



Munich Personal RePEc Archive

Formal Institutions and Subjective Well-Being: Revisiting the Cross-Country Evidence

Bjornskov, Christian and Dreher, Axel and Fischer, Justina
AV

Aarhus School of Business, Aarhus University, University of
Goettingen, Department of Economics, University of Hamburg,
Department of Economics

2008

Online at <https://mpra.ub.uni-muenchen.de/20488/>

MPRA Paper No. 20488, posted 06 Feb 2010 17:36 UTC

Formal Institutions and Subjective Well-Being:
Revisiting the Cross-Country Evidence

Christian Bjørnskov ^a
Axel Dreher ^b
Justina A.V. Fischer ^c

February 2010

Abstract:

A long tradition in economics explores the association between the quality of formal institutions and economic performance. The literature on the relationship between such institutions and happiness is, however, rather limited, and inconclusive. In this paper, we revisit the findings from recent cross-country studies on the institutions-happiness association. Our findings suggest that their conclusions are qualitatively rather insensitive to the specific measure of ‘happiness’ used, while the associations between formal institutions and subjective well-being differ among poor and rich countries. Separating different types of institutional quality, we find that in developing countries the effects of economic-judicial institutions on happiness dominate those of political institutions, while analyses restricted to middle- and high-income countries show strong support for an additional beneficial effect of political institutions. Our results bear important implications which we discuss in the concluding section of the paper.

Keywords: Happiness, life satisfaction, well-being, quality of life, institutions, democracy, rule of law, political constraints, policy implications

JEL codes: I31, H10, H40

^a Department of Economics, Aarhus School of Business, Aarhus University, Hermodsvej 22, DK-8230 Åbyhøj, Denmark; phone: +45 89 48 61 81; e-mail: ChBj@asb.dk.

^b Georg-August University Goettingen, Platz der Goettinger Sieben 3, 37073 Goettingen, Germany, KOF Swiss Economic Institute, Switzerland, IZA, and CESifo, Germany, E-mail: mail@axel-dreher.de.

^c OECD, 2 rue André-Pascal, 75775 Paris CEDEX 16, France, and the Stockholm School of Economics, Sweden, e-mail: JAVFischer@gmx.de.

1. Introduction

Since the study of subjective well-being gained wider interest in the early nineties in both academia and among the public, much multi-disciplinary work, in particular in psychology and economics, has furthered our understanding of the sources of happiness, life satisfaction and other embodiments of subjective well-being.¹

In this paper, we study to what extent formal national institutions affect people's happiness, which is one of the main questions in this literature. Institutions, broadly defined by North (1990) as 'the rules of the game', regulate public and private affairs and could thus be expected to exert an important influence on individual well-being. For example, well-functioning legal systems provide and enforce property rights, insuring citizens against violence, theft and economic exploitation, while democratic institutions and government decentralization provide everyone with the means to influence the political process and resulting policy outcomes (Frey and Stutzer, 2000a; Bjørnskov, Dreher and Fischer, 2008b). In political decision-making, the extent of democratic, institutional constraints on politics, but also the relative strength of political veto players, might be important.²

At a more basic level, one would think that institutions affecting the degree of protection of life and property ought to clearly affect the happiness of entire populations

¹ For an introduction into different concepts and measurements of subjective well-being, see Fischer (2009).

² Indeed, the results of Henisz (2000, 2002) indicate that constraints on policy-making are associated with objectively better economic outcomes. A common argument is that most people are status-quo biased, while the presence of such constraints slows down the political reform process and prevents the 'tyranny of the majority', thus increasing the well-being of the average risk-averse individual (Alt and Lowry, 1994; Tsebelis, 1995; König, 2001).

subject to the same rules and institutions. Good democratic institutions may also create additional ‘procedural utility’ – the outcome-independent benefit from active political involvement, which has been shown to substantially exceed the contribution of the pure allocation effect to well-being (Stutzer and Frey, 2003).

Previous studies have investigated the effect of various measures and concepts of institutional quality on subjective well-being: democratic institutions and civil liberties, the quality of legal institutions and the rule of law, government effectiveness and economic freedom, the existence of various political constraints and subsidiarity in political decision-making (e.g., Frey and Stutzer, 2000a; Henisz, 2000; Helliwell, 2006; Ovaska and Takashima, 2006; Bjørnskov, Dreher and Fischer, 2008a; Dorn et al., 2007, 2008; Helliwell and Huang, 2008; Blume, Müller and Voigt, 2009). These studies have come to inconclusive results. As such, a growing literature has yielded few insights not disputed by subsequent studies.³

We ask what the reason for this lack of consensus may be. Previous papers may have come to different conclusions because they used different measures of happiness, different control variables, and different samples. In addition, different studies have used different institutional indicators that may or may not measure truly separate constructs (cf. Knack and Langbein, 2010). An additional problem with the previous

³ To illustrate, the effects of political rights on life satisfaction tend to vanish in samples focusing on the whole world when further country-level control variables are added (e.g., Schyns, 1998, Bjørnskov, Dreher and Fischer, 2008a). In sub-samples of developed countries only, however, the beneficial effects tend to prevail (Dorn et al., 2007; Helliwell and Huang, 2008). For more examples, a more detailed discussion of the literature, including transmission channels of institutions, and reasons why previous studies may have come to different results, we refer to the working paper version of this paper, Bjørnskov, Dreher and Fischer (2009).

literature is that the effect of institutional quality has been investigated in samples which pooled rich and poor countries. Arguably, the impact of institutions will likely differ among these groups of countries, with institutions providing basic needs (food, shelter, health care, education) affecting more countries at lower levels of economic development. The effects of political institutions, conversely, are more likely to kick in when a majority of the population has escaped material want.⁴

In this paper, we therefore re-investigate the impact of institutional quality on two measures of happiness using one common framework, namely by holding sample size constant, and controlling for a common set of variables. Moreover, we ask the question of which type of formal institutional quality matters, which we attempt to answer using 1) an array of different institutional indicators, and 2) two new, orthogonal indicators derived by Principal Components Analysis. Both tests are likely to provide some indication as to which broad institutional mechanisms matter for happiness. As an additional way of clearing some of the confusion in the literature, we investigate the potentially different effects of institutions on happiness for relatively rich and poor countries separately.

We find that the quality of formal institutions is indeed positively associated with happiness. Using Principal Components Analysis, the effects only slightly differ with respect to how aggregate happiness is defined. The analysis suggests that the effects of

⁴ Relaxing the implicit assumption in most studies that the effects of institutional quality are homogenous across the world sample, Helliwell and Huang (2008) provide a first indication that honest and efficient public service provision increases happiness in relatively poor and rich countries, while political institutions are positively related to happiness in relatively rich countries only. However, Knack and Langbein (2010) demonstrate that the indicators used in Helliwell and Huang (2009) are not distinguishable as separate indices.

economic-judicial institutions on happiness dominate those of political institutions in developing countries. In a sample restricted to middle- and high-income countries, however, we find strong support for a beneficial effect of political institutions in addition. We conclude that these differences might partly explain the contradictory results of previous studies neglecting them.

