

Do Institutions of Capitalism Promote More Equal Distribution of Happiness?

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Abstract

We investigate how the policies and institutions consistent with the principles of capitalism, measured by the Economic Freedom of the World (EFW) index, are related to the distribution of happiness, measured by the standard deviation of life satisfaction, in a large sample of countries across the world. Our main finding suggests that capitalistic institutions are associated with lower inequality of happiness even when we control for economic development, social trust, unemployment, religiosity, and constant happiness trends over time. These results are robust to three alternative measures of happiness inequality including the mean absolute difference, the interquartile range, and the Gini coefficient. We also test how different measures of institutional quality affect the distribution of happiness in countries. We find suggestive evidence that government effectiveness, which captures perceptions about the quality of public and civic services, policy formulation and implementation, and the credibility of government commitment to such policies, has the largest happiness equalizing effect. Finally, we use an instrument that has been identified by a rich historical literature *a priori* (Easterly 2007), the measure of suitability of land for growing wheat relative to sugarcane, as a source of exogenous variation to investigate the causal impact of the rule of law on happiness inequality. Our results suggest a strong negative and significant causal link between the two. We argue that our findings imply that capitalistic institutions have a happiness equalizing effect beyond their positive impact on economic development and social capital and *via* the channels of procedural utility and people's intrinsic motivations.

Keywords: Economic Freedom, Happiness Inequality, Institutions

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1. Introduction

Over the past several decades, thousands of studies in different times and places have examined the causes and correlates of happiness. The World Database of Happiness (Veenhoven 2015), for instance, reports more than 9,000 happiness studies of which 4810 empirical papers covering 164 countries. Majority of these studies have focused on the correlates of the *level* of happiness within and across countries and over time, with only a handful of studies examining how happiness is *distributed* across individuals or within one's lifetime.

Yet, studying the determinants of the distribution of happiness is relevant for several reasons. First, looking at levels (or averages) could be misleading, especially when it comes to economic and social policy. For example, Stevenson and Wolfers (2008) and Dutta and Foster (2013) show that even though average happiness in the United States has stayed relatively flat since the 1970s, the inequality of happiness has substantially decreased with a large number of people moving from the lowest happiness category "not very happy" to the middle category "pretty happy." Similarly, Clark et al. (2015) show that economic growth is systematically correlated with lower happiness inequality measured by the standard deviation of different happiness metrics across and *within* countries.

These findings cast doubt on the widely accepted view that economic growth does not lead to greater happiness over time (Easterlin, 1974, 1995, 2010). They further reveal important socio-economic trends that other more conventional measures of social inequality have not been able to capture. This last point comes in view of the rapid increase of income inequality in the US for the same period of time. Similarly, Ott (2005, 2010) documents that cross-national patterns of income inequality differ widely from patterns of happiness inequality, and Veenhoven (2005) finds falling happiness inequality in EU countries over the years 1973-2001 despite rising income inequality.

Second, from the perspective of policy analysis society may be interested not just in maximizing the average level of happiness, but also how happiness is distributed across individuals and over time. A large experimental and empirical literature supports the view that people are inequality averse and have preferences for more equal distribution of income (see Ferrer-i-Carbonell & Ramos, 2013 for a survey).² This literature is largely based on lab experiments of small groups of people, but recently studies using self-reported data on

² Classical economists, for example, understood that human behavior is driven by a multitude of psychological motives, not just by self-interest. In the *Theory of Moral Sentiments*, for example, Adam Smith (1759, p.1) notes "How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it."

happiness have provided additional evidence of more representative global samples (e.g., see Alesina et al. 2004). In the US, resentment over socio-economic inequality has a long history and recently culminated in the Occupy Wall Street movement.

Finally, happiness inequality may be an important determinant of many socio-economic outcomes. Recent research shows that while an overwhelming majority of Americans have a preference for a more egalitarian society, most Americans also significantly underestimate the actual level of income inequality (Norton & Ariely, 2011). This puzzling observation could very well be a reflection of the declining happiness inequality in the US over the past several decades. Such attitudes about social mobility, perception of fairness, and economic inequality may be determined to some extent by people's perception of the distribution of happiness and not just by the distribution of income inequality. Veenhoven (2005) suggests that social inequality cannot be measured appropriately by using indicators of inequality that use specific inputs such as income or education.

So far, however, the economic discourse has mostly focused on the causes and correlates of economic inequality and little is known about the determinants of happiness inequality. In this paper, we examine how the policies and institutions consistent with the principles of economic freedom and good governance are related to the distribution of happiness in countries. In this sense, our paper builds on previous work by Ott (2005), Veenhoven (2005) and Clark et al. (2015) who find that economic development and democratic quality are correlated with lower levels of happiness inequality. In this latter study, Clark et al. (2015) argue that economic growth leads to a greater provision of public services such as education, health, and public infrastructure that reduce the anxieties of the worst-off populations.

This study contributes to this line of research in three ways. First, majority of the previous evidence on the relationship between institutions and happiness inequality is based on bivariate correlations. In this paper, we control for the level of economic development, social capital and other macro variables, which allows us to test if the effect of economic freedom is independent from the effect of these variables and captures processes associated with procedural utility and people's intrinsic motivations that can possibly reduce happiness inequality through the economic freedom channel. We furthermore show that economic development is correlated with lower levels of happiness inequality even when we control for a rich set of institutional variables. In that sense, we show that the results by Clark et al. (2015) are not driven by omitted variables associated with institutions.

We also test if our results are sensitive to the use of four different measures of happiness inequality: (1) the standard deviation, (2) the mean absolute difference in

happiness, (3) the interquartile range, and (4) the Gini coefficient. Our choice of inequality measure is informed by Kalmijn and Veenhoven (2005) who find that the standard deviation is the best performing statistic in the context of happiness inequality research. As Clark et al. (2015) note if economic growth increases happiness, and happiness is bound by some upper limit, then economic growth will decrease the variance of happiness by construction. Using the standard deviation metric helps us avoid the problem of finding a statistically artificial relationship between the two.

Second, since the EFW index is a complex composite indicator that has multiple dimensions that can theoretically affect happiness inequality in opposite directions, we examine how the different areas of the index—government size, legal system, sound money, international trade, and regulation—are related to the inequality of happiness across countries. Following Ott (2010), we also examine the effect of several alternative measures of governance on SWB from the World Bank Governance Indicators (WBGDI).

Finally, we use an instrument that has been identified by a prolific historical literature *a priori* (Engerman and Sokoloff 2000), the measure of the suitability of land for growing wheat relative to sugarcane, as a source of exogenous variation to investigate the causal impact of the rule of law, measured by the area 2 of the EFW index, on happiness inequality. In this sense, to the best of our knowledge, we provide some of the first estimates of the causal impact of institutions on happiness inequality.

Our findings suggest that economic freedom is significantly correlated with lower inequality of happiness even when we control for economic development, social capital, religiosity, and constant trends over time. If causal, our results suggest that the magnitude of the effect is substantial: a 3-point increase in the EFW index decreases happiness inequality by more than a standard deviation. These results are robust to the three alternative measures of happiness inequality that we employ for our analysis.

