their culture, EF is beneficial for the average citizen. Still, these numbers also show that for EF to benefit everybody, further efforts to communicate the benefits of market mechanisms as well as better education to increase tolerance and trusts in the society are needed.

4. CONCLUSION

Overall, the results throughout all regressions support a positive effect of Economic Freedom (EF) on subjective well-being (SWB). This finding is important both scientifically and politically, as material well-being or GDP is challenged as not necessarily corresponding to an improved quality of life (Stroup, 2007). Moreover, the coefficient should only be a lower bound for the absolute effect of EF. Many channels via

which we would assume a positive effect have been closed, for instance controlling for the income level with GDP per capita. Using panel data, I have shown that the effect is not due to omitted variable bias or serial correlation in the data. Several sensitivity analyses supported the robustness of the positive effect, and provided more details about who benefits the most from increases in EF.

The **Economic Freedom Index (EFI)** from the Fraser Institute seems to capture the factors of EF that are related to SWB quite well. In particular, its dimensions **Legal System & Property Rights**, **Sound Money** and **Regulation** are also strong individual contributors to SWB. **Regulation** is an area that highlights how a policy measure that is well intended (or at least supposed to be) exerts unseen or adverse effects that seem to be SWB decreasing. It is beyond the scope of this paper to explore the reasons and channels for this finding in detail. There are, however, several channels, like lobbyism or regulatory capture, highlighted in the relevant literature. It seems that, on average, the unintended consequences of more regulation prevail, in particular with regard to credit market regulation. One policy implication is to carefully and systematically evaluate the pros and cons of implementing new regulatory approaches and acknowledge the inherent problems. With regard to **Sound Money**, the strong positive effect of low and less volatile inflation rates shows that higher inflation rates are not a favorable option to remedy problems with high government debt.

The sensitivity analysis showed who benefits most from economic freedom. Overall, the positive effect of the **EFI** does not differ significantly between socio-demographic groups. Its dimension **Freedom to Trade** is significant and positive for young people and the dimension **Legal System & Property Rights** for the old people. The positive effect for the index does not differ significantly between genders. It is also not affected by political orientation and social class. Its dimensions **Legal System & Property Rights** and **Regulation** are significant and positive for high social classes, but not for low social classes.

Developing countries seem to benefit more from EF in terms of higher SWB than developed countries. This seems to be due

to adaption effects in developed countries. Moreover, developing countries also profit more from less **Regulation**. In developing countries, poorly paid bureaucrats and regulators, as well as on average weaker legal systems, seems to amplify the negative effects of distorting regulation on SWB. As a policy conclusion, reforms that increase EF in developing countries should focus on reducing unnecessary **Regulation**, in particular in areas that are prone to regulatory capture or corruption. In addition, **Sound Money**, which is mainly related to lower and less volatile inflation, has a high individual positive effect on the SWB of people in developing countries. One policy implication is to increase the independence of central banks and commit them to credible inflation targets. For developed countries, the positive effect of a well-working **Legal System & Property Rights** is significantly larger and exhibits, together with less **Regulation**, the largest individual effect on SWB.

Culture also affects to which degree societies profit from more EF. Firstly, the attitude toward other people is important. Tolerance toward fellow society members and their choices allows people to have a greater appreciation of the benefits of free choice. Surprisingly, societies with a higher level of trust profit less from EF. Secondly, the attitude of people toward the market economy moderates the positive effect. Societies that place greater value on the importance of hard work experience a larger positive effect of more EF. The same holds, though to a smaller degree, for societies, which have a positive perception of competition. The largest moderating influence is the preference for state or private ownership of companies. Societies that have a strong aversion to private ownership (maybe due to education or history) profit less from EF. Even in these societies, the effect remains positive, bar one exception. Societies that have more trust in private ownership compared to state ownership experience the largest positive effect. Accordingly, a direct policy implication is to combine reforms that increase EF with approaches to understand and explain the benefits of competition and free markets to citizens. Furthermore, increasing tolerance within the country, for example via better education, will also increase the level of appreciation people have for EF.

NOTES

1. For example the governments of France, Spain, and Italy introduced bans on short-selling of certain stocks and bonds, <http://www.bloomberg.com/news/2011-08-25/short-selling-bans-extended-in-france-spain-italy-amid-stock-volatility.html>.

2. In the Soviet Union, especially after World War 1, overall output increased strongly 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.

3. 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 increased greatly. For a modern attempt to model how free trade changes the composition of goods available in an economy, see Romer (1994).

4. 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 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).

5. Bjørnskov *et al.* (2008) report a positive effect of decentralization on SWB.

6. 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.

7. 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 *et al.* (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.

8. The specific gathering of data took place in 1981 (1981–84), 1990 (1989–93), 1995 (1994–99), 2000 (1999–2004), 2005 (2005–07). 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 (Bjørnskov, 2008, 2010). 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.

9. In the data set available on the WVS homepage, some data from the European Value Surveys (EVS) are not included due to legal reasons. It is however possible to extract the EVS waves, and follow the instruction under the link <http://www.wvsevsdb.com/wvs/DownloadDoc.jsp> to create the combined file which includes more European Countries.

10. The correlation with, e.g., the Heritage Foundation's Economic Freedom Index is 0.8259. When both indexes are included in a regression, the Fraser Index remains significant, while the Heritage Index is mostly insignificant. Under the link <http://www.freetheworld.com/2012/EFWdataset2012.xls> more details about the performance of individual countries in each of the dimensions can be found.

11. Including a large set of other potential control variables like political freedom, unemployment, demographic variables, inequality, etc. does not affect the size and significance of the coefficient of the Economic Freedom Index. I refrain from including these because on the one hand some of these factors are transmission channels for the effect of Economic

Freedom (like inequality and unemployment) and others are used to calculate or closely related to individual components of the Economic Freedom Index (like the ICRG Political risk assessment). Results with other sets of control variables are available from the author on request.

12. The question was "How important is god in your life", with 10 being very high and 0 very low.

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

14. 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.

15. Testing with only one of the two or both together always yielded the same results. The PWT variables remain significant.

16. Overall, when calculating a fully interacted nested model, the effect of Economic Freedom and its components does not differ significantly for any of the socio-demographic criteria. When using a simple *t*-test and Stata's *suest* command, the dimensions Regulation and Freedom to Trade differ significantly with regard to Political Orientation, Legal Security & Property Rights, Sound Money, and the composite index differ by Age group. Please note that each of the *suest* command has the drawback that the random effects with correction for first-order serial correlation cannot be applied.

17. The original coding was just the inverse; I inverted the numbers to ensure comparability with the other variables where higher values are also related to a more positive attitude toward the market economy.

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