We proceed as follows. The next section presents our indicators of institutional quality and reports our data and estimation method. Section 3 shows the results while the final section concludes and derives policy implications.

2. Data and Methodology

2.1. Data

2.1.1. The dependent variable: subjective well-being

To measure national levels of life satisfaction, we employ two different indicators, based both on the survey question "All things considered, how satisfied are you with your life as a whole these days?", which respondents answer on a ten-point scale. The life satisfaction scores employed here are taken from all the five available waves of the World Values Survey (WVS, 2009), a repeated cross-section with a growing number of participating countries.⁵

Our first measure of happiness follows Helliwell (2006) and the approach in the World Database of Happiness in using the average national score on the life satisfaction question. As an alternative, we rely on the World Values Survey coding in using the percentage of the population answering in the top three categories, which arguably

⁵ First wave: 1981-1984, second wave: 1989-1993, third wave: 1994-1999, fourth wave: 1999-2004, fifth wave: 2005.

makes the measure less sensitive to cultural differences in answering at the extremes of the scale (following Bjørnskov, Dreher and Fischer, 2007). While the correlation across the two measures is .95, the country rankings do change slightly between these measures. With our focus on institutional determinants of happiness, both reverse causality and ecological fallacy are not likely to be a problem here. In particular, the exclusion of relevant individual-level factors could severely bias our results if their inclusion resulted in different country rankings. However, to test for the presence of ecological fallacy we calculate the country fixed effects from running a standard individual-level ordered probit regression (cf. Bjørnskov, Dreher and Fischer, 2008a), obtaining a measure of differences in macro happiness not pertaining to individual-level factors. Comparing these country fixed effects estimates with the alternative aggregate happiness measures employed in this study suggests that an ecological fallacy is not likely to be present: their correlations are .99 (for the simple average happiness) and .92 (for the top three coding), respectively.

The mean of life satisfaction in a country is usually viewed as good overall assessment of national happiness, but is clearly more sensitive to respondents in either tail of the happiness distribution, namely to very low or high ranges of the life satisfaction score, compared to the top-share. On the other hand, using the share of respondents answering in the top-three categories mitigates some specific cultural differences in response styles that may introduce unnecessary noise when using average happiness (cf. Bjørnskov, 2006). We remain agnostic with respect to which measure is the more precise, including which measure provides a better solution to the potential

cardinality problem (see, e.g., Ng, 1997), since two different types of cultural response styles could bias the measures in opposite directions.⁶

2.1.2. Measures of formal institutions

To test for the impact of the quality of formal institutions on life satisfaction, we employ a set of alternative governance measures: 1) the ‘legal quality’ index from the Fraser Institute (Gwartney and Lawson, 2008); 2) the combined Gastil index of civil liberties and political rights from Freedom House (2008); 3) the Polity IV index of democracy from Marshall and Jaggers (2004); 4)-5) Helliwell’s (2006) two groups of variables relating to “the *honesty and efficiency of government*” and “the operation of the *democratic process*,” which may be viewed as proxy of democratic rights;⁷ and 6)-8) three indices from Henisz (2000, 2002), the first measuring the extent of constraints

⁶ Bjørnskov (2006) argues that the WVS coding is more appropriate if respondents in some countries are averse to answering in the top category. However, if respondents are averse to answering far from the mean, i.e., averse to both ‘too’ positive and ‘too’ negative answers, resulting in a mean-preserving cultural spread, the average measure would be more precise. As we have no way of assessing the relative importance of these types of biases, we proceed by tentatively interpreting the measures as if they were precise. We nevertheless do note that the average measure may be a more reliable measure in particularly poor countries, in which only a small and presumably rich part of the population is likely to respond in the top categories.

⁷ These variables derive from Kaufmann et al. (2008), with the first variable being the average of government effectiveness, regulatory efficiency, rule of law and lack of corruption, and the second variable the average of voice and accountability, and political stability. Helliwell arrives at measures for 1990 and 1981 by extrapolating the Kaufmann data from 1996 (the earliest observation) into the past (personal communication, July 22, 2009). These two highly correlated indices are also used in Helliwell and Huang’s (2008) analysis investigating the impact of government quality on happiness.

on policy-making by measuring the strength of political veto players, the second adding the veto-players in the judiciary and at the sub-federal level, and the third capturing the extent of ‘law and order’. Except for the Gastil index, higher values correspond to improved institutional quality or more binding institutional constraints. The eight institutional measures are summarized in Table 1.

[Insert Table 1 about here]

Two of our legal institutions indices (‘legal quality’, ‘law and order’) capture the protection of property rights. While among the political institutional measures the Gastil index measures the protection of political rights *and* civil liberties more broadly – capturing also the freedoms of speech and of association – citizens’ political rights in a narrow sense are reflected in the Polity IV index. The remaining indices are designed to measure either government effectiveness or the degree of discretion in policy-making. By testing these indicators against each other we hope to be able to evaluate which types of governance are responsible for potential consequences on average national happiness. Descriptive statistics of the institutional variables are shown in Table 2 while sources are given in the Appendix.

[Insert Table 2 about here]

2.1.3. Control variables

In choosing our control variables, we take the specification in Helliwell (2006) as our starting point and supplement it by additional aggregate variables found to be important determinants of well-being in previous work (Bjørnskov, Dreher and Fischer, 2007).

The set of control variables includes an indicator of social capital: the average number of membership in nine different types of voluntary organizations, which in the tradition of Putnam (2000) aims to capture social activity and social networks. As measure of informal societal institutions we also employ social trust – an indicator of honesty and trustworthiness – which is measured by the percentage of respondents answering ‘yes’ to the question “In general, do you think most people can be trusted?” Since recent studies indicate that the quality of formal institutions is affected by social trust, including this measure of informal institutions is arguably important as we would otherwise risk overestimating the importance of formal institutions (cf. Knack, 2002). Following Helliwell (2006), our baseline specification also includes a measure of how strongly people believe in god (expressed by the national percentage answering ‘yes’ to the question “Do you believe in a superior being”), which might also be considered as a type of informal institution (cf. North, 1990). We also control for the divorce rate and the official unemployment rate. Divorce rates have been shown to negatively affect happiness (e.g., Helliwell, 2006), and so has the national unemployment rate (e.g., DiTella et al. 2001). As the effect of economic development is highly debated in the happiness literature, we also include (log) GDP per capita throughout (cf. Easterlin, 1995). This gives us a maximum sample of 148 pooled country-year observations from 62 countries potentially observed in either waves, namely in 1981, 1990, 1995, 1999, and 2005, for which we have full data. All countries are listed in Appendix Table A2.

Descriptive statistics of the control variables are shown in Table 2 while sources are given in the Appendix.