Once we decompose the EFW index, we find that institutions associated with the principles of sound money, freedom to trade internationally, and low regulatory environment all contribute to lower levels of happiness inequality. We also test how different measures of institutional quality affect the distribution of happiness in a country. We find suggestive evidence that government effectiveness, which captures perceptions about the quality of public and civic services, policy formulation and implementation, and the credibility of government commitment to such policies, has the largest happiness equalizing effect. Finally, the results from our instrumental variable estimations suggest a strong, statistically significant and negative casual link between the rule of law and happiness inequality.

2. Economic Freedom and Happiness Inequality

How does economic freedom influence the distribution of happiness in a country? There is little theoretical and empirical evidence to draw on to be able to answer this question. Majority of the previous studies examine the effect of economic freedom on the average *level* of happiness across countries and find a strong positive relationship between the two (Bjornskov et al., 2010, Rode, 2013, Gehring, 2013). However, it is not clear whether economic freedom benefits more those at the top of the happiness distribution or those at the bottom. Some initial evidence (Ott, 2005, 2010) indicates that countries with better democratic quality and government effectiveness tend to have more equal distribution of happiness. Preliminary evidence in Figure 1 also shows that people who live in countries with higher level of economic freedom report higher mean level of life satisfaction (upper panel) and that happiness inequality in more economically free countries, measured by the standard deviation of life satisfaction, is significantly lower (lower panel). Figure 2 goes a step further and shows the distribution of answers to the life satisfaction question from the World Values Survey for the four quartiles of the EFW index. The figure suggests that as countries become more economically free, more people move from the bottom and top of the happiness distribution towards its upper middle part. Of course, the evidence in these figures could be due to third factor such as economic growth that is correlated with both happiness inequality and economic freedom.

Providing a more definitive answer, however, is challenging because economic freedom determines the relative rewards from different productive (e.g., higher education) and non-productive activities (e.g., rent-seeking) which can in turn affect variety of socio-economic outcomes such as economic growth, the level of entrepreneurship, income inequality, or social capital that are important determinants of happiness. It is also not clear what is the optimal size of the government, and thus economic freedom, to achieve a level of redistribution that maximizes social welfare and reduces social inequality. One of the most important roles of modern governments across the world has been redistribution and creating equality of opportunity (Mueller 2003). Public choice scholars, however, are quick to note that beyond some optimal level, greater government size can be welfare reducing and create even larger disparities in equality of opportunity. This is because most political actors have a vested interest in larger government, not optimal government. Furthermore, politicians and bureaucrats are driven by their own self-interest and are subject to political capture by special interest groups that through lobbying and rent-seeking create inefficiencies and ultimately greater economic and political inequality (Downs, 1962;

Niskanen, 1971; Tullock, 1998). What is the optimal size of the government to maximize social welfare is still an open question in the literature.

Below we propose a simple theoretical framework to help guide our analysis, which is followed by empirical tests in section 4. We argue that there are four possible channels through which economic freedom can influence the distribution of happiness inequality: (1) economic outcomes, (2) social capital, (3) procedural utility, and (4) intrinsic motivations.

2.1 Economics Outcomes

There is by now a large theoretical and empirical literature that shows that economic freedom is correlated with many positive economic outcomes. People who live in countries with institutions that are consistent with the principles of economic freedom are more likely to earn higher incomes (De Haan, Lundström, & Sturm, 2006), less likely to experience long run unemployment (Feldmann 2007), and in turn report higher levels of control over their life (Nikolaev & Bennett 2015). Economic freedom is also associated with lower levels of inflation, higher level of human capital investment (Gwartney, Holcombe, & Lawson, 2006; Hall, Sobel, & Crowley, 2010), and higher level of entrepreneurial activity (Bjørnskov & Foss, 2008; Kreft & Sobel, 2005). As a consequence, people in more economically free societies face more real opportunities on the labor and product markets and less poverty (Azman-Saini, Baharumshah, & Law, 2010).

A critical question here is whether economic opportunities will be more evenly distributed in more economically free societies. The literature on the relationship between economic freedom and economic inequality has so far, however, produced ambiguous results (for a review of this literature see Bennett & Nikolaev, 2015). Thus, two competing hypotheses are possible here:

Hypothesis 1: Economic freedom reduces happiness inequality since material gains and economic opportunities are more valuable for people at the bottom of the economic distribution than to those at the top. Even if economic freedom creates a more unequal distribution of economic opportunities, there is still an overwhelming evidence that individuals at the bottom of the economic distribution are better off in more economically free societies compared to their counterparts in less economically free societies (De Haan, Lundström, & Sturm, 2006). According to the law of diminishing marginal utility, then, we expect material opportunities at the bottom of the income distribution to generate higher levels of happiness and to lead to overall reduction in the inequality of happiness. Frey and Stutzer (2000), for example, find that beyond \$10,000 of “subsistence” level of income, more

money does not bring more happiness. Although Kahneman & Deaton (2010), using data from the US, find this to be true only for hedonic happiness and the threshold point to be \$75,000.

Hypothesis 2: Alternatively, more choices may raise the material aspirations of people, especially those at the bottom of the economic distribution, leading to higher levels of inequality of happiness (Duesenberry, 1949; Frank, 1999; Scitovsky, 1976; Stutzer, 2004). If more economically free societies offer higher economic rewards, they may set the benchmark for social comparison higher. As poorer people compare themselves to those at the top of the economic distribution, they may experience more frequent feelings of disappointment and resentment even if they face more economic opportunities. Furthermore, this could lead to positional arm races that can reduce social welfare (Frank, 1999, 2005; Layard, 1980). The end result will be higher level of happiness inequality despite greater material opportunities.

2.2. Social Capital

There is also an emerging literature that shows that good institutions, and in particular institutions consistent with the principles of economic freedom, are linked to many positive social outcomes. Previous studies, for example, find that economic freedom is associated with higher levels of tolerance (Berggren & Nilsson, 2013) and higher level of social trust (Berggren & Jordahl, 2006) that cultivate an environment of peacefulness (De Soysa & Fjelde, 2010). Furthermore, Nikolaev & Bennett (2015) show that people in more economically free societies are more likely to feel connected with each other, which can translate to less frequent feelings of loneliness. More inclusive markets and higher levels of social capital, then, increase people's sense of relatedness and narrow differences in happiness as those at the bottom of the income distribution, or traditionally discriminated minorities, feel more connected to the rest of society.

2.3. Procedural Utility

There is an increasing evidence in the economics of happiness literature that people care not only about different socio-economic outcomes, but also about the processes that lead to these outcomes (Frey, Benz, & Stutzer, 2004). Thus, while the extent to which people feel unhappy with the level of inequality in a country may depend on their own position in the economic (or happiness) distribution, it can also depend on how they view the processes that generate such inequality. Alesina et al. (2004), for example, show that Americans are less

inequality averse compared to Europeans, mostly because they believe in the procedural fairness of the US system. Thus, institutions may provide an additional source of utility, *procedural utility*, because they determine not only different socio-economic outcomes, but also how these outcomes are generated. In this sense, even if a person is at the bottom of the income distribution, they may experience higher levels of happiness if they believe that the institutional environment in their country provides a fair chance for everyone to move up the socio-economic ladder. Nikolaev & Bennett (2015) show that people who live in more economically free countries are more likely to report higher perception of procedural fairness and social mobility. In this respect, economic freedom and good institutions may reduce happiness inequality.

