



## **WORKING PAPER NO. 466**

### ***The Cultural Foundations of Happiness***

**Pierluigi Conzo, Arnstein Aassve, Giulia Fuochi and Letizia Mencarini**

**January 2017**



**University of Naples Federico II**



**University of Salerno**



**Bocconi**

**Bocconi University, Milan**

---

**CSEF - Centre for Studies in Economics and Finance**  
**DEPARTMENT OF ECONOMICS – UNIVERSITY OF NAPLES**  
**80126 NAPLES - ITALY**  
**Tel. and fax +39 081 675372 – e-mail: [csef@unina.it](mailto:csef@unina.it)**  
**ISSN: 2240-9696**



## **WORKING PAPER NO. 466**

### ***The Cultural Foundations of Happiness***

**Pierluigi Conzo<sup>\*</sup>, Arnstein Aassve<sup>\*\*</sup>, Giulia Fuochi<sup>\*\*\*</sup> and Letizia Mencarini<sup>\*\*</sup>**

#### **Abstract**

The paper provides a framework for how culture affects happiness. According to self-determination theory, well-being is driven by the satisfaction of three basic psychological needs: autonomy, relatedness and competence. We assess if, and to what extent, generalized trust and the values of obedience and respect influence Europeans' satisfaction of these needs, controlling for income and education. We find a positive and significant impact for generalized morality (high trust and respect, low obedience), which is robust to different checks for endogeneity, including instrumental variable regressions at country, regional and individual level and panel-data estimations.

**Keywords:** self-determination, culture, trust, subjective well-being, happiness, life satisfaction.

**JEL Classification:** A13, E02, P48, I31, Z13

**Acknowledgments:** We thank Toke Aidt, Bruno Arpino, Sergio Beraldo, Reto Odermatt, Marco Pagano, Francesco Russo, Fabrizio Zilibotti, the CSEF, Collegio Carlo Alberto and ESf fellows and participants to the 2016 European Public Choice Society Workshop (Friburg) and to the 48<sup>th</sup> scientific meeting of Italian Statistical Society (Salerno) for their useful comments and suggestions. The authors gratefully acknowledge financial support from the European Research Council under the European ERC Grant Agreement no StG-313617 (SWELL-FER: Subjective Well-being and Fertility, P.I. Letizia Mencarini) and under the European Union's H2020 Programme ERC Grant agreement n° 694145 (IFAMID: Institutional Family Demography, P.I. Arnstein Aassve).

<sup>\*</sup> Università di Torino, CSEF and Collegio Carlo Alberto. Address for correspondence: Dept. of Economics and Statistics "Cognetti de Martiis", University of Turin – Campus Luigi Einaudi, Lungo Dora Siena 100A. Email: [pierluigi.conzo@unito.it](mailto:pierluigi.conzo@unito.it)

<sup>\*\*</sup> Università Bocconi, Dondena Centre for Research on Social Dynamics and Public Policy

<sup>\*\*\*</sup> Università di Padova



## **Table of contents**

### *1. Introduction*

### *2. The background*

#### 2.1 Culture and subjective well-being

#### 2.2 Self-determination theory and well-being

### *3. Data and variables*

#### 3.1 SDT and subjective well-being

#### 3.2 Culture

### *4. Baseline econometric results*

### *5. Dealing with endogeneity*

#### 5.1 IV estimation at country level

#### 5.2 Life satisfaction and culture – longitudinal estimates

#### 5.3 IV estimation at the regional level: historical institutions

#### 5.4 IV estimation at the individual level: inherited trust

### *6. Conclusion*

### *References*

### *Tables*



*The culture and happiness of people do not depend as much on spectacular changes in the political surface as on steady action of certain principles transmitted unobserved through secondary orders of institutions" (Cattaneo [1847] 1956, vol. 3, 115)*

## 1. Introduction

Culture plays a persistent role in economic outcomes. Research on this topic dates back to Weber (1905) and Banfield (1957), who stressed the importance of religion and social capital in economic development. Recent studies of a more causal nature show that the backwardness of many societies is rooted in low trust towards unknown others (Guiso et al., 2006; Tabellini, 2010; Algan & Cahuc, 2010) and limited morality, according to which rules of good conduct and honesty apply only within circles of related people (Tabellini, 2008; Platteau, 2000). However, the role of culture in the broader concept of well-being is still underexplored. This is surprising given the growing attention towards concepts and measures of subjective well-being in economics and public policy (Helliwell, 2006; OECD, 2013; Algan & Cahuc, 2014).

This study investigates the role of culture in fostering well-being in European countries. We define culture in terms of persistent beliefs and values (Guiso et al., 2006) and rank societies according to whether honesty and good conduct are delimited by kinship relations (limited morality) or extended to unknown others (generalized morality). Empirically, generalized morality can be portrayed by high levels of trust and the internalization of individualistic values (e.g. low obedience and high respect) (Tabellini, 2008 & 2010). From a theoretical point of view, we connect culture to well-being by relying on a well-established psychological theory, namely, the self-determination theory (SDT). SDT states that humans seek to satisfy innate basic psychological needs defined in terms of *autonomy* (acting concordantly with one's sense of self), *competence* (i.e. feeling a sense of accomplishment from one's own actions) and *relatedness* (feeling connected to individuals and groups). By satisfying these three needs, individuals thrive and experience higher levels of subjective well-being. In contrast, whenever the cultural and social characteristics of a country limit the fulfilment of the individual's basic psychological needs, well-being decreases (for an overview see DeHaan & Ryan, 2014).