2.1.4. Baseline model

The baseline model consists of the institutional quality measure, the social capital variable, the two informal institutions measures ('social trust' and 'belief in god'), the divorce and unemployment rates, and a measure of national income. In the course of our analysis, this baseline model is then supplemented by a set of additional variables. First, we include dummies for postcommunist countries, Latin America and Asia, which previous research shows to be highly significant (Bjørnskov, Dreher and Fischer, 2007, 2008a). Second, we 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. Third, we augment the model with openness to trade and the investment price level relative to the U.S., both of which are measures of international integration and business prospects; in recent studies, these have been found to be robustly positively associated with happiness (e.g., Bjørnskov, Dreher and Fischer, 2007, 2008a). As well-working institutions may promote trade and growth (prospects) (as, e.g., the institutional reforms in China show), omitting these factors from the model would lead to an overestimation of the pure effect of institutional quality.⁸

⁸ Bjørnskov, Dreher and Fischer (2008) find additional robust determinants of life satisfaction. However, not all are significant at conventional levels in this sample and others are only available for a small number of observations. We therefore do not include these variables in the full specification, but note that the results reported below remain unchanged if adding the additional variables.

2.2. Methodology

In the following, we estimate the influence of the institutional indicators in this unbalanced country-panel dataset as pooled OLS with Beck and Katz's (1995) panel corrected standard errors (PCSE).⁹ As happiness and institutions change slowly over time, inclusion of country fixed effects is not advisable even though our sample spans up to 25 years.¹⁰

It may be argued that pooling the data increases the number of observations artificially. Furthermore, the unbalanced structure of the data gives some countries greater weight in the estimates than others. However, the main results remain when we weigh observations giving each country equal weight. They also remain when we use the 1999-cross-section only.

Finally, to test whether the impact of institutions on happiness differs among poor and rich countries, we also use reduced samples of rich and poor country observations. The rich country-sample consists of all observations with an average GDP per capita above 10,000 purchasing-power parity adjusted US dollars; this sub-sample includes 96

⁹ Assuming that disturbances are heteroscedastic, allowing for panel-specific variances in unbalanced panels corrects for a bias in the standard errors that may otherwise inflate significance levels. Using PCSE thus generates more conservative estimates.

¹⁰ In an additional set of results, we allow for an estimated first-order autoregressive disturbance, which equally corrects otherwise biased standard errors. Given that institutions change slowly over time, even with a time gap of 5 years or more across waves the assumption of first-order autocorrelation is justified. We do not report these estimates in the following as all results are robust to allowing for autocorrelation; however, these results are available on request. The same holds for a set of fixed effects regressions which employs an alternative, more volatile measure of national happiness. Although all results are less significant in the fixed effects specification, as one would expect in a small sample, these results also provide significant support for our main findings.

country-year observations from 31 countries. We chose a threshold level of 10,000 USD as it is approximately the level at which most studies find average income to cease being associated with subjective well-being, excluding roughly one third of all observations and countries (Schyns, 1998; Dolan, Peasgood and White, 2008).¹¹ The sample containing poor countries only consists of all observations with GDP per capita below 20,000 US dollars, thereby making it of the same size as the subsample with rich countries, i.e., a sample size that is empirically practicable.¹² With both samples, the relevant comparison group is therefore the set of middle-income countries. All results are reported for both happiness measures using the full sample and the sub-samples of rich and poor countries.

3. Results

As a first simple way of illustrating the potential effects of institutional quality on life satisfaction, as well as demonstrating the difficulty in separating institutional measures, Table 3 reports the simple and partial correlations (controlling for GDP) between the institutional variables as well as their correlations with the two measures of national happiness. First of all, the table illustrates the difficulty in separating different institutional characteristics, as most indices are highly related. The relative exceptions are the Polity IV index and the two political constraints indicators that are more

¹¹ When splitting the sample at what may seem a somewhat arbitrary level of USD 10,000, it should be noted that all results remain qualitatively unchanged when we apply other cut-offs of, e.g., USD 9,000 or 11,000. As such, the subsample results in the following do not depend on the specific cut-off chosen here.

¹² As we are operating near the limit at which panel estimates make sense, we have had to go for a larger sample, which necessitates that we allow for partially overlapping samples. While a clean cut-off would be ideally preferable, it is not practicable with these data.

moderately correlated with the remaining institutional indices. However, it is worth noting that a relatively large share of rich countries scores a perfect 10 on the Polity IV index, which is therefore effectively right-censored.¹³ Second, the partial correlations also show that controlling for joint variation due to GDP per capita (which is highly correlated with institutional quality) reduces some of the correlations among the institutional measures and thus makes it potentially easier to separate the effects of single institutional measures on happiness. In other words, part of the identification problem seems to lie in economic development confounding relations between institutional indices.

[Insert Table 3 about here]

The remainder of this section is structured as follows. First, we replicate the results in Helliwell (2006) for our two measures of happiness – based on constant samples of countries – thereby testing the robustness of previous results to the choice of dependent variable. We then add additional control variables to see whether these first results arise from omitted variables bias. Second, we employ the different indicators of institutional quality introduced above to test which dimension of institutional quality is most robustly linked to happiness. Finally, we report the results of Principal Components Analysis, deriving two main dimensions of institutional quality, and relating them to happiness.

¹³ It is also well known that most countries tend to fare better on the Polity IV index of democracy than on the alternative Gastil index of political rights and civil liberties or Henisz's (2000) measures. As explained in the previous section, the reason is that the latter two indices apply a broader concept of democracy that also entails civil rights (like, e.g., economic freedom).

Column 1 of Table 4 replicates Helliwell's (2006) results using the 'honest and efficient government' indicator and his original specification (thus excluding period and region dummies) with average national happiness as dependent variable. Column 5 instead reports the results when the share of respondents in the top three categories is employed as dependent variable instead.

As the estimates in these columns show, in the baseline specification our variable of main interest, government efficiency, increases national happiness according to both definitions of happiness, with a coefficient significant at the one percent level. As regards the control variables, their effects are equally qualitatively identical across the two definitions of well-being. Contrasting Helliwell (2006), however, the effects of social networks ('average memberships') are not robust to using our larger sample. At least at the five percent level, and in support of Helliwell (2006), we find that social trust, believing in god, and economic development increase average and 'top three' well-being, while divorce and unemployment rates reduce it.

The model extensions are reported in columns 2 and 6. They add a dummy for postcommunist countries and the regional dummies for Asia and Latin America, period dummies, and two variables – trade openness and the investment price level – that are arguably correlated with efficient government institutions.¹⁴ Columns 3 and 7 exclude poor countries from the regression sample while columns 4 and 8 exclude relatively rich

¹⁴ As the tables show, the introduction of regional dummies substantially improves the statistical fit. With respect to these variables, it is worth mentioning that people in Latin American countries, in particular, are happier than the average. The difference to the rest of the world, all other things held constant, is +0.44 points on the average measure and +5.6 percentage points when using the WVS coding. A working paper version of this paper (Bjørnskov, Dreher and Fischer, 2009) provides further evidence showing the influence of the separate inclusion of regional dummies and additional variables.

countries. Again, we hold the samples constant across the table so that the observed differences are exclusively due to differences caused by the additional explanatory variables included in the model and to how we measure happiness.

Across our models and the two happiness measures, some minor differences emerge for the control variables: According to the results for the average coding reported on the lefthand side of the table, membership in voluntary organizations is significant at the ten percent level in only relatively poor countries, and only for the average measure of happiness. In contrast, the unemployment rate no longer affects average happiness according to columns 2-4 but still reduces well-being when focusing on the share of happiest in the population.¹⁵ While the effects of the divorce rate are robust when using the average coding, the coefficient is not significant in any of the additional regressions when using the top three coding (columns 6-8). Not surprisingly, per capita GDP loses significance when focusing on the top three coding in the more homogenous group of rich countries.