2.4 Intrinsic Motivations

The psychological theory of self-determination (Deci and Ryan 2000) suggests one final channel through which economic freedom may affect the distribution of happiness in a country. According to this theory, people strive to satisfy three basic intrinsic needs: (1) autonomy, (2) relatedness, and (3) competence. In this sense, economic freedom may be valuable in and of itself because it emphasizes the importance of human agency and allows individuals to act in a deliberate and purposeful manner, exert power over their environment, and develop their talents by exercising autonomy and self-expression. This can lead to greater feelings of self-worth and human empowerment, especially for those who are worst-off and lack economic opportunities. Welzel (2013), for example, develops a theory of emancipation based on the human desire for an existence free from domination. He argues that as freedom grows, people gain control over their lives and society's agenda. Free agency leads to the emergence of emancipative values, which then lead to higher level of psychological well-being. Nikolaev & Bennett (2015) show that people who live in countries with institutions consistent with the principles of economic freedom experience more frequent feelings of pride and accomplishment. Furthermore, intrinsic attributes such as autonomy and competence are characterized by the experience of "flow" (Csikszentmihalyi, 1991), which is one of the highest feeling of personal happiness that occurs when an individual is completely immersed in a self-selected task or activity. Recent research also finds that the perception of freedom of choice is one of the most important determinants of SWB (Inglehart et al. 2008; Verme 2009).

Overall, our simple theoretical framework, which by no means is exhaustive, implies that economic freedom is more likely to reduce happiness inequality on net. However,

different psychological and economic theories suggest that the relationship can go either way depending on the relative magnitudes of the different effects.

3. Data

In this section, we describe the main variables used in this study. Table 1 presents summary statistics.

3.1 *Inequality of Happiness*

Happiness data was collected from the latest aggregated release of the World Values Survey (WVS). Since 1981, the WVS has polled almost 100 societies, representing nearly 90% of the world's population. Our main sample spans from 1981 through 2012 and represents a cross section of up to 92 countries (198 country-year observations). Specifically, data on life satisfaction were collected using the following question: “*All things considered, how satisfied are you with your life these days?*” The recoded scale of possible answers ranged from 1 (*not at all satisfied*) to 10 (*very satisfied*). Thus, our happiness measure is a reflective assessment involving evaluative judgment of one's life and requires an effort to remember and evaluate past experiences.

To create a measure of happiness inequality, we use the standard deviation of life satisfaction across citizens of each country and year survey data are available. Our choice of happiness inequality measure is based on the work of Kalmijn and Veenhoven (2005) who review a number of inequality descriptive statistics used to quantify inequality of happiness in nations and find that the best performing statistic is the standard deviation (with the worst performing statistic being the Gini coefficient). Kalmijn and Veenhoven (2005) further find that the mean absolute difference and the interquartile range are other well-performing statistics, so we incorporate them into our analysis as a robustness test.

Self-reported data, by their nature, cannot be validated. However, an extensive literature exists that validates SWB data indirectly and shows that SWB metrics are valid, reliable, and psychometrically sound (Diener, Inglehart, and Tay 2013; Kahneman and Krueger 2006; OECD 2013; Stone and Mackie 2014). Moreover, subjective well-being metrics are commonly used in economic research and policy analysis (Di Tella, MacCulloch, and Oswald 2001; Diener et al. 2009).

3.2 *Economic Freedom*

The independent variable of interest is the degree to which a country's institutions and policies are consistent with economic freedom. Following a large body of empirical literature, we use the Fraser Institute's Economic Freedom of the World index (EFW). The index is comprised of 43 variables that are assigned to five major areas: (EF1) Size of Government; (EF2) Legal Structure and Security of Property Rights; (EF3) Sound Money; (EF4) Freedom to Trade Internationally; and (EF5) Regulation of Credit, Labor, and Business. Each component is rated on a 0-10 scale that reflects the distribution of the underlying data. The five area ratings reflect the average of the component ratings, and the composite index reflects the average of the five areas. Data on economic freedom is available in five year intervals prior to 2000 and annually afterwards (Gwartney, Lawson and Hall, 2014).

3.4 Political Institutions

While our primary focus is on how economic institutions and policies affect happiness inequality, we also test whether democratic political institutions also influence the distribution of happiness. Democratic societies allow citizens to actively participate in the governance of their countries, potentially providing them with a sense that their votes and choices matter. Specifically, we use a set of measures of political institutions from the latest release of the WBI dataset. The WBI dataset has been collected since 1996 and covers 215 countries. There are six aggregate indicators— (1) Voice and Accountability, (2) Political Stability and Absence of Violence, (3) Government Effectiveness, (4) Regulatory Quality, (5) Rule of Law, and (6) Control of Corruption—which summarize the views of a large number of enterprise, citizens, and expert survey respondents in industrial and developing countries.³

3.5 Factor Endowments

We use as a measure of factor endowments the measure of the suitability of land and climate for growing wheat relative to sugar (Wheat-Sugar) developed by Easterly (2007). Wheat-Sugar is measured as the log of the ratio of one plus the share of arable land suitable for growing wheat to one plus the share of arable land suitable for growing sugar, or $\log\left(\frac{1+\text{share land suitable for wheat}}{1+\text{share land suitable for sugarcane}}\right)$. In section 5.2 we provide theoretical justification for the plausible validity of Wheat-Sugar as an exogenous instrument for the rule of law.

³ These data are collected from 32 individual data sources produced by survey institutes, think tanks, non-governmental organizations, and private sector firms. For more information on data collection and methodology see: <http://info.worldbank.org/governance/wgi/index.aspx#home>

3.6 Other Control Variables

We also control for the level of economic development using the real log of PPP-adjusted GDP per capita from the World Bank World Development Indicators. In addition, we include a measure of social capital, which is captured by the mean level of social trust in a country, and the level of religiosity, which is measured by the proportion of people who answer being “religious.” Both of these variables are collected with questions from the WVS and have previously been found to be important determinants of the level of happiness in a macro context (see Bjornskov et al., 2010)

4. Model Specification

The basic model that is used throughout this study can be summarized as follows:

$$Happiness\ Inequality_{ct} = \sum \varphi_j EF_{ct}^j + \delta X_{ct} + \alpha_c + \gamma_t + \varepsilon_{ct} \quad (1)$$

where $Happiness\ Inequality_{ct}$ represents the standard deviation in life satisfaction for country c in year t , $\sum EF_{ct}$ is the Economic Freedom of the World index, or one its five dimensions, X_{ct} is a vector of controls including the log of GDP per capita. Country specific effects, year effects, and i.i.d. error term are denoted by α_c , γ_t , and ε_{ct} , respectively.