The SDT is useful for two reasons. First, in contrast to the standard measures of happiness or life satisfaction, it goes directly to the mechanisms that drive individuals' subjective well-being. Secondly, the three basic needs lend themselves naturally to the key cultural traits considered in the economics literature. Specifically, the need for *competence* would be better satisfied in countries where generalized morality sustains personal fulfilment, which is a feature of more horizontal-individualistic societies, where hierarchy is less pronounced and where the individual has priority

over the group. In these societies, authority (e.g. parents) endorses individuals' control over choices and their feelings of effectiveness in dealing with the external environment (Iyengar and Lepper, 1999; Chirkov et al. 2003; Grolnick et al., 1991; Sagiv & Schwartz, 2000). Moreover, in horizontal-individualistic societies, where the value of independence is highly internalized (Triandis, 1995), the need for *autonomy* is satisfied to a greater extent. This implies that a high internalization of obedience hinders the individual's autonomy by limiting his/her ability to identify his/her own values and interests (Grolnick & Ryan 1989; Phinney et al. 2005). Finally, one's need for *relatedness* may be better satisfied in societies where generalized trust is high and where value internalization is high for respect and low for obedience. In those societies, respect for others stimulates social relations, interactions transcend the borders of a selected group of closely-related persons and autonomy support creates the conditions for individuals to experience relatedness (Baard et al. 2004).

To test these hypotheses we use data from the European Social Survey to build an index measuring basic psychological needs satisfaction. For what concerns culture, we derive measures of obedience, respect and trust, as in Tabellini (2010), from the European Value Study. Our empirical strategy consists in exploiting the variation in culture and needs satisfaction at different levels (country, region and individual) and in assessing the robustness of the culture effect to alternative models aimed at mitigating endogeneity issues. In particular, through OLS cross-country regressions we first show the effect of generalized morality on the satisfaction of basic psychological needs. Second, we present an IV approach where lagged values of the country's cultural traits are used as instruments. Third, to account for unobserved country effects, we perform fixed- and random-effects panel estimations on life satisfaction (in place of basic psychological needs satisfaction) by using the four waves of the European Value Survey. Fourth, we consider regional variation of generalized morality within countries and instrument it with historical institutions and past literacy rates. Finally, at the individual level, we run an IV estimation of psychological needs satisfaction on the second-generation migrants' level of trust, which is instrumented with the trust inherited from their parents. All models include income and education controls. Results show that generalized morality (high trust and respect, low obedience) positively affects the satisfaction of basic psychological needs – and hence subjective well-being – with culture remaining robust to most of our estimation strategies. Our findings suggest, therefore, that there is a significant role for culture in well-being, which goes beyond its well-recognized effects on economic growth.

Our study contributes to the economic literature on culture and well-being as it is the first attempt to give theoretical foundations to how culture affects individuals' subjective well-being.



One weakness of the existing literature on subjective well-being lies in the way well-being is measured. The vast majority of studies rely on indicators made up from the respondents' evaluation of their overall satisfaction with life or of their level of happiness, which is usually reported on a ten-point scale. Such measures are not necessarily robust since respondents' inner state is easily altered by current affect (Schwarz & Strack, 1999), differences in personality and mood may create imprecise evaluations of well-being (Kahneman & Riis, 2005) and the comparability of ordinal scales across different cultures is often questionable (King et al., 2004). In essence, the standard measure of subjective well-being is unhelpful in deciphering the relationship between culture and subjective well-being. Conversely, measuring satisfaction with autonomy, relatedness and competence provides a closer connection between a well-being approach grounded in psychology and the definition of culture in terms of values and beliefs adopted in economics.

The remainder of this paper is structured as follows. In Section 2, we discuss the background literature on culture, SDT and subjective well-being, while in Section 3 we explain how we operationalize these concepts and describe the data. In the fourth section we present and discuss our basic econometric results while in the fifth we present robustness checks. The sixth section offers our conclusions.

## **2. Background**

### *2.1 Culture and subjective well-being*

The idea that culture is relevant to economic outcomes dates back to Weber (1905) and it was later invoked by Banfield (1957). While Weber stressed the role of the Protestant Reformation in fostering the development of capitalism, Banfield identified “amoral familism” –good conduct as a moral duty only among those with family ties – as the cultural root of the underdevelopment of southern Italy. Amoral familism and low generalized trust have recently been recognized as features of limited morality (Tabellini, 2008; Platteau, 2000) and are shown to be detrimental to economic growth (Guiso et al., 2006; Tabellini, 2010; Algan & Cahuc, 2010). In particular Tabellini (2008, 2010) finds that generalized morality has a causal role in the economic growth of European regions. The cultural components of generalized morality that he considers are trust, respect, obedience and control. The first two are deemed as a “lubricant” of economic exchanges (Arrow, 1972), whereas the other two portray individualism and influence the “entrepreneurial environment where

individuals seek to take advantage of economic opportunities” (Tabellini, 2010, p. 683).<sup>1</sup> Most of these studies measure culture relying on the definition suggested by Guiso et al. (2006, p. 23) who describe it as “those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation”.

While the role of culture and institutions in economic outcomes has been extensively investigated in recent years (for an overview see Alesina & Giuliano, 2015), the analysis of their effects on subjective well-being is still limited. This is surprising as recent empirical studies on subjective well-being and contributions from the behavioural economics have suggested that well-being cannot be adequately represented by absolute income (Fleurbaey, 2009; Algan & Cahuc, 2014). Conversely, measures of subjective well-being, such as reported happiness or life satisfaction, are seen as better alternatives (e.g. Frey & Stutzer, 2002; Kahneman et al., 2004). Subjective well-being, studied by psychologists since the 1950s, was first considered by economists as a useful proxy for utility (Frey & Stutzer, 2002; Kahneman & Thaler, 2006). Now, it is not only recognized as a distinct outcome, but also frequently preferred over the standard utility concept, because it provides more comprehensive information and it reveals undisclosed preferences (e.g. Luechinger & Raschky, 2009; van Praag & Baarsma, 2005). From a macro perspective, absolute income seems to be a strong predictor of average subjective well-being, especially for poorer countries (e.g. Hagerty & Veenhoven, 2003), but so do many other variables. Examples include genetic endowments (Proto & Oswald, 2016), perceptions of freedom and corruption (Inglehart et al., 2008), social support (Clark et al., 2012), individualism as opposed to collectivism (Diener et al., 2003), trust (e.g. Helliwell et al., 2016; Hudson, 2006), government decentralization (Frey & Stutzer, 2000), democracy (Dorn et al., 2007) and religion (Campante & Yanagizawa-Drott, 2015). Cultural and institutional variables thus appear to have an impact on subjective well-being at the country level, rivalling, or even weakening, the influence of national wealth (e.g. Clark et al., 2012). For example, Senik (2014) emphasizes the role of mentality – as opposed to that of extrinsic circumstances – in explaining why the French are less happy than their standard of living would predict.<sup>2</sup>