[Insert Table 4 about here]

¹⁵ We can only speculate on why unemployment becomes insignificant when using the average measure of happiness. Possibly, this finding indicates a social norm effect (cf. Clark, Knabe and Raetzel, 2008). However, it also seems a priori likely that unemployment mainly moves people out of the bottom of the top categories and into a lower category, thus only affecting the happiness average marginally, but emerging clearly in the alternative measure. We also note that the effects of unemployment and membership are substantially weakened when period fixed effects are added. As such, due to our data covering more periods, this effect seems to reflect that these factors tend to follow a joint, international business cycle.

Turning to our variable of interest – the effects of honest and efficient governments – we basically replicate Helliwell’s (2006) main findings when keeping to his specification, regardless of how the dependent variable is defined. When using the average coding, the result equally remains when adding the extra control variables, which is not the case when employing the population share of the happiest people: in column 7, institutional quality is significant at the ten percent level only, while it is no longer significant at conventional levels in column 8. The decrease in coefficient size of the ‘efficient government’ estimates suggests that government efficiency varies systematically across world regions, but rather not over time, and that it is associated with increased trade openness and positive business prospects, as we conjectured.

Overall, there hence seems to be some support for the importance of institutional quality on happiness when using the average measure of population well-being. The results in both tables nevertheless indicate that the simple models of columns 1 and 5 overestimate the effects of formal institutions. Calculating elasticities, the results show that the beta coefficient reduced by more than half when including the additional relevant control variables.

Taken all together, in the extended models, quality of both formal and informal institutional quality still appears to be conducive to people’s life satisfaction in rich countries. However, while the effects of social trust and belief in god are robust to varying model specifications, this is not the case for the effect of ‘honest and efficient governments’: it is not robust to the choice of happiness measure, particularly when economic covariates are added to the model. Using the average coding, which both includes changes away from misery (the bottom of the happiness distribution) as well as changes towards actual happiness (the top of the distribution), a one-standard deviation

shock to formal institutions induces an improvement in happiness of approximately one fourth of a standard deviation while a shock of similar size to trust results in a similar improvement in happiness.

Arguably, a main critique one could direct against the results in Table 4 is that, as various measures of governance are strongly correlated and one indicator of institutional quality might just proxy for another, they do not inform about which type of formal institutions matters.

To test for the potential importance of the broader number of alternative institutional indicators as used in the previous literature and summarized in Table 1, we employ the (new) baseline of columns 2 and 5 in the previous table (which includes period dummies, regional dummies, and all economic factors), again focusing on the same set of country observations. Specifically, we replace the ‘honest and efficient government’ indicator by one other institutional index at the time to test which of them is most robustly related to well-being. Again, we also report results for subsamples restricted to richer and poorer countries.

Table 5 summarizes the results of testing the strength of the institutional indicators against each other. For all eight indices, respectively, one additional index of the seven remaining ones was added at the time to the regressions. Table 5 then reports the number of instances out of seven in which the index remains significant at conventional levels of significance. As such, the results can indicate the relative strength of each institutional indicator. For both life satisfaction measures, democratic process quite clearly dominates in the total sample, always being significant at the five percent level at least. However, quite strong results are also obtained for legal quality and the Gastil index. For the rich country sample it is less clear which index dominates as the Political

Constraints III measure also remains significant at conventional levels in most cases. For the poor country sample, legal quality is the most robust measure, with democratic process second and all other indicators failing all tests with at least one of the happiness measures.

[Insert Table 5 about here]

Overall, in Table 5 the evidence on the effects of formal institutions on happiness remains mixed and rather inconclusive. First, the fairly robust impact of democratic process and legal quality across the two different definitions of happiness and the two sample sizes is quite striking. On the other hand, for the richer countries the overall picture looks different where both measures of legal quality, the Gastil index of civil liberties, the democratic process measure, and Political Constraints III are reasonably robust.

With respect to the Polity IV index, in particular, it must be stressed that there is rather little variation in these indices at the top of the global income distribution. As such, their profiles tend to follow the pattern of the effects of economic development on happiness. In other words, the specific relation between these indices and GDP per capita implies that they are relatively likely to pick up the non-linear relation between average income and happiness documented in other studies (cf. Schyns, 1998). Seen in the light of this feature, the relative strength of the Gastil index may be more remarkable as it measures the status of both economic-judicial and political institutions, resulting in

much larger variation compared to the more narrowly defined Polity IV democracy measure.¹⁶

As the results in Table 5 suggest, it is difficult to separate the effects of different indices of formal institutions on happiness since they are highly correlated – as shown in Table 3 – and strongly related to economic development (cf. Paldam and Gundlach, in press). As recent evidence suggests that many governance indices may measure the same underlying construct (c.f., Knack and Langbein, 2010), we therefore perform the following simple three-step test in addition to the standard analysis: 1) we first follow Bueno de Mesquita et al. (2003) in calculating the residuals of regressing the eight indicators on (log) GDP per capita, thereby taking out most joint variation due to economic development, and leaving only variation that is strictly institutional instead of following from economic capacity (see also Hicken, Satyanath and Sergenti, 2005); 2) we use these residuals as if they were precise measures of institutions in a principal components analysis (Table A3 in the Appendix reports the specifics of this analysis); and 3) we rerun the analyses above using the component solution of the analysis. As such, this procedure has the double advantage that most variation caused by economic development is excluded from the resulting indices, and that these indices are orthogonal by construction. Problems due to joint variation hidden in most indices of institutional quality that would prevent identification of differential effects of different types of institutions are thus alleviated.

¹⁶ Indeed, splitting the Gastil index in political rights and civil liberties shows that the variation of the full index across the richer countries is driven by civil liberties, mirroring the invariance of the more narrowly defined Polity IV index.

First of all, the principal components analysis supports the existence of two orthogonal components that can be readily interpreted as a political institutions component and a component capturing the quality of economic and judicial institutions (see Table A3), corroborating the differential findings of Table 5. As such, the results are broadly consistent with the similar analysis in Munck and Verkuilen (2002) who find two broadly similar institutional dimensions.

Using these two scores – which we term ‘political factor’ and ‘economic factor’ – in place of the primary indices therefore should provide more precise estimates on the importance of the two separate institutional types for happiness compared to the analyses above. As Table 6 quite clearly shows, this actually is the case.

[Insert Table 6 about here]

The results in Table 6 document a positive effect of economic-judicial and political institutions for both measures of life satisfaction, in the full sample and both subsamples alike. However, for either measure of life satisfaction, the one of the dimensions of institutional quality is clearly stronger when excluding relatively poor countries. Our results indicate that whenever countries have reached a certain level of economic development, the institutions of democratic political decision-making may be beneficial for overall national happiness. In contrast, the development of factors such as a fair and efficient legal system affects citizens’ average happiness in poor countries

too, but not happiness when coded as the top three percentage.¹⁷ The last section summarizes and discusses the significance of the full set of findings.