Several potential problems arise with the specifications above. First, the data that is used in the panel is unbalanced (i.e., time period $T_i \neq T$ for some c), and thus likely to be heteroskedastic since majority of the missing observations are associated with less developed countries. This necessitates using robust standard errors to avoid reporting inflated significance of the independent variables.

Another problem is unobserved country heterogeneity, which is common for most cross country regressions. One way to deal with unobserved country heterogeneity when panel data is available is to use random-effects (RE) or fixed-effects (FE) models. One advantage to using a random-effects model is that it is more efficient because it uses the variation across countries and over time whereas fixed-effects estimation relies solely on within-country variation over time. A major assumption to using a random-effects model is that the country-specific effect is not correlated with other covariates. This assumption, however, is often violated since the country specific characteristics such as geography or culture is likely to also be correlated with the other explanatory variables such as social trust or religiosity.

A Hausman test for model (4) in Table 2, for example, rejects the null hypothesis that the country effects are uncorrelated with the explanatory variables ($\chi^2=368.22$, $p=0.000$). This confirms that the assumption $\varepsilon_{ct} \sim (0, \sigma^2)$ is not satisfied and the random effect model is not appropriate. One possible solution is to estimate the model using clustered-robust standard errors under the weaker assumption that errors are independent across countries, i.e., $E(\varepsilon_{ct}, \varepsilon_{js}) = 0$ for $c \neq s$ and ε_{ct} is heteroskedastic, which yields consistent results.

In addition to heteroskedasticity and country heterogeneity, another potential problem is autocorrelation of the dependent variable. A simple test shows that the errors of model (4) in Table 2 are serially correlated, which is another reason to use clustered robust standard errors in a pooled OLS estimation. The country fixed-effect model provides an explanation for this correlation since the country specific effect induces correlation over time for a given country. The estimated autocorrelations, however, are relatively constant across years, which suggest that the errors are stationary.

5. Empirical Results

5.1 Pooled OLS Regressions

We present a summary of our main findings in Table 2. All models in this table are estimated with a pooled OLS with clustered robust standard errors at the country level. Model (1) is a parsimonious specification that includes only the economic freedom variable as the sole regressor. Since EFW is likely to affect happiness inequality through the channels of economic development and social capital, our goal here is to get a sense of the overall (direct and indirect) effect of capitalistic institutions on the distribution of happiness. The EFW variable enters our regression with a negative and statistically significant coefficient, which suggests that higher levels of economic freedom are associated with more equal distribution of happiness. If causal, our estimates suggest that a 1-point increase in the EFW index (on a scale from 0-10) decreases the standard deviation of happiness in a country by 0.133 points, all else constant. This effect is economically significant since happiness inequality is distributed with a standard deviation of 0.33 around a mean of 2.17. In other words, a 3-point increase in EFW index decreases happiness inequality by more than a standard deviation.

Model (2) adds the log of GDP per capita as an additional control variable and model (3) and (4) further include social trust, and the level of religiosity, and unemployment to our specification. In all three models, EFW is statistically significant and has a negative

sign, although once we control for these additional variables, the magnitude of the effect drops by more than a half in model (4). As expected, the coefficient on unemployment has a positive sign indicating that higher level of unemployment increases happiness inequality. This result is intuitive since the negative effect of unemployment on life satisfaction is well-documented in the literature and unemployment often affects disproportionately those who are worst off economically (e.g., people with low-level skills). The coefficient on social capital enters the regression with a positive sign, but it loses its statistical significance in model (4). Religion is found to be positively correlated with happiness inequality, although the result is statistically insignificant and as we show later not robust with the choice of happiness inequality measure. More importantly, however, the coefficient on log GDP enters the regression with a negative sign and is highly statistically significant in all regressions. This suggests that happiness is distributed more evenly in countries with higher level of economic development and provides further proof for the argument in hypothesis 1. The results from our analysis are consistent with the findings of Clark et al. (2015) and Ott (2005). Finally, model (5) add an additional variable that measures people's perception of freedom of choice and control over their life. Once we add this variable, the coefficient on economic freedom loses its significance, although it still enters negatively the regression, suggesting that a possible channel through which economic freedom may reduce happiness inequality is through the channel of *procedural utility*.

Table 3 replicates model (4), from Table 2 with 3 alternatives measures of happiness inequality: the interquartile range, the mean absolute difference, and the Gini coefficient. In all models, we use OLS with robust standard errors clustered at the country level. For comparison purposes, we also include the estimation results from model (4) in Table 2. The results in this table suggest that our results are not sensitive to the choice of inequality measure.

Next, we decompose the EFW index into its five main sub-indexes and report the results in Table 5. While all areas of the EFW index are negatively correlated with happiness inequality, only the areas of sound money, international trade, and regulation are statistically significant, with the last area exerting the strongest impact of all five. We repeat this exercise using several indexes from the WBGI as a robustness test. Our results are consistent with our main findings so far—better quality of institutions is strongly and negatively correlated with happiness inequality. For example, lower level of corruption and strong legal system are associated with lower happiness inequality across nations. Among the six measures of governance, the most robust institutional variable that is correlated with lower levels of

happiness inequality is government effectiveness. This measure captures perceptions about the quality of public and civic services, policy formulation and implementation, and the credibility of government commitment to such policies.

5.2 2SLS Regressions: Factor Endowments as a Source of Exogenous Variation

The analysis so far is rather descriptive since our pooled OLS regressions do not allow us to adequately address issues of reverse causality or country heterogeneity. In this section, we use a recently developed instrument by Easterly (2007), the measure of the suitability of land for growing wheat relative to sugarcane (Wheat-Sugar), as a source of exogenous variation to investigate the potential causal impact of rule of law, measured by area 2 of the EFW index, on happiness inequality. The analysis is performed in two steps:

$$Rule\ of\ Law_c = \delta X_c + \vartheta Z_c + \varepsilon_c \tag{2}$$

$$Happiness\ Inequality_c = \beta X_c + \delta \widehat{Rule\ of\ Law}_c + \varepsilon_c \tag{3}$$

where Z represents the instrument Wheat-Sugar and ε is the error term for country c . Equation (3) re-estimates equation (1) using the predicted values of the rule of law variable, $\widehat{Rule\ of\ Law}$, which are obtained from the estimation of equation (2).

The rationale for using Wheat-Sugar as an instrument for the rule of law rests on the endowment theory of legal origins, and specifically the so-called Engerman-Sokoloff hypothesis (E-S). According to E-S, a country's climate, geography, and natural resources "shaped the initial formation of property rights and the initial systems for defining, defending and interpreting property rights [and] have had long-lasting ramifications on property rights and private contracting today (Levine 2005: 75-76)." Engerman and Sokoloff (1997, 2000) further argue that natural resources related to mining and agriculture shaped the development of legal institutions in the Americas following European colonization. Areas endowed with land suitable for the production of cash crops such as sugarcane, tobacco and coffee, as well as with large unskilled populations, gave European colonizers the incentive to establish large slave plantations so that they can take advantage of economies of scale. As a consequence, an elite class of landowners emerged that instituted policies that protected their interests and created political inequality which in turn perpetuated economic inequality over time (this is what Easterly calls structural inequality).