The social context has an unquestionable role in individuals’ perception of well-being. What has not yet been understood is the set of mechanisms driving this relationship, in part because subjective well-being is usually measured through a single question on life satisfaction or

---

<sup>1</sup> As explicitly admitted in the paper, Tabellini’s selection – even though convincingly grounded in sociological and economic theory - is likely affected by a certain degree of unavoidable arbitrariness. However, the chosen cultural variables are extensively showed by the author to be robust to other manipulations and robustness checks.

<sup>2</sup> The author shows that the “French unhappiness puzzle” is due to cultural traits as French emigrants are on average less happy than other EU migrants when they live abroad and are exposed to the same external conditions as the destination country.

happiness. This single-question approach is potentially problematic. For instance, the inner state of the respondent is often altered by current affect (Schwarz & Strack, 1999), leading to measurement errors in life satisfaction or happiness in capturing latent well-being. In addition, the difficulty of comparing ordinal scales across cultures can make cross-country results difficult to interpret (King et al., 2004). Conversely, a detailed set of indicators – identified as valid proxies for specific well-being dimensions – would increase the precision and comparability of results. For instance, measurement error is reduced when using a multi-item scale *vis-à-vis* a single indicator to measure latent dimensions of well-being. Moreover, the use of multi-item scales allows for the detection and correction of comparability bias through explorative and/or confirmatory factor analyses. These are not available when a single indicator is used.

We hope to contribute here by relying on self-determination theory, which identifies the specific dimensions of well-being that are likely to be affected by the social context and that offers validated multi-item scales to measure them.

## 2.2 Self-determination theory and well-being

Self-determination theory (SDT) states that individuals seek the satisfaction of three basic psychological needs when interacting with the social context: autonomy, competence and relatedness (Deci & Ryan, 2000). Autonomy is the need to self-organize behaviour and experiences, and to act according to one's own true interests and values. The need for relatedness is what drives individuals to interact with other individuals and includes not only the need to receive and give love and support, but also the feeling of belonging to a group or to a community. The need for competence is satisfied when an individual feels able to control his/her actions and is assured that these will produce the desired results, and that they are connected to feelings of self-efficacy and personal fulfilment. The three basic psychological needs are innate and universal *psychological nutrients* necessary for an optimal human functioning (Deci & Ryan, 2000). Prior research has shown that as individuals experience the satisfaction of these needs, they also experience self-determination and, by consequence, higher well-being (e.g. Baard et al., 2004; Deci et al., 2001; DeHaan & Ryan, 2014; Reis et al., 2000), in one or more life domains (Milyavskaya & Koestner, 2011). In this perspective, life conditions and social contexts able to satisfy these needs foster well-being and personal growth. In contrast, the external conditions that hold back basic psychological needs satisfaction invariably lead to negative consequences for an individual's well-being and their mental health.<sup>3</sup>

---

<sup>3</sup> Well-being is here intended not just as the experience of positive emotions, but as the individuals' possibility of thriving and developing their human potential, entailing both the concepts of hedonic and eudaimonic well-being (Ryan et al., 2013).

What makes the study of SDT different from the existing literature is the idea that the typical measure of subjective well-being is made up of the three underlying needs. There is, indeed, strong empirical evidence supporting the idea that these three basic psychological needs predict and explain self-reported subjective well-being across contexts and cultures, and this holds for various measures of subjective well-being (e.g. Chen et al., 2015; Chirkov et al., 2005; Deci et al., 2001; DeHaan and Ryan, 2014). Consequently, one can hypothesize that certain cultural characteristics may hamper or facilitate the satisfaction of basic psychological needs.

First, individuals residing in a country where obedience is widely recognized as an important value may feel less autonomous than individuals in countries where the importance of obedience is less internalized. The rationale for this argument is that the norm of obedience may hamper the individuals' capability of self-organizing, of identifying one's own values and interests, and of developing motivations to pursue the goals that are valued by the self (Grolnick & Ryan 1989; Phinney et al. 2005). This might be particularly relevant in European countries, which are more inclined to individualism than Asian countries (e.g. Lucas et al. 2000; Suh et al. 1998), or – more generally – in horizontal-individualistic societies in which independence is highly valued (Triandis, 1995).

Second, it may be easier to build good relationships in countries where respect is recognized as a fundamental cultural value, as respect is a necessary condition for good relationships between individuals. Consequently, this might increase the satisfaction of the need for relatedness. In addition, generalized trust would foster the satisfaction of the need for relatedness. After all, being able to trust people outside the small circle of close friends or relatives increases social interactions with unknown persons.

Third, the need for competence would be better satisfied in societies where personal fulfilment is sustained by a culture characterized by generalized morality, which is a feature of more horizontal societies, i.e. societies where hierarchy is less pronounced. In these countries, the authority (e.g. parents) stimulates individuals' control over motivations and choices and their feeling of effectiveness in dealing with the external environment (Iyengar & Lepper, 1999; Chirkov et al. 2003; Grolnick et al., 1991; Sagiv & Schwartz, 2000). In summary, satisfaction of basic psychological needs represents the process through which culture affects subjective well-being, but in contrast to more crude measures such as general life-satisfaction, it more precisely captures non-material living conditions in a given society.