4. Conclusions and policy implications

What contributes to happiness, and whether national happiness can be altered has recently become a key topic in the new literature on happiness within economics. However, many empirical findings have been conflicting, not least those pertaining to the potential influence of institutional quality. This paper looks closer into the association between the quality of formal institutions and national happiness, paying specific attention to the differential effects of different types and different indicators of institutional quality. Particularly, we have estimated the potential influence of formal institutions by applying eight different indicators of institutional quality and governance to a constant set of countries. In addition, we have taken account of the strong correlation among measures of institutional quality by deriving factor scores, which yielded two separate dimensions of good governance capturing economic-judicial quality and political influence. Finally, we took account of the differential impact of institutional quality on happiness in low as compared to high income countries.

Overall, when employing the traditional institutional indicators, our results support the existence of a positive effect of institutions on average national happiness,

¹⁷ It should be stressed that due to the well established association between income and individual subjective wellbeing, the top three share is more likely to capture the average happiness of a relative elite in particularly poor countries. In contrast, in relatively richer countries, it is likely to be a better measure of the happiness of the population at large. To the extent that this holds for most poor countries, we must consider the average measure as a more valid measure of happiness within these countries, all other things being equal.

but also illustrate the difficulty in separating different types and dimensions of institutional quality. To resolve this problem, we use two measures of institutional quality constructed with factor analysis. We thereby alleviate the problem of conceptually and empirically separating different indicators, as outlined by Knack and Langbein (2010). This provides some support for the existence of two independent effects – that of overall economic-judicial and that of political institutions. The economic-judicial type seems to dominate the political institutions type when a sufficient number of developing countries enter the sample, while analyses restricted to middle- and high-income countries show an additional strong support for a beneficial effect of the political institutions type. This finding is in line with Dorn et al. (2007) and Helliwell and Huang (2008), both showing that democracy contributes to happiness in cross-sections of *richer* countries.

Overall, our factor score analysis indicates a robust and positive association between the quality of formal economic-judicial and political institutions, and national happiness. The size of these effects, measured as the change induced in happiness from a one-standard deviation change in institutional quality, vary between one sixth and one third of a standard deviation. Using the average measure of happiness, marginal effects are substantially larger for the subsample of richer countries than for comparatively poor countries, and are therefore of economic and social significance.

However, following the traditional happiness literature (e.g., Helliwell 2003), we do not estimate the unconditional effects of institutions, but confine the analysis to partial effects, controlling for some of the potential transmission channels – most notably economic well-being and trade. While economic transmission channels are comparably easy to account for, with an international country panel like ours there are

no consistent measures of government activities, procedural utility or even ‘entertainment through politics’. This leaves us with the still unresolved question of what the potentially mediating factors may be and a set of relatively conservative estimates of the importance of institutions for happiness.

Another critique one may raise is the rather unresolved question of causality – do happy citizens choose democratic structures while the unhappy prefer to be lead by a ‘strong single man’? Here, we follow the previous literature arguing that the relatively larger stability of institutions over time compared to the more volatile happiness measure makes reversed causality unlikely (e.g., Frey and Stutzer 2000, Dorn et al. 2008). Moreover, we found the effects of the institutional factor scores to be robust in a fixed effects framework that controls for unobserved heterogeneity across countries, thus mitigating potential biases through endogeneity and omitted variables.

Our results suggest that citizens may derive subjective well-being from having democratic political institutions whenever the bulk of the population has escaped real (absolute) poverty. Yet, before that goal has been reached, only economic-judicial institutions protecting life, ensuring property rights and providing economic opportunities contribute to average happiness. This type of institutions may simultaneously also fuel economic growth (cf. Knack and Keefer, 1995; Berggren, 2003; Engerman and Sokoloff, 2008). From a methodological point of view, our empirical findings suggest that part of the controversy in the literature may simply stem from the systematic parameter heterogeneity of the institutional estimates that may have biased full-sample estimates towards zero in most large-sample studies. In other words, at a basic level, the results suggest that institutions protecting life and property – the economic-judicial institutions – are associated with happiness at most levels of

development. Political institutions are more likely to be related to valuing influence and being able to express ones opinion freely.

Whether our findings hold any policy implications or not is the final question to be touched upon. We explicitly do not discuss whether governments *should* attempt to follow such implications – a question which Frey and Stutzer (2000b) address at length – but only *whether* the findings hold potential implications.

First, the results indicate that the strength of legal quality is associated with happiness. One of the potential ways to raise national happiness would thus seem to be to invest in a fair and efficient legal system and to allow for economic opportunities in poor and rich countries alike, as indicated by Ovaska and Takashima (2006). An additional side-benefit of such an approach would also be higher economic growth as suggested by the vast literature on the topic. However, the everlasting problem remains *how* to implement a fair and efficient legal system in which citizens can have confidence.

Second, our findings suggest that democratization would in general be beneficial for national happiness when countries have reached a certain level of economic development at which most basic needs are met for the majority of the population. Indeed, the democracy literature suggests that democratization becomes more likely when countries surpass some level of economic development (Lipset, 1959; Paldam, 2007). That might imply that we should not expect a beneficial effect of attempts by the international community to impose democracy from the outside in poor, disorganized, and socially unstable countries. The results of the literature on development aid but also the current ‘failures’ in Iraq and Afghanistan show that such efforts have been at best ineffective (e.g., Knack, 2004).

At the end of the day, we are therefore left with a set of findings that entail rather difficult implications. Fair and efficient judicial systems seem to contribute to both happiness and economic development, but the literature also suggests that institutional quality cannot simply be transplanted or copied from other countries. For middle and high-income countries, this paper shows that the existence of democratic political institutions is also positively associated with happiness. The restriction of the effect of such institutions in richer countries, fortunately, represents only a minor problem, as most studies find that democracy tends to emerge when countries reach a certain level of economic development, and citizens begin to demand political influence (Lipset, 1959; Paldam, 2007).

Acknowledgements

We thank John Helliwell for sharing his data, Christina Bjerg for excellent research assistance and Niclas Berggren, John Helliwell, Kristina Nyström, and, participants at the IALMH conference in Padova (2007), the Labour research seminar of the University of Uppsala (2007), and the Ratio Institute seminar (2008) for helpful comments. Three anonymous referees of this journal provided many helpful comments. Justina Fischer thanks the Marie Curie fellowship scheme (RTN ENABLE) at the Stockholm School of Economics for financing a first draft. The views expressed in this paper are those of the authors alone, not necessarily of the OECD or any of its member countries.