On the other hand, areas that were endowed with climates and land suitable for the production of grains such as wheat and unpopulated by natives gave rise to an economic environment conducive to a smaller-scale family farming. A sizeable middle-class emerged since majority of immigrants became independent land owners. Because the initial distribution of economic and political power was far more equal, more egalitarian legal institutions were developed that provided property rights protection for the greater majority of the people. Thus, we use Wheat-Sugar, which is a measure for the suitability of climate and land endowments for the growing wheat relative to sugarcane, as a source of exogenous variation. While Easterly (2007) shows that Wheat-Sugar is negatively correlated with income inequality in reduced form OLS estimations, Bennett & Nikolaev (2015) show that this instrument works through channel of rule of law channel. A successful instrument will furthermore be correlated with the rule of law, but not directly associated with the inequality of happiness. Figure 3 shows that there is strong negative correlation between happiness inequality and the rule of law (-0.515) in our sample, which is statistically significant at the 1 percent level. We are further confident that our choice of instrument is valid, since it is highly unlikely that our measure of the suitability of land for growing wheat relative to sugarcane affects happiness in a direct way (at least no economic or psychological theory that we are aware of suggests so). In Table 7, we provide descriptive statistics for all variables used for our analysis in this section.

Our main results are presented in Table 8. We use a two-stage least squares estimator (2SLS) to estimate the causal impact of the rule of law (EF2) on happiness inequality. We instrument EF2 with Wheat-Sugar. Columns (1a) and (2a) of Table 8 show the first (1a) and second stage (2a) of our estimation, respectively, for a parsimonious model. The coefficient on Wheat-Sugar in the first stage is positive and statistically significant at the 1 percent level. In the second-stage, we find that happiness inequality, measured by the standard deviation of life satisfaction, is negative and also statistically significant at the 5 percent level.

In columns (1b)-(2b) and (1c)-(2c), we repeat this exercise by adding additional control variables that are often associated with economic inequality (see Table 7 for descriptions). In columns (1b)-(2b), for example, we add a measures of geography, the share of population living within 100 km of the coast (Pop100km), and a dummy equal to one for countries with French civil law heritage (LegorFR). In columns (1c)-(2c), we furthermore add a measure of human capital, the average educational attainment of the adult population (AYS15) and measures for average growth of the economy (Growth) as well as government size (EF1). In both cases, Wheat-Sugar is positive and statistically significant in the first stage

while EF2 is negative and statistically significant in the second stage. Neither one of the additional controls is statistically significant in the second stage. Overall, the results in Table 8 confirm our hypothesis that institutions consistent with a strong legal system and protection of private property are associated with lower levels of happiness inequality. The magnitude of the estimated coefficients is slightly stronger than our OLS regressions, which suggest that our estimation strategy from section 5.1 underestimates the true causal effect of economic freedom on happiness inequality.

At the bottom of Table 8, we report the IV F-test statistic for the relevance of the instruments. In the case of a single instrument and a single endogenous regressor, the t-value of the instrument should be greater than 3.2, i.e., the rule of thumb is that the F-statistic of a joint test whether all excluded instruments are significant should be greater than 10. This is the case in all three models, which provides confidence for the choice of instrument in our study. In addition, we report the p-value of the Durbin test statistic, which test the hypothesis that the instrument is endogenous. In all models, the test rejects the hypothesis that the Wheat-Sugar is endogenous and is suggestive that the instrument provides exogenous variation for the rule of law variable.⁴

As one final robustness test, we replicate our analysis using another popular instrument for EF2, the share of population living in tropics (Tropics). According to the Acemoglu et al. (2001), tropics were regions that provided poor settlement conditions, and, as a consequence, settlers pursued an extractive strategy that lead to the development of weaker legal system and enforcement of property rights. Therefore, we believe that Tropics is a good alternative instrument. The results from the 2SLS estimation with this alternative IV are presented in Table 9. In all models, Tropics is negative and statistically significant in the first stage, and EF2 is negative and highly statistically significant too. The estimated coefficients are of similar magnitude to our estimations from Table 8. The relevant tests, which are reported in the bottom of the table, also suggest that Tropics is an exogenous and relevant instrument.

6. Discussion

Despite the rising level of income inequality in the Western world since the 1970s, recent research has documented that happiness inequality has fallen in countries that have experienced economic growth (Veenhoven, 2005; Clark et al. 2015). One possible explanation of this finding is that economic growth comes with better public services (such

⁴ We further perform the Wu-Hausman test, although we do not report it Table 7, which also suggests that the Wheat-Sugar is exogenous.

as education, health, or infrastructure), lower crime, and greater freedom of choice that benefits more those at the bottom of the happiness (and economic) distribution. In this study, we build on this line of research by investigating the relationship between capitalistic institutions and happiness inequality measured by the standard deviation of life satisfaction. Our findings provide suggestive evidence that a richer and more free world is also a more equal world, at least when it comes to people's own evaluations of how their lives are going.

These empirical findings are robust to three alternative measures of happiness inequality—the interquartile range, the mean absolute difference, and the Gini coefficient. We also test how different measures of institutional quality affect the distribution of happiness in countries. We find that government effectiveness, which captures perceptions about the quality of public and civic services, policy formulation and implementation, and the credibility of government commitment to such policies, has the largest happiness equalizing effect.

Finally, we use an instrument that has been identified by a rich historical literature *a priori* (Easterly 2007) as a source of exogenous variation to investigate the causal impact of the rule of law on happiness inequality. Our results suggest a strong negative and significant causal link between the two. We argue that our findings imply that capitalistic institutions have a happiness equalizing effect beyond their positive impact on economic development and social capital and *via* the channels of procedural utility.

In one way, our findings could be purely descriptive as they are consistent with the widely accepted view that institutional quality plays a vital role to prevailing patterns of prosperity around the world. Rich countries are the type of countries where investors feel secure about their property rights, monetary and fiscal policies guarantee stability, and civil liberties and political representation put pressure on bureaucracies to perform more efficiently. However, we also believe that high quality institutions are as much the consequence of economic development as they are the cause of it. There is by now overwhelming evidence that the arrow of causation goes from institutions to prosperity, and in this study we suggest that this arrow also points to a more equal life when it comes to people's subjective evaluation of their lives.

There is of course much work to be done in this emerging field of economic inquiry. An instrument does not make a theory as Dani Rodrik wisely remarks. A fruitful avenue for future research will be to examine if our results hold in panel models that account for some of the unobserved heterogeneity across countries. It will also important to understand to what extent the relationship between institutions and happiness inequality is dependent on level of economic development, culture, or social capital? Natural experiments

such as ex-communist countries that are currently in transition can provide further insights. This topic will be in the heart of public policy debate in the coming years, especially that research in this area so far has offered a new and brighter outlook when it comes to economic development.