The application of basic psychological needs is not entirely new in economics. Frey & Stutzer (2005) used this concept to explain why procedural utility is important to well-being. They argue that participation and autonomy in political decision-making provide procedural goods that

satisfy the basic needs of competence, autonomy and relatedness. Moreover, they show that participation rights increase self-determination and well-being, while actual participation does not. This strengthens the hypotheses that societal – in particular cultural – characteristics have a significant impact on subjective well-being, as measured by basic psychological needs satisfaction. Apart from this study, the analysis of the cultural drivers of subjective well-being – reflected by the satisfaction of basic psychological needs – has been, to the best of our knowledge, neglected in economics.

### 3. Data and variables

We combine data from the European Social Survey (ESS, 2012) and the European Value Survey (EVS, waves 2-4, 1990-2008) to have our measures of basic psychological needs satisfaction and culture. Our ESS sample includes 27 countries, namely Albania, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine and the United Kingdom<sup>4</sup>. Summary statistics are reported in Table 1.

[Table 1 here]

#### 3.1 SDT and subjective well-being

In order to measure self-determination in the ESS data we use items that are similar to the well-known Basic Needs Satisfaction in Life General Scale (BNSG-S). Whereas the original BNSG-S is composed of 21 items shared equally among the three needs (e.g. Gagné, 2003; Johnston & Finney, 2010; Niemiec, Ryan, & Deci, 2009), we have instead eleven items. These items are rescaled to have equal range of values and same direction as the original BNSG-S. Many of them belong to the ESS Round Six rotating module “Personal and Social Well-being” where SDT served as a motivating framework for their construction (ESS, 2013). The relatedness index is made up of the self assessment of the following statements: 1) “I feel appreciated by the people I am close to”, 2) “I feel people treat me with respect”, 3) “I receive help and support from people I am close to when I need it”, and “I provide help and support to people I am close to when they need it”. The competence index is made up of the following statements: 1) “I have little chance to show

---

<sup>4</sup> In the figures and in Appendix B ESS countries have the following labels: AL (Albania), BE (Belgium), BG (Bulgaria), CY (Cyprus), CZ (the Czech Republic), DK (Denmark), EE (Estonia), FI (Finland), FR (France), DE (Germany), HU (Hungary), IS (Iceland), IE (Ireland), IT (Italy), LT (Lithuania), NL (the Netherlands), NO (Norway), PL (Poland), PT (Portugal), RU (Russia), SK (Slovakia), SI (Slovenia), ES (Spain), SE (Sweden), CH (Switzerland), UA (Ukraine) and GB (the United Kingdom).

how capable I am” (reversed), 2) “I feel accomplishment from what I do”, 3) “There are lots of things I feel I am good at”, and 4) “I learn new things in life”). The autonomy index is made up by: 1) “I am free to decide how to live my life”, 2) “I make time to do things I really want to do”, and 3) “I have a sense of direction in my life”.

The satisfaction of the three basic psychological needs is calculated for each of them, whereas the overall self-determination is calculated by averaging across all eleven items.

The Cronbach’s alpha for the overall SDT scale is 0.78, whereas it is 0.73 for relatedness, 0.55 for competence and 0.52 for autonomy. For the last two dimensions, we find the Cronbach alphas to be somewhat lower than what is usually the case for the original BNSG-S. This is not surprising as not all the items are exactly the same as the original version (see Appendix B for details on the original items and the scale construction), and the number of items available is smaller. The items are also drawn from a large data set where respondents come from the 27 countries listed above, which is far more heterogeneous than the sample usually found in studies on SDT. Still, given that the scale is validated (Johnston & Finney, 2010) and has a clear theoretical basis (e.g. Deci & Ryan, 2000), lower Cronbach alphas do not imply a lack of explanatory power (Sijtsma, 2009). Moreover, very often in the BNSG-S scale reliability has proved higher for relatedness than for competence and autonomy needs, as is the case in the ESS version (e.g. Gagné, 2003; Johnston & Finney, 2010; Niemiec, Ryan, & Deci, 2009).

The scatterplots in Figure 1 document the positive correlation between the SDT variables and life satisfaction<sup>5</sup>, with Northern European countries (e.g., Denmark, Norway, Sweden) reporting higher scores for both dimensions, while former Soviet countries (e.g., Russia, Ukraine, Hungary) performing relatively worse in both. As predicted by SDT, countries with higher scores for BPNS, autonomy, competence and relatedness also enjoy higher subjective well-being as measured by self-reported levels of life satisfaction.

[Figure 1 here]

### 3.2 Culture

To operationalize generalized vs. limited morality we follow the approach developed by Tabellini (2008, 2010)<sup>6</sup>. In our measure of culture we include *respect*, *obedience* and *lack of trust*

---

<sup>5</sup> Life satisfaction is the country average across individuals answers to the question “All things considered, how satisfied are you with your life as a whole nowadays? Please answer using this card, where 0 means extremely dissatisfied and 10 means extremely satisfied”. We use data from the EVS (wave 4, 2008-2010).

<sup>6</sup> An alternative way of measuring culture is through the individualism-collectivism cleavage (Gorodnichenko & Roland, 2012; Hofstede & Hofstede, 2001). Studies in cultural psychology (e.g. Triandis, 1995) have shown that, differently from individualistic societies where individuals interact in the same way with everybody, in collectivistic cultures people tend to change behaviour according to in-group or out-group peers. However, since most European

while, in order to mitigate endogeneity, we exclude *control*, as it is likely to be jointly determined with our dependent SDT variables, in particular autonomy<sup>7</sup>. *Lack of trust* is, in our analysis, measured as the percentage of respondents in a country who answer “Can’t be too careful” to the question “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” (the other possible answers being “Most people can be trusted” and “Don’t know”; source: EVS, 2008). We measure the value of *respect* for others as the percentage of respondents in each country that mentioned “tolerance and respect for other people” as being important to the question: “Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five.” (source: EVS, 2008)<sup>8</sup>. Similarly, the variable *obedience* is represented by the percentage of respondents that mention “obedience” as being important in the same question used to build the *respect* variable.