References

- Aidt, T.S. and M. Gassebner, 2007, Do Autocratic States Trade Less? Cambridge Working Papers in Economics 0742.
- Alt, J. and R. Lowry, 1994, Divided Governments, Fiscal Institutions and Budget Deficits: Evidence from the States, *American Political Science Review* 88: 811-828.
- Beck, N. and J.N. Katz, 1995, Nuisance vs. substance: Specifying and Estimating Time-Series Cross Section Models. *Political Analysis* 6: 1-36.
- Berggren, N., 2003, The benefits of economic freedom: a survey, *The Independent Review* 8: 193-211.
- Bjørnskov, Ch., 2006, The multiple facets of social capital, *European Journal of Political Economy* 22: 22-40.
- Bjørnskov, Ch., A. Dreher and J.A.V. Fischer, 2005, Cross-Country Determinants of Life Satisfaction: Exploring Different Determinants across Groups in Society, University of St. Gallen Department of Economics working paper series 2005-19.
- Bjørnskov, Ch., A. Dreher and J.A.V. Fischer, 2007, The Bigger the Better? Evidence of the Effect of Government Size on Life Satisfaction around the World, *Public Choice* 130: 267-292.
- Bjørnskov, Ch., A. Dreher and J.A.V. Fischer, 2008a, Cross-Country Determinants of Life Satisfaction: Exploring Different Determinants across Groups in Society, *Social Choice and Welfare* 30: 119-173.
- Bjørnskov, Ch., A. Dreher and J.A.V. Fischer, 2008b, On Decentralization and Life Satisfaction, *Economics Letters* 99: 147-151.
- Bjørnskov, Ch., A. Dreher and J.A.V. Fischer, 2009, Formal Institutions and Subjective Well-Being: Revisiting the Cross-Country Evidence, MPRA Paper 17159, University Library of Munich, Germany.
- Blume, L., J. Müller and S. Voigt, 2009, The Economic Effects of Direct Democracy – a First Global Assessment, *Public Choice* 140: 431-461.
- Bueno de Mesquita, B., A. Smith, R.M. Siverson, J.D. Morrow, 2003, *The Logic of Political Survival*. Cambridge, MA: MIT Press.

- Clark, A.E., A. Knabe, and S. Rätzel, 2008. *Unemployment as a Social Norm in Germany*, SOEPpapers 132, DIW Berlin, The German Socio-Economic Panel (SOEP).
- De Haan, J., S. Lundström and J.-E. Sturm, 2006, Market-oriented institutions and policies and economic growth: a critical survey, *Journal of Economic Surveys* 20: 157-191.
- Diener, E., M. Diener and C. Diener, 1995, Factors predicting the subjective well-being of nations, *Journal of Personality and Social Psychology* 69: 851-864.
- Di Tella, R., R.J. MacCulloch and A.J. Oswald, 2001, Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness, *American Economic Review* 91, 335-341.
- Dolan, P., T. Peasgood and M. White, 2008, Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology* 29, 94-122.
- Dorn, D., J.A.V. Fischer, G. Kirchgässner and A. Sousa-Poza, 2007, Is it culture or democracy? The impact of culture and democracy on happiness, *Social Indicators Research* 82: 502-526.
- Dorn, D., J.A.V. Fischer, G. Kirchgässner and A. Sousa-Poza, 2008, Direct democracy and life satisfaction revisited: new evidence for Switzerland, *Journal of Happiness Studies* 9, 227-255.
- Easterlin, R., 1995, Will raising the income of all increase the happiness of all? *Journal of Economic Behavior & Organization* 27, 35-47.
- Engerman, S.L. and K.L. Sokoloff, 2008, Debating the role of Institutions in Political and Economic Development: Theory, History and Findings, *Annual Review of Political Science* 11: 119-135.
- Feinberg, R.E., 2006, Presidential Mandates and Ministerial Institutions: Summitry of the Americas, the Organization of American States (OAS) and the Inter-American Development Bank (IDB), *Review of International Organizations* 1, 1: 69-94.
- Fischer, J.A.V., 2009, Subjective Well-Being as Welfare Measure: Concepts and Methodology, MPRA Paper 16619, University Library of Munich, Germany,

- published as chapter 1 of the OECD report on SWB to the European Commission, 2009.
- Fischer, J.A.V, 2008, Competition and well-being: does market competition make people unhappy? Working Paper Series in Economics and Finance 697, Stockholm School of Economics.
- Freedom House, 2008, Country Rankings, www.freedomhouse.org.
- Frey, B.S., 2008, *Happiness: A Revolution in Economics*. MIT Press, Cambridge, Ma.
- Frey, B.S. and A. Stutzer, 2000a, Happiness, economy and institutions, *The Economic Journal* 110: 918-938.
- Frey, B.S. and A. Stutzer, 2000b, Maximizing happiness? *German Economic Review* 1: 145–167.
- Frey, B.S. and A. Stutzer, 2005, Beyond outcomes: measuring procedural utility. *Oxford Economic Papers* 57: 90-111.
- Gassebner, M., A. Keck and R. Teh, 2009, Shaken, Not Stirred: The Impact of Disasters on International Trade, *Review of International Economics*, forthcoming.
- Glaeser, E.L. and A. Shleifer, 2002, Legal origins. *Quarterly Journal of Economics* 117: 1193-1229.
- Gwartney, J. and R. Lawson, 2008, *Economic Freedom of the World 2008*, downloadable from <http://www.freetheworld.com/download.html>.
- Helliwell, J.F., 2003, How's life? Combining individual and national variables to explain subjective well-being, *Economic Modelling* 20: 331-360.
- Helliwell, J.F, 2006, Well-being, social capital, and public sector; What's new? *The Economic Journal* 116 (510): C34-C45.
- Helliwell, J.F. and W. Huang, 2008, How's your government? International evidence linking good government and well-being. *British Journal of Political Science* 38, 595-619.
- Henisz, W.J., 2000, The institutional environment for economic growth, *Economics & Politics* 12: 1-31.
- Henisz, W.J., 2002, The institutional environment for infrastructure investment, *Industrial and Corporate Change* 11, 2, 355-389.

- Hicken, A., S. Satyanath, E. Sergenti, 2005, Political institutions and economic performance: The effects of accountability and obstacles to policy change. *American Journal of Political Science* 49(4), 897-907.
- Kaufmann, D., A. Kraay and M. Mastruzzi, 2008, Governance matters V: Governance indicators for 1996-2002, World Bank Policy Research Working Paper no.
- Knack, S., 2002, Social Capital and the quality of government: evidence from the States. *American Journal of Political Science* 46: 772-785.
- Knack, S., 2004, Does foreign aid promote democracy? *International Studies Quarterly* 48: 251-266.
- Knack, S. and P. Keefer, 1995, Institutions and economic performance: cross-country tests using alternative institutional measures, *Economics & Politics* 7: 207-227.
- Knack, S. and L. Langbein, 2010, The worldwide governance indicators and tautology: six, one, or none? *Journal of Development Studies* 46: 350-370.
- König, Th., 2001, Bicameralism and Party Politics in Germany: an Empirical Social Choice Analysis, *Political Studies* 49: 411-437.
- Layard, R., 2006, Happiness and Public Policy: A Challenge to the Profession. *Economic Journal* 116: C24-33.
- Lipset, S.M., 1959, Some social requisites of democracy: Economic development and political legitimacy, *American Political Science Review* 53, 69-105.
- Lookofsky, J., 2008. Desperately seeking subsidiarity: Danish private law in the Scandinavian, European, and global context. *Duke Journal of International and Comparative Law* 19: 161-185.
- Marshall, M. and K. Jagers, 2004, Polity IV dataset. University of Maryland, Center for International Development and Conflict Management.
- Méon, P.-G. and K. Sekkat, 2008, Institutional Quality and Trade: Which Institutions? Which Trade? *Economic Inquiry* 46, 227-240.
- Munck, G.L. and J. Verkuilen, 2002, Conceptualizing and Measuring Democracy: Evaluating Alternative Ideas, *Comparative Political Studies* 35, 1: 5-34.
- Ng, Y-K., 1997, A Case for Happiness, Cardinalism, and Interpersonal Comparison. *The Economic Journal* 107: 1848-1858.
- North, D.C., 1990, *Institutions, Institutional Change, and Economic Performance*. Cambridge: Cambridge University Press.