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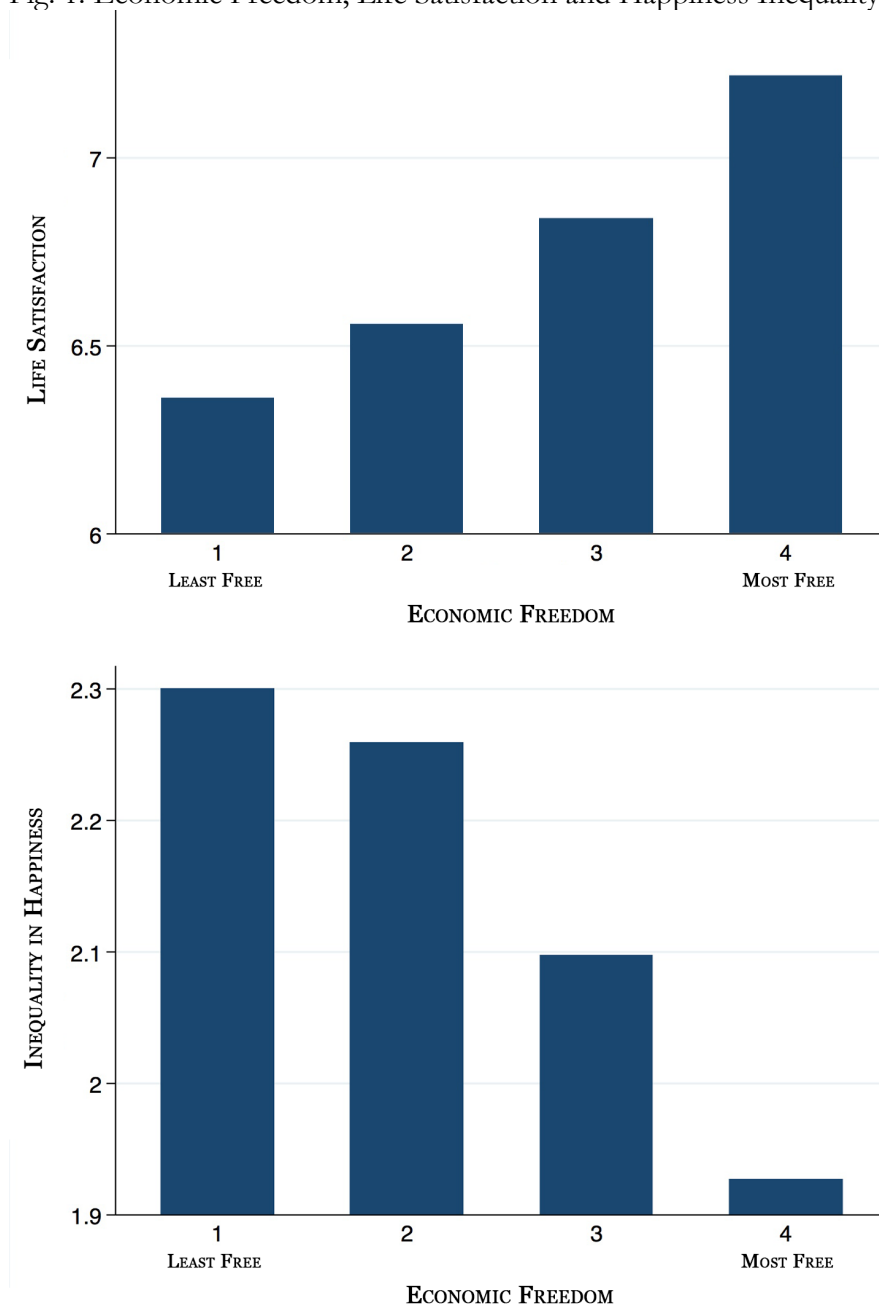
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Appendix

Table 1: Summary Statistics

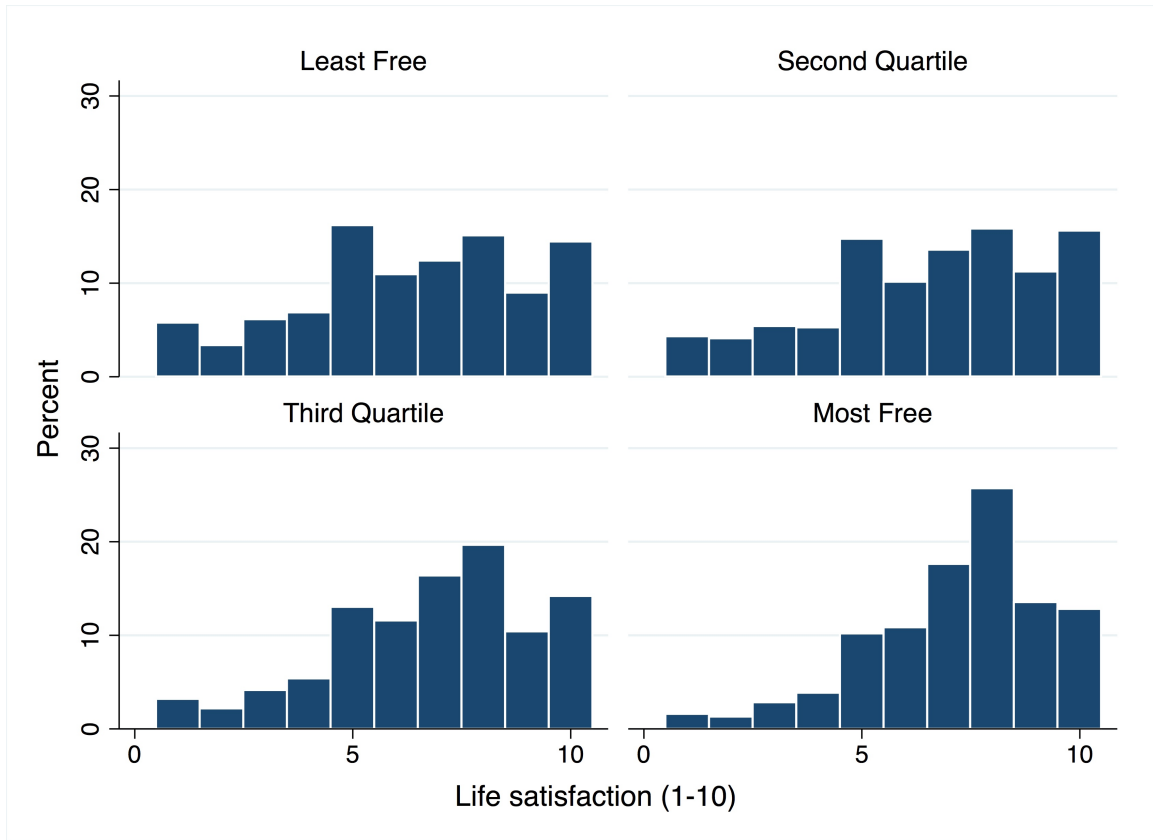
Variable	Obs	Mean	Std. Dev.	Min	Max
Happiness Inequality					
Standard Deviation	230	2.17	0.33	1.35	3.35
Mean Abs Difference	230	1.74	0.32	1.02	3.25
Interquartile Range	230	2.93	0.88	1.00	7.00
EFW	201	6.68	1.15	3.03	8.98
Area 1: Government	202	6.17	1.49	1.63	9.38
Area 2: Legal System	200	6.12	1.64	2.20	9.29
Area 3: Money	203	7.59	2.17	0.00	9.89
Area 4: Int Trade	202	7.01	1.70	1.30	9.91
Area 5: Regulation	202	6.54	1.26	1.58	9.02
Log GDP per capita	207	9.33	1.00	6.74	11.75
Social Trust	231	0.27	0.15	0.03	0.74
Religiosity	219	3.03	0.67	1.28	3.99
WB Governance Indicators					
Government Effectiveness	145	0.19	0.97	-2.07	1.90
Democratic Quality	145	0.06	0.90	-2.43	1.65
Control of Corruption	145	0.25	1.13	-1.56	2.45
Gov. Effectiveness	145	0.35	0.99	-1.77	2.16
Political Stability	145	-0.06	0.98	-3.18	1.59
Regulatory Quality	145	0.37	0.94	-1.83	2.02
Rule of Law	145	0.18	1.04	-1.89	1.95
Voice and Accountability	145	0.18	0.97	-2.07	1.70
Perception of Freedom	224	6.86	0.79	4.68	8.44