Given the small sample size, we limit the number of controls in our econometric models. We, therefore, aggregate the three cultural traits through a principal component analysis and extract the first component (*pc\_culture*) as in Tabellini (2010). By doing this, we also avoid problems of perfect collinearity among these cultural variables as they are correlated among themselves (see Table 2b)<sup>9</sup>. As showed in Table 2a, *pc\_culture* is negatively correlated with *respect* and positively with *lack of trust* and *obedience*. According to the theoretical background, *pc\_culture* therefore measures limited morality.

[Tables 2a-2b here]

From a descriptive point of view, and as predicted by SDT (see section 2.2), limited morality appears to be harmful for the satisfaction of basic psychological needs (see the scatterplots in Figure 2). Northern European countries perform better than former-communist ones: apart from scoring higher in terms of BPNS, Denmark, Norway, Sweden and Switzerland are close to a generalized-morality type of culture; Russia, Ukraine, Bulgaria, Hungary, Albania, Slovakia and the Czech Republic, instead, tend to be characterized by limited morality and register lower scores of BPNS.

[Figure 2 here]

---

countries rank at the top of the individualism ladder, we decide not to exploit the individualistic-collectivistic cleavage because of limited variation in individualism across EU countries.

<sup>7</sup> Consider also that in Tabellini’s analysis the positive effect of *control* on growth was only marginally significant in baseline OLS regressions and not robust to the IV estimation.

<sup>8</sup> The other qualities among which the respondent could choose are: good manners, independence, obedience, hard work, feeling of responsibility, imagination, thrift, saving money and things, determination and perseverance, religious faith and unselfishness.

<sup>9</sup> For instance, *obedience* (*respect*) is positively (negatively) and significantly correlated with *lack of trust* while *respect* is negatively but not significantly correlated with *obedience* (Table 2b).

#### 4. Baseline econometric results

We begin our empirical analysis on the role of cultural traits on satisfaction of basic psychological needs by estimating the following cross-country regression:

$$Y_i = \beta_0 + \beta_1 \log GDP_i + \beta_2 education_i + \beta_3 S_i + \varepsilon_i$$

Eq. 1

where  $Y_i$  is the country-average score for the satisfaction of basic psychological needs (BPNS) or – depending on the specification – a specific psychological need (namely, *autonomy*, *competence* or *relatedness*),  $\log GDP$  is the country *per capita* GDP in US\$PPP (source: World Bank, 2012), *education* is a proxy for the country human capital score measured as the median value of the respondents' level of education (source: ESS, 2012; ISCED standardization) and  $S$  is our key proxy for cultural traits (*pc\_culture* or its components, *lack of trust*, *respect* and *obedience*). Additionally, we estimate models controlling for quality of institutions as captured by the World Governance Indicators (WGIs hereon; Kaufmann et al. 2009)<sup>10</sup>. These indicators represent a “good summary of the institutional qualities characteristics associated with governance” (Alesina & Giuliano, 2015, p. 21)<sup>11</sup>. We summarize the six WGIs through a principal component analysis and use the first extracted component in our econometric analysis (*pc\_WGI*). We also estimate models with both *pc\_culture* and *pc\_WGI* included as controls. All the models are estimated through OLS with robust standard errors.

The baseline results reported in Table 3a show that limited morality (variable *pc\_culture* in column 4) is negatively and significantly correlated with BPNS, with negative effects originating from *lack of trust* and *obedience* (columns 2-3) while the positive ones derive from *respect* (column 1).

[Table 3a here]

---

<sup>10</sup> The WGIs are six aggregated indicators capturing quality of governance. They are built on hundreds of specific individual variables measuring various dimensions of governance, taken from 35 data sources provided by 33 different organizations. The six dimensions are: i) *Voice and Accountability*; ii) *Political Stability and Absence of Violence*; iii) *Government Effectiveness*; iv) *Regulatory Quality*; v) *Rule of Law*; vi) *Control of Corruption*. For further details on the aggregation procedure together with margins of error see Kaufmann et al. (2009) or visit [www.govindicators.org](http://www.govindicators.org).

<sup>11</sup> We use the WGIs since other standard country measures of institutions, which are linked to constitutional and legal characteristics (e.g., constraints on the executive, legal origins, protection against expropriation) vary little across EU countries today. The “constraints on executive” variable from the dataset POLITY IV – an objective proxy for check and balances over executive power and accountability of government officials – takes on a value of 7 for 25 out of 28 countries in the ESS dataset; similarly 25 out of 28 countries in our dataset are classified as having a civil-law legal tradition.



Concerning the specific domains of SDT, the negative effect of limited morality and, in particular, of *obedience* persists for autonomy, competence and relatedness (column 2, Tables 3b-3d). *Lack of trust* negatively affects competence and autonomy while *respect* positively affects relatedness and competence.<sup>12</sup>

[Tables 3b-3d here]

In terms of magnitude, the culture effect is non-negligible. One standard deviation increase in limited morality generates a standard deviation decrease in BPNS ranging from five to seven. All these results support the hypothesis that a culture characterized by limited morality is detrimental for the satisfaction of psychological needs (and therefore subjective well-being).