- Ovaska, T. and R. Takashima, 2006, Economic Policy and the Level of Self-Perceived Well-Being: An International Comparison, *Journal of Socio-Economics* 35: 308-325.
- Paldam, M., 2007, The Big Pattern of Democracy. Pp. 103-129 in A. Marciano and J-M. Josselin (eds.), *Democracy, Freedom and Coercion: A Law and Economics Approach*. Cheltenham: Edward Elgar.
- Paldam, M. And E. Gundlach, in press, The Democratic Transition: A Study of the Causality between Income and the Gastil Index, forthcoming in *European Journal of Development Research*.
- Political Risk Services, 1996, *The ICRG Rating System*: Political Risk Services.
- Putnam, R.D., 2000, *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.
- Schyns, P., 1998, Crossnational Differences in happiness: economic and cultural factors explored, *Social Indicators Research* 43: 3-26.
- Stutzer, A., and B.S. Frey, 2003, Institutions Matter for Procedural Utility: An Economic Study of the Impact of Political Participation Possibilities. Pp 81-99 in R. Mudambi, P. Navarra and G. Sobbrío, (eds.), *Economic Welfare, International Business and Global Institutional Change*. Cheltenham: Edward Elgar.
- Summers, A., Heston, R. And B. Aten, 2006, Penn World Tables, Mark 6.2. Center for International Comparisons (CICUP), University of Pennsylvania.
- Tsebelis, G., 1995, Decision Making in Political Systems: Veto Players in Presidentialism, Parliamentarism, Multicameralism and Multipartyism, *British Journal of Political Science* 25: 289-325.
- Uslaner, E.M., 2002, *The Moral Foundations of Trust*. Cambridge, UK: Cambridge University Press.
- World Bank, 2007, *World Development Indicators*, CD-Rom, Washington, D.C.
- World Values Survey, 2009, European and World values surveys five-wave integrated data file, 1981-2005. The European Values Study Foundation and World Values Survey Association, available at <http://www.worldvaluessurvey.org/>.
- Zak, P. and S. Knack, 2001, Trust and Growth, *Economic Journal* 111: 295-321.

Table 1. Institutional measures

Name	Source	Description
Legal quality	Fraser Institute (Gwartney and Lawson, 2008)	Overall measure of the quality and capacity of the legal system, consisting of indices of judicial independence, impartiality of the courts, protection of intellectual property rights, military interference in law and politics, and integrity of the legal system.
Gastil index	Freedom House (2008)	Index capturing the existence of political rights and civil liberties; lower scores mean better protection of rights and liberties.
Polity IV index	Marshall and Jaggers (2004)	Index intended to capture three essential elements of democracy: 1) institutions and procedures enabling citizens to freely express their preferences for policies and leaders; 2) effective constraints on the exercise of power by the executive; and 3) the civil liberties of citizens to participate in the political process.
Honest and efficient gov.	Helliwell (2006)	Average of rule of law, regulatory quality, bureaucratic efficiency and control of corruption indices from Kaufmann et al. (2003).
Democratic process	Helliwell (2006)	Average of political stability and voice and accountability indices from Kaufmann et al. (2003).
Political constraints III	Henisz (2000, 2002)	Index capturing constraints on the feasibility of policy change, defined as the degree to which a change in the preferences of one or more political actors is permitted to affect government policy. The index effectively measures the number and strength of political veto points.
Political constraints V	Henisz (2000, 2002)	Index employing the same data and logic as Political constraints III, but adding veto points within the judiciary and sub-federal entities.
Law and order	Henisz (2000, 2002)	Law and Order index from Political Risk Services (1996). Higher scores imply “a strong law and order tradition;” lower score mean “a tradition of depending on physical force or illegal means to setting claims.”

Table 2. Descriptive statistics

	Mean	Standard deviation	Observations
Life satisfaction, average	6.989	.956	149
Life satisfaction, top three	48.942	17.599	149
Average memberships	.429	.313	149
Social trust	.316	.152	149
Belief in god	.417	.267	149
Divorce rate	1.832	1.112	149
Unemployment rate	8.352	4.669	149
Postcommunist	.228	.421	149
Openness to trade	74.936	47.680	149
Investment price level	83.601	30.392	149
GDP per capita	16,607	8,527	149
Legal quality	7.005	1.571	149
Gastil index	1.985	1.287	149
Polity IV index	7.763	4.041	149
Honest and efficient government	.928	.892	149
Democratic process	.789	.679	149
Political constraints III	.442	.142	149
Political constraints V	.698	.187	149
Law and order	4.752	1.204	149

Table 3. Correlations between life satisfaction and institutional measures

	1	2	3	4	5	6	7	8
1. Honest and efficient government	1	.91 (.73)	.84 (.56)	-.69 (-.21)	.50 (.01)	.34 (.18)	.56 (.31)	.76 (.49)
2. Democratic process		1	.81 (.49)	-.76 (-.39)	.58 (.21)	.40 (.30)	.58 (.33)	.73 (.42)
3. Legal quality			1	-.64 (-.09)	.42 (-.04)	.32 (.16)	.59 (.39)	.76 (.52)
4. Gastil index				1	-.91 (-.86)	-.47 (-.39)	-.57 (-.35)	-.56 (-.13)
5. Polity IV index					1	.48 (.39)	.51 (.31)	.39 (.00)
6. Political constraints III						1	.53 (.46)	.27 (.11)
7. Political constraints V							1	.65 (.48)
8. Law and order								1
Average happiness	.66	.56	.53	-.48	.35	.21	.29	.39
Top three happiness	.65	.57	.53	-.49	.39	.23	.28	.41

Note: partial correlations in parentheses, controlling for GDP per capita.