Fig. 1: Economic Freedom, Life Satisfaction and Happiness Inequality



Note: Happiness inequality is measured by the standard deviation of life satisfaction
Source: World Values Survey, wave 6 (2010-2012)

Fig. 2: Distribution of Life Satisfaction by EFW quartile



Note: Data on life satisfaction are collected with the question “All things considered, how satisfied are you with your life these days?” The recoded scale of possible answers ranged from 1 (*not at all satisfied*) to 10 (*very satisfied*).
 Source: World Values Survey, 1981-2012

Fig. 3: Rule of Law and Happiness Inequality



Note: Happiness inequality is measured by the standard deviation of life satisfaction from World Values Survey, 1981-2012. Rule of law is area 2 of the EFW index.

Table 2: Main Results, EFW and Happiness Inequality

	(1)	(2)	(3)	(4)	(5)
EFW	-0.133*** (0.019)	-0.081*** (0.028)	-0.070*** (0.025)	-0.064* (0.035)	-0.046 (0.039)
Log GDP per capita		-0.110*** (0.036)	-0.070** (0.034)	-0.119** (0.047)	-0.157*** (0.043)
Social Trust			-0.395** (0.161)	-0.196 (0.203)	-0.248 (0.210)
Religiosity			0.081* (0.048)	0.144** (0.063)	0.079 (0.062)
Unemployment				0.009** (0.004)	0.007 (0.005)
Perception of Freedom					-0.045 (0.049)
Time Effects	Y	Y	Y	Y	Y
Observations	200	177	173	131	128
R-squared	0.292	0.374	0.454	0.568	0.591
N Countries	93	87	86	63	63

Note: Dependent variable in all models is the standard deviation of life satisfaction (*Source:* World Values Survey, 1981-2012). All models are estimated using a pooled OLS with robust Huber-White standard errors clustered at the country level. The results are robust to using a random-effects with AR(1) disturbances. Robust standard errors clustered at the country level are reported in parenthesis. Statistical significance is indicated: *** p<0.01, ** p<0.05, * p<0.1

Table 3: Alternative Measures of Happiness Inequality

	(1)	(2)	(3)	(4)
	Standard Deviation	M Absolute Difference	Interquartile Range	Gini Coefficient
EFW	-0.056* (0.033)	-0.058* (0.033)	-0.013** (0.006)	-0.013** (0.006)
Log GDP	-0.162*** (0.041)	-0.155*** (0.039)	-0.028*** (0.009)	-0.028*** (0.009)
Unemployment	0.008* (0.004)	0.007 (0.004)	0.002*** (0.001)	0.002*** (0.001)
Social Trust	-0.275 (0.205)	-0.304 (0.224)	-0.052 (0.032)	-0.052 (0.032)
Religiosity	0.067 (0.056)	0.052 (0.061)	-0.007 (0.009)	-0.007 (0.009)
Constant	3.846*** (0.277)	3.451*** (0.279)	0.533*** (0.093)	0.533*** (0.093)
Times Effects	YES	YES	YES	YES
Observations	131	131	131	131
R-squared	0.587	0.559	0.553	0.553
N Countries	63	63	63	63

Note: All models (1)-(4) are estimated using a pooled OLS with robust Huber-White standard errors clustered at the country level (reported in parenthesis). Statistical significance is indicated: *** p<0.01, ** p<0.05, * p<0.1

Table 4: Correlation Matrix Institutional Variables

	EFW	A1	A2	A3	A4	A5	G1	G2	G3	G4	G5	G6
EFW	1.00											
Area 1: Government Size	0.14	1.00										
Area 2: Legal System	0.74	-0.31	1.00									
Area 3: Sound Money	0.79	-0.06	0.47	1.00								
Area 4: International Trade	0.77	-0.10	0.63	0.45	1.00							
Area 5: Regulation	0.80	0.06	0.52	0.59	0.53	1.00						
G1: Control of Corruption	0.75	-0.28	0.82	0.61	0.61	0.60	1.00					
G2: Government Effectiveness	0.71	-0.31	0.81	0.55	0.59	0.58	0.95	1.00				
G3: Political Stability	0.60	-0.28	0.75	0.45	0.51	0.44	0.81	0.78	1.00			
G4: Regulatory Quality	0.71	-0.23	0.72	0.50	0.67	0.61	0.89	0.92	0.75	1.00		
G5: Rule of Law	0.72	-0.32	0.83	0.57	0.59	0.58	0.96	0.96	0.83	0.91	1.00	
G6: Voice and Accountability	0.54	-0.26	0.60	0.44	0.50	0.41	0.80	0.80	0.73	0.84	0.84	1.00

Table 5: Decomposing the EFW Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EFW	-0.070*** (0.025)						
A1: Government Size		0.000 (0.020)	-0.013 (0.017)				
A2: Legal System		-0.022 (0.029)		-0.034 (0.028)			
A3: Sound Money		-0.005 (0.013)			-0.021** (0.009)		
A4: International Trade		0.000 (0.021)				-0.036* (0.018)	
A5: Regulation		-0.059* (0.031)					-0.065*** (0.021)
Log GDP	-0.070** (0.034)	-0.061 (0.037)	-0.108*** (0.032)	-0.085** (0.038)	-0.094*** (0.034)	-0.080** (0.034)	-0.079*** (0.029)
Social Trust	-0.395** (0.161)	-0.329* (0.194)	-0.393** (0.181)	-0.307* (0.183)	-0.356** (0.174)	-0.442*** (0.162)	-0.415** (0.158)
Religious	0.081* (0.048)	0.081 (0.051)	0.110** (0.054)	0.075 (0.050)	0.095 (0.057)	0.080 (0.054)	0.087* (0.047)
Time Effects	Y	Y	Y	Y	Y	Y	Y
Observations	173	170	174	173	175	174	174
N Countries	86	85	86	86	86	86	86
R-squared	0.454	0.463	0.417	0.440	0.427	0.435	0.464