Moreover, the effect of culture outperforms that of governance on BPNS and on most of the specific SDT domains. More specifically, when jointly controlling for culture and governance, limited morality remains significant in all estimates while good governance is significant only for autonomy (Tables 3a-b, column 5). This result may be driven by the simultaneous effect of limited morality on governance. In this respect, a vast amount of theoretical and empirical evidence has shown that the quality of governance of a country strongly depends on the social or “civic” capital of its citizens (Guiso et al., 2010; Gorodnichenko & Roland, 2015; Nannicini et al., 2013). Institutions and culture influence each other (Alesina & Giuliano, 2015) and can be thought of as two sides of the same coin, despite institutions being generally classified as “formal” and “informal” normative constraints (North, 1991). In addition, measuring institutions through quality of governance amplifies the role of culture as, for instance, in societies with high civic engagement, good governance is likely to be driven by generalized morality (Guiso et al., 2010)<sup>13</sup>.

<sup>12</sup> The insignificant effect of *lack of trust* on relatedness may appear surprising. It has to be considered, however, that this variable captures the *net* effect of limited trust, i.e. keeping constant country income and education. As widely documented in the related literature, trust affects economic outcomes and therefore its effect on SDT measures may well be *indirect*, namely passing through higher country GDP and/or human capital. This argument is also supported by the fact that when we exclude *logGDP* (column 3, Table 3d), *lack of trust* becomes significant and greater in magnitude (coeff. = -.434; p-value = 0.032). Results are omitted for reasons of space, but available upon request.

<sup>13</sup> The use WGIs to proxy for institutions has been criticized, as they would capture outcomes of the political process rather than policy constraints (Glaeser et al., 2004). For this reason, as a robustness check, we use the countries’ legal origin to isolate the effect of the “formal” component of institutions from the “informal” one, which is more closely related to culture. According to Djankov et al. (2003), legal traditions explain economic outcomes since, when it comes to market failures, the civil-law tradition is more oriented toward regulation while the common-law tradition is more concerned with avoiding state abuse. In terms of the rule of law, common-law countries generally guarantee higher shareholders’ and creditors’ protection and more capitalized stock exchanges than civil-law ones (La Porta et al., 1998 and 2008). Civil-law countries are also shown to have higher government ownership and regulation than the common-law ones. Additionally, the former are characterized by greater independence of judicial power with better contract enforcement as well as security of property rights. Results are reported in Table A1 in the Appendix A and generally show that, while the effect of culture remains significant, formal institutions - proxied for by the *civil\_law* variable - have a significant impact on none of the SDT outcomes. This might be also due to the lack of a sizeable variability in legal traditions across EU countries in our dataset and/or to the possibility that they affect SDT outcomes through country income and education.

## 5. Dealing with endogeneity

The OLS results are likely to be biased due to reverse causality and/or uncontrolled confounder(s). In particular, answers to the cultural questions might be driven by heterogeneous BPNS scores and/or a third unobserved factor might affect both culture and BPNS. In addition, the proxies for generalized morality could be measured with error, thereby leading to biased estimates. These issues, jointly with a small sample size, limit the causal interpretation of the OLS results. In this section we mitigate these problems by implementing four robustness checks. First, we re-estimate the baseline model through the instrumental variable approach (Section 5.1). Second, we re-estimate it on a different dataset that allows us to implement panel-data estimation strategies. In particular, we use the four-waves data from the European Value Study (EVS) and replace the SDT outcomes with life satisfaction (Section 5.2). Third, we exploit EU regional variation in culture and BPNS and instrument culture with historical institutions as in Tabellini (2010) (Section 5.3). Lastly, as in the epidemiological approach to the transmission of culture (Ljunge 2014; Guiso et al., 2006; Algan and Cahuc, 2010), we consider inherited trust as an instrument for the second generation migrants' level of trust (Section 5.4).

### 5.1 IV estimation at country level

We exploit the non-perfect persistency of cultural values and the quality of governance to instrument *pc\_culture* with its lagged values. More specifically, we instrument *pc\_culture* with *pc\_culture (1999)*, the principal component for *lack of trust*, *obedience* and *respect* evaluated in 1999 (source: EVS, wave 3). Similarly, in the models including both governance and culture, we instrument *pc\_WGI* with *pc\_WGI (2000)*, the principal component for the six WGIs measured in 2000 (source: World Bank).

While very similar to their respective lagged values, *pc\_culture* and *pc\_WGI* prove statistically different from them. The null hypothesis that *pc\_culture* and *pc\_culture (1999)* are equally distributed is rejected under the Kolmogorov-Smirnov test (Figure A1 in the Appendix A). A similar result is obtained when comparing the distribution of *pc\_WGI* with its distribution in 2000 (Figure A2 in the Appendix A). The recent changes in cultural values and governance quality of countries within waves are further detailed in Figure A3 (in the Appendix A).<sup>14</sup>

---

<sup>14</sup> The largest change in about ten years in terms of generalized morality is found in Norway (especially through improvements in generalized trust) and Portugal, while cultural traits moved towards limited morality for Albania and Ireland. Significant improvements in twelve years in governance quality are witnessed by the Czech Republic and Lithuania, whereas Spain and Italy registered the largest decrease in the WGIs. Consider also that a large number of empirical and theoretical studies show that culture and institutions co-evolve. For an accurate summary on the topic see Alesina & Giuliano (2015). In this respect, changes in governance and culture can be due to a combination of a variety of factors, e.g. institutional changes (Fernández, 2013; Di Tella et al., 2007), macroeconomic shocks (Giuliano & Spilimbergo, 2014), migration (Senik, 2014; Dinesen, 2013), and international regulations.