Table 4. Basic results

	Average coding				Top three coding			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Average memberships	.229 (.155)	.248* (.145)	-.015 (.179)	.343* (.191)	3.336 (3.067)	1.399 (2.913)	-4.211 (3.923)	4.639 (3.606)
Social trust	2.056*** (382)	1.850*** (.358)	1.568*** (.382)	2.413*** (.617)	44.110*** (7.707)	44.855*** (7.324)	41.918*** (8.495)	56.042*** (12.305)
Belief in god	1.751*** (.229)	1.014*** (.254)	.867*** (.239)	1.444*** (.334)	31.035*** (4.481)	17.329*** (4.798)	13.539** (5.349)	28.563*** (6.040)
Divorce rate	-.242*** (.049)	-.126*** (.042)	-.114** (.053)	-.133** (.053)	-2.646*** (.921)	-.747 (.769)	-.118 (1.101)	-.835 (.857)
Unemployment rate	-.022** (.009)	-.011 (.009)	-.004 (.012)	-.011 (.010)	-.454** (.196)	-.388** (.183)	-.502* (.278)	-.393* (.206)
Log GDP per capita	.425*** (.137)	.380** (.153)	.482** (.218)	.625*** (.177)	6.859** (2.664)	6.312** (2.929)	5.972 (5.294)	12.382*** (3.311)
Postcommunist		-.502** (.206)	-.272 (.271)	-.368 (.232)		-9.689** (3.842)	-8.083 (5.776)	-6.425 (4.458)
Openness to trade		.002** (.001)	.002** (.001)	.004** (.001)		.061*** (.018)	.062*** (.020)	.077*** (.023)
Investment price level		.004*** (.001)	.004* (.002)	.005*** (.001)		.089*** (.025)	.089*** (.057)	.105*** (.030)
Honest and efficient government	.477*** (.111)	.265** (.111)	.342** (.151)	.229* (.118)	7.894*** (2.137)	3.062 (2.075)	4.697* (2.671)	1.364 (2.075)
Regional dummies	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Period dummies	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Sample	All	All	GDP>10,000	GDP<20,000	All	All	GDP>10,000	GDP<20,000
Observations	148	148	96	96	148	148	96	96
Countries	62	62	36	54	62	62	36	54
R squared	.707	.802	.757	.810	.645	.769	.754	.762
Wald Chi squared	360.42	613.45	299.75	540.83	392.75	638.78	333.49	521.39

Note: estimation is with pooled OLS; panel corrected standard errors in parentheses; *** (**) [*] indicates significance at $p < .01$ ($p < .05$) [$p < .10$]. “Average” is the country’s mean in life satisfaction while “Top three” is the country’s population share of those reporting in the highest three categories of life satisfaction..

Table 5. Which indicators are robust?

	Average			Top three		
	All	GDP>10,000	GDP<20,000	All	GDP>10,000	GDP<20,000
Legal quality	6	6	7	5	5	6
Gastil index	4	7	0	5	6	4
Polity IV index	1	3	0	5	4	5
Honest and efficient government	4	3	4	0	0	0
Democratic process	7	7	6	7	7	4
Law and order	0	0	0	0	0	0
Political constraints III	0	5	0	0	6	0
Political constraints V	0	4	0	0	1	0

Note: The numbers count the instances in which the indicator remains significant at $p < .05$ when one other indicator is added at the time to the regressions reported in column 5 of tables 4 and 5, respectively.

“Average” is the country’s mean in life satisfaction, while “Top three” denotes the population share of those reporting in the highest three categories of life satisfaction.

Table 6. Testing types of institutions

	Average			Top three		
	All	GDP>10,000	GDP<20,000	All	GDP>10,000	GDP<20,000
Economic factor	.204*** (.065)	.279*** (.071)	.175** (.071)	2.468** (1.194)	3.737*** (1.348)	1.249 (1.275)
Political factor	.109** (.053)	.253*** (.073)	.055 (.059)	2.712*** (.943)	4.956*** (1.531)	1.998* (1.089)
Observations	148	96	96	148	96	96
Countries	62	36	54	62	36	54
R squared	.815	.814	.817	.787	.794	.773
Wald chi2	622.08	475.49	537.19	617.19	554.70	483.67

Note: robust standard errors in parentheses; *** (**) [*] indicates significance at $p < .01$ ($p < .05$) [$p < .10$]; all regressions include the baseline variables. “Average” is the country’s mean in life satisfaction, while “Top three” denotes the population share of those reporting in the highest three categories of life satisfaction.

Table A1. Data sources

Variable	Source	Measured as
Life satisfaction, top three	World Values Survey (2009)	Population percentage
Life satisfaction, average		1 (low) to 10 (high)
Average memberships		Population percentage
Social trust		Population percentage
Belief in god		Population percentage
Divorce rate	World Bank (2007)	Share of marriages
Unemployment rate		Share of active labor force
Postcommunist		0 (no) / 1 (yes)
Openness to trade	Penn World Tables, Mark 6.2 (Heston et al., 2006)	Share of GDP
Investment price level		Investment price level relative to US investment price level
GDP per capita		ppp adjusted US dollars
Legal quality	The Fraser Institute (Gwartney and Lawson, 2008)	0 (low) to 10 (high)
Gastil index	Freedom House (2008)	1 (high) to 7 (low)
Polity IV index	Polity IV (Marshall and Jaggers, 2004)	0 (low) to 10 (high)
Honest and efficient government	Helliwell (2006)	-2.5 to 2.5
Democratic process	Helliwell (2006)	-2.5 to 2.5
Law and order	Henisz (2000)	0 to .74
Polcon III	Henisz (2002)	0 to .89
Polcon V	Henisz (2000)	2 to 6

Table A2. Countries included in the study

<i>Albania (1999)</i>	Hungary (1990)	<i>Russia (1990)</i>
<i>Argentina (1981)</i>	Iceland (1981)	<i>Serbia (2005)</i>
Australia (1981)	<i>Indonesia (2005)</i>	Singapore (1999)
Austria (1990)	Ireland (1981)	<i>Slovak Republic (1999)</i>
Belgium (1981)	Italy (1981)	Slovenia (1990)
<i>Brazil (1990)</i>	Japan (1981)	<i>South Africa (2005)</i>
<i>Bulgaria (1990)</i>	<i>Jordan (2005)</i>	South Korea (1990)
Canada (1981)	<i>Latvia (1990)</i>	Spain (1981)
Chile (1990)	<i>Lithuania (1990)</i>	Sweden (1981)
<i>Croatia (1995)</i>	Luxembourg (1999)	Switzerland (1990)
Cyprus (2005)	Malta (1999)	Taiwan (2005)
Czech Republic (1995)	<i>Mexico (1981)</i>	<i>Thailand (2005)</i>
Denmark (1981)	<i>Moldova (1999)</i>	Trinidad and Tobago (2005)
<i>Dominican Republic (1995)</i>	<i>Morocco (2005)</i>	<i>Turkey (2005)</i>
<i>Egypt (2005)</i>	Netherlands (1981)	<i>Ukraine (1995)</i>
<i>El Salvador (1999)</i>	New Zealand (1999)	United Kingdom (1981)
<i>Estonia (1990)</i>	Norway (1981)	United States (1981)
Finland (1990)	<i>Peru (1995)</i>	<i>Uruguay (1995)</i>
France (1981)	<i>Poland (1990)</i>	<i>Venezuela (1995)</i>
Germany (1981)	Portugal (1990)	<i>Vietnam (2005)</i>
Greece (1999)	<i>Romania (1990)</i>	

Note: countries in italics are those with at least one observation with a GDP per capita above 10,000 USD. Numbers in parentheses are the first year in which the country has an observation.

Table A3. Principal components analysis

Variable	Economic factor	Political factor	Uniqueness
Honest and efficient government	.836	.136	.267
Democratic process	.787	.319	.257
Legal quality	.657	.008	.455
Gastil index	-.289	-.869	.154
Polity IV	.004	.883	.207
Law and order	.514	.019	.530
Polcon III	.187	.387	.571
Polcon V	.371	.277	.411
Eigenvalue	3.392	1.284	
Variance explained	.491	.407	

Note: component loadings have been rotated.