Note: Dependent variable in all models is the standard deviation of life satisfaction (*Source:* World Values Survey, 1981-2012). All models are estimated using a pooled OLS model with robust Huber-White standard errors clustered at the country level (reported in parenthesis). Statistical significance is indicated: *** p<0.01, ** p<0.05, * p<0.1

Table 6: Alternative Measures of Institutional Quality

	(1)	(2)	(3)	(4)	(5)	(6)
Control of Corruption	-0.120*** (0.032)					
Gov Effectiveness		-0.161*** (0.043)				
Political Stability			-0.044 (0.053)			
Regulatory Quality				-0.131*** (0.037)		
Rule of Law					-0.121*** (0.038)	
Voice & Accountability						-0.106*** (0.035)
Year Effects	Y	Y	Y	Y	Y	Y
Observations	110	110	110	110	110	110
N Countries	63	63	63	63	63	63
Adjusted R-squared	0.525	0.533	0.463	0.505	0.510	0.501

Note: All models (1)-(4) are estimated using a pooled OLS with robust Huber-White standard errors clustered at the country level (reported in parenthesis). All models include controls for log GDP, unemployment, social trust, and religiosity. Statistical significance is indicated: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 7: Description and Summary Statistics Variables (IV analysis)

Variable	Description	Mean	SD	Min	Max	N
Happiness Inequality	Standard deviation of life satisfaction in each country of sample. Data on life satisfaction are collected with the question “ <i>All things considered, how satisfied are you with your life these days?</i> ” The recoded scale of possible answers ranged from 1 (<i>not at all satisfied</i>) to 10 (<i>very satisfied</i>). <i>Source:</i> World Values Survey, 1981-2012	2.12	0.36	1.38	3.22	71
EF2	Legal system and property rights index. Comprised of nine components: judicial independence, impartial courts, protection of property rights, military interference in the rule of law and politics, integrity of the legal system, legal enforcement of contracts, regulatory restrictions on the sale of real property, reliability of police, and business costs of crime. Values on a 0-10 scale. Each component receives equal weighting for index. Average over period 1985-2005. <i>Source:</i> Fraser Institute, Gwartney et al. (2013).	5.85	1.81	1.38	8.96	71
Wheat-Sugar	Suitability of climate and land endowments for growth wheat relative to sugar. Measured as: $\log[(1+\text{share of arable land suitable for wheat})/(1+\text{share of arable land suitable for sugarcane})]$. <i>Source:</i> Easterly (2007).	0.19	0.16	0.00	0.58	61
Tropics	Proportion of land area located in tropical region. <i>Source:</i> Gallup et al. (1999).	0.35	0.46	0.00	1.00	71
Pop100km	Share of the national population living within 100km of the coast. <i>Source:</i> Gallup et al. (1999).	0.45	0.33	0.00	1.00	70
LegorFr	Dummy variable equal to one if a country classified as having French legal tradition, and zero otherwise. <i>Source:</i> La Porta et al. (1999).	0.47	0.50	0.00	1.00	70
AYS15	Mean years of schooling for population above age 15 over period 1985-2005. <i>Source:</i> Barro and Lee (2013).	6.72	2.66	1.09	12.52	70
Growth	Mean 5-year real growth rate of GDP per capita over period 1985-2005. <i>Source:</i> Penn World Tables, version 7.1, Heston et al. (2012).	9.80	8.71	-5.32	47.78	71
GovSize	Size of government index, comprised of four main components: government consumption, government investment and enterprises, transfer and subsidies, and top marginal tax rates. Values on a 0-10 scale that is decreasing in size of government. Each component receives equal weighting. Average over period 1985-2005. Fraser Institute, Gwartney et al. (2013).	5.63	1.32	2.93	8.24	71

Table 8: 2SLS Estimation (IV=Wheat-Sugar)

Variables	(1) First Stage A2: Legal System	(2) Sec Stage St. Dev Life Sat	(3) First Stage A2: Legal System	(4) Second St. Dev Life Sat	(5) First A2: Legal System	(6) Second St. Dev Life Sat
Wheat-Sugar	4.488*** (1.288)		4.263*** (1.115)		3.156*** (1.085)	
A2: Legal		-0.112** (0.0511)		-0.120** (0.0528)		-0.155** (0.0751)
Pop100km			1.541*** (0.564)	-0.178 (0.136)	1.660*** (0.545)	-0.105 (0.168)
LegorFr			-1.561*** (0.372)	-0.0470 (0.116)	-1.237*** (0.381)	-0.0617 (0.125)
AYS15					0.0161 (0.0668)	-0.0107 (0.0146)
Growth					5.98e-05 (0.0211)	0.00278 (0.00462)
Gov Size					-0.483*** (0.143)	-0.0541 (0.0530)
Observations	62	62	62	62	61	61
R-squared	0.168	0.308	0.405	0.339	0.512	0.344
Instrument Strength		12.14		14.63		8.463
Durbin (p-value)		0.961		0.751		0.620

Note: Dependent variable in first stage (1a, 1b, and 1c) is the index of property rights (area 2 of the EFW index). Dependent variable in second stage (2a, 2b, 2c) is the standard deviation of life satisfaction. See Table 7 for variable description and summary statistics. Statistical significance is indicated: *** p<0.01, ** p<0.05, * p<0.1

Table 9: 2SLS Estimation (IV=Tropics)

Variables	(1a)	(2a)	(1b)	(2b)	(1c)	(2c)
	A2: Legal System	St. Dev Life Sat	A2: Legal System	St. Dev Life Sat	A2: Legal System	St. Dev Life Sat
Tropics	-2.187*** (0.377)		-2.050*** (0.318)		-1.754*** (0.369)	
A2: Legal System		-0.0965*** (0.0339)		-0.100*** (0.0355)		-0.128*** (0.0484)
Pop100km			1.451*** (0.416)	-0.200* (0.106)	1.668*** (0.441)	-0.139 (0.129)
LegorFR			-1.321*** (0.291)	0.00252 (0.0865)	-1.277*** (0.302)	-0.00757 (0.0932)
AYS15					-0.0571 (0.0553)	-0.00747 (0.0124)
Growth					-0.00199 (0.0177)	0.00293 (0.00404)
Gov Size					-0.234* (0.125)	-0.0408 (0.0352)
Observations	71	71	71	71	70	70
R-squared	0.328	0.317	0.545	0.360	0.575	0.378
Instrument Strength		33.74		41.53		22.57
Durbin (p-value)		0.550		0.892		0.862

Note: Dependent variable in first stage (1a, 1b, and 1c) is the index of property rights (area 2 of the EFW index). Dependent variable in second stage (2a, 2b, 2c) is the standard deviation of life satisfaction. See Table 7 for variable description and summary statistics. Statistical significance is indicated: *** p<0.01, ** p<0.05, * p<0.1