The condition of instrument relevance is satisfied, as lagged culture and WGIs are likely to be highly correlated with their respective current level and empirical studies on trust and institutions show the path-dependency of these societal features over time (see, among others, Algan & Cahuc, 2010; Guiso et al., 2006)

The validity of our exclusion restriction hinges on the assumption that lagged culture influences current SDT outcomes only through current values of culture. This assumption might be questioned given the recent empirical evidence showing a direct causal effect of past institutions or culture on current economic outcomes (see, among others, Acemoglu et al., 2001; Guiso et al., 2006). However, our dependent variable is satisfaction of basic psychological needs and not economic performance, which is, instead, used as control in our framework. If past culture and institutions directly influence later economic outcomes (and, therefore, well-being), such an effect would be captured by the *logGDP* and *education* controls, which account for country heterogeneity in income and human capital trajectories.

Results from the first-stage IV estimates are reported in Table 4 and show that lagged culture positively affects current culture when only *pc\_culture* is instrumented (column 1). The statistical diagnostics support instrument relevance as i) the F-statistic of the first stage is large (above ten), and ii) the weak-identification test suggests that our instrument is not weak (the Kleibergen-Paap rk Wald F statistics is above the relevant threshold).

[Table 4 here]

Second-stage IV-estimation results are consistent with those obtained from the OLS. In particular, the effect of culture on SDT outcomes remains positive and significant in all specifications, i.e. when the dependent variable is BPNS (Table 5a, column 1), autonomy (Table 5b, column 1), competence (Table 5c, column 1) and relatedness (Table 5d, column 1).

[Tables 5a-5d here]

Moreover, the significant impact of culture - controlling for quality of governance - on all the SDT dimensions is also confirmed under this IV approach, while the governance effect on autonomy disappears. First-stage results after instrumenting both culture and governance with their respective lagged values are reported in in Table 4 (columns 2-3), while results from the second stage are in column 2 of Tables 5a-5d.

## 5.2 Life satisfaction and culture – longitudinal estimates

Previous OLS and IV results have to be interpreted with caution because of the limited number of observations. Moreover, the validity of our exclusion restriction also relies on the assumed zero (or low) correlation between lagged BPNS and lagged *pc\_culture* or on the scarce explanatory power of the former on current BPNS. These assumptions cannot be tested empirically with the data at our disposal. Ideally, one would need panel data on autonomy, relatedness and competence for a larger sample of countries. Unfortunately, to the best of our knowledge there are no broad and longitudinal surveys that would allow us to construct longitudinal measures of the three SDT dimensions and culture. The only way to perform a longitudinal analysis is to substitute the BNPS scale with the level of life satisfaction. Whereas the BNPS scales and life satisfaction are strongly correlated (see Figure 1), this approach is not ideal for at least two reasons. First, this approach is inconsistent with the SDT theoretical framework, which allows us to draw clear connections between culture and subjective well-being. Moreover, the reported levels of life satisfaction may be driven by other sources than what is contained within the BPNS. Keeping these caveats in mind, we construct a longitudinal data set from the EVS where the dependent variable is defined as the average life satisfaction at country level. In doing so, we estimate OLS panel random and fixed effects estimations based on four waves<sup>15</sup>. Fixed effects regressions net out the confounding effects of any time-invariant, unobserved characteristics of a given country. Consistent with the previous models, we also control for the country *per capita* GDP in US\$PPP (source: World Bank) and for the years of total schooling country average (for respondents aged 25 and above; source: Barro & Lee, 2013), as a proxy for education. Both regressors are measured in the country and year of administration of the EVS. Higher values of the principal component extracted from the cultural variables correspond to a higher degree of limited morality in a country, i.e. higher trust, less obedience, more respect).

Results from the random and fixed effects models are reported in Tables 6a-b and are generally consistent with main findings, especially for those relevant to *respect* and *lack of trust*. This suggests that a society in which generalized trust is high and respect widely valued will also enjoy higher well-being (as proxied for by life satisfaction).

[Tables 6a-6b here]

---

<sup>15</sup> EVS is a large-scale, cross-national, and longitudinal survey on basic human values based on four waves. The first wave has been implemented in sixteen countries during 1981-1984; the second in 29 countries in 1990-1993; the third in 33 countries in 1999-2001; the fourth in 47 countries in 2008-2010. To exploit fully the time dimension of the data we consider only countries that are present in at least three waves of the study. Controlling also for GDP and Education, we deal with 26 countries for a total of 86 observations.

### 5.3 IV estimation at the regional level: historical institutions

We run an additional robustness check by using an alternative set of instruments and considering a sample of EU regions. We replicate Tabellini's (2010) IV approach by instrumenting current culture with past institutional features across regions of selected EU countries, namely France, Western Germany, the UK, Italy, the Netherlands, Belgium, Spain, and Portugal. In his empirical study Tabellini claims a causal link between a culture of generalized morality and economic growth by comparing EU regions with different historical characteristics. These characteristics are past education and past political institutions. The former is measured by the literacy rate around 1880, while the second by constraints on executive power in the years 1600-1850.

The exclusion restriction relies on the assumption that past institutions affect current development only through current culture. This restriction is empirically justified by controlling for contemporaneous education and political institutions (through country fixed effects), as well as for initial economic conditions. From a theoretical point of view, the chosen instruments are argued to be relevant since liberal institutions are likely to reinforce positive cultural values when some conditions are realized. These conditions are i) higher citizens' perceived match between beliefs and outcomes (Platteau 2000), ii) the wide political participation of productive entrepreneurs (when the rule of law is respected and the discretionary political power of authority is limited) (Putnam 1993), and iii) higher awareness of the external political environment and socialization through increased literacy. Instrument relevance is further supported by the empirical evidence provided by Guiso et al. (2016), who show that early experience of self government fosters higher levels of civic capital through the development of inter-generationally transmitted beliefs of self-efficacy.<sup>16</sup>

To check the robustness of the culture effect on SDT outcomes, we combine Tabellini's dataset with the ESS (2012) and compute for each region the average of the respondents' score for autonomy, competence and relatedness. As in Tabellini's analysis, our cultural variable (*pc\_culture*) now captures generalized morality and corresponds to the first principal component of *respect*, *trust* and *obedience*. It is negatively correlated with *obedience* and positively correlated with *respect* and *trust* (Table 7a). We replicate Tabellini's IV analysis by instrumenting *pc\_culture* with early political institutions (variable *pc\_institutions*) and past literacy levels (variable *literacy*

---

<sup>16</sup> Tabellini's first-stage regressions display a positive impact for high literacy and sound institutions in the past on later generalized morality. In the second-stage estimates the author shows that the regional variation in the degree of generalized morality explains much of variation in *per capita* GDP after controlling for country fixed effects, contemporaneous education and past urbanization rates. These controls allow Tabellini to exclude that past institutions affect current growth through human capital accumulation and different initial economic conditions which determine economic convergence; in addition, they are also used to mitigate unobserved heterogeneity problems deriving from unobserved time-invariant country characteristics, education and historical and economic development that would induce a spurious correlation between culture and growth.

(1880)) in order to assess the effect of generalized morality on SDT outcomes. Additionally, we control for contemporaneous GDP, gross enrolment rates in primary and secondary schools in 1960 (*school (1960)*) and past urbanization rates (*urbanization (1850-1860)*)<sup>17</sup>.

[Table 7a here]

First-stage estimates highlight a positive correlation between past institutions and generalized morality across EU regions (Table 7b). Second-stage estimates with and without controlling for GDP are reported in Table 7c, column 1 and 2 respectively. Results confirm the positive effect of generalized morality on BPNS, competence and relatedness. As in Tabellini (2010), in the first stage country fixed characteristics are controlled for through the inclusion of country dummies, while in the second stage country group dummies are included in accordance with the Esping-Andersen (1999) classification<sup>18</sup>.

[Table 7b here]

#### 5.4 IV estimation at the individual level: inherited trust

The last robustness check is implemented at the individual level. We consider a sample of second-generation migrants, i.e. the respondents in ESS dataset (wave 6) born in an EU country with at least one parent born in another country. As in Ljunge (2014), we instrument their level of trust with the level of trust of his/her mother's or father's country of origin. The parents' level of trust is built by using the WVS dataset (waves 3-4) and aggregating at the country level respondents' answer to the question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" (0 implies "Most people can be trusted" and 1 "Can't be too careful"). The level of trust of migrants' children is measured in the ESS dataset (wave 6) through the question "Generally speaking, would you say that most people

<sup>17</sup> In order to have comparable results, we exclude "control" from Tabellini's principal component analysis for culture. Note also that *pc\_institutions* is the first principal component of the five variables measuring constraints on the executive at five different points in time (i.e. 1600, 1700, 1750, 1800, 1850; higher value correspond to better institutions; source: POLITY IV dataset). The countries considered by Tabellini are Belgium, France, Italy, the Netherlands, Portugal, Spain, the UK and Germany. See Tabellini (2010) for further details on all the variables in his analysis that we have used for this robustness check. The dataset used by the author can be downloaded at <http://goo.gl/KaalD9>.

<sup>18</sup> We choose to include country-group dummies instead of country-individual dummies in the second stage as our dependent variables (SDT outcomes) have little variation at regional level. Moreover, by using the regions (and countries) selected by Tabellini we lose information and additional variability deriving from other countries not included in the author's dataset. Country-group dummies are built according to the Esping-Andersen's (1999) taxonomy, whereby countries are classified according to their welfare models as: i) *Social-democratic* (Denmark, Sweden); ii) *Conservative* (the Netherlands, Belgium, France, Germany, Austria and Switzerland); iii) *Mediterranean* (Greece, Italy and Spain); iv) *Former socialist* (the Czech Rep., Poland).

can be trusted, or that you can't be too careful in dealing with people". Answers were collected on an ordinal scale ranging from 0 (You can't be too careful) to 10 (Most people can be trusted).

The set of equations we estimate is the following:

$$Y_{ica} = \beta_0 + \beta_1 Trust_{ica} + \beta_2 X_{ica} + \gamma_c + \varepsilon_{ica} \quad \text{Eq. 2}$$

$$Trust_{ica} = \beta_0 + \beta_1 Lack\_of\_Trust_a + \beta_2 X_{ica} + \gamma_c + \varepsilon_{ica} \quad \text{Eq. 3}$$

where  $Y_{ica}$  is the SDT outcome (BPNS, autonomy, relatedness or competence) of individual  $i$ , born and residing in country  $c$  with a parent born in a country  $a \neq c$ ;  $trust_{ica}$  is the level of trust of individual  $i$ , born and residing in country  $c$  with a parent born in a country  $a \neq c$ ;  $lack\ of\ trust_a$  is average level of mistrust common to all individuals with a parent born in country  $a$ ,  $\gamma_c$  is the country fixed effect;  $X_{ica}$  is a set of individual's socio-demographic and economic controls including gender, age and income class, education level, number of household components, marital status, employment status. In our sample  $i=4,197$ ,  $a=83$  and  $c=29$ . Reverse causality is not a concern in this case as trust of respondents born and residing in country  $c$  cannot affect the average level of trust in the parent's birth country  $a$ . The inclusion of  $\gamma_c$  allows accounting for the institutional structure and all other unobserved differences that apply to all residents in  $c$  and may influence both their level of trust and SDT outcomes.<sup>19</sup>

The relevance of the chosen instrument hinges on the intergenerational transmission of trust (or, more generally, cultural values) from parents to children. The existence of this transmission has been documented empirically by regressing the trust of children on that of parents (Dohmen et al., 2012) or, for the sample of migrants, on the average trust in the country of origin (Algan & Cahuc, 2010). Guiso et al. (2006) show a positive correlation between trust of immigrants and their descendants in the US and trust levels in the country of ancestry. Apart from inherited trust and cultural and institutional features of the country of residence, it is difficult to think of other channels through which average trust in the country of origin affect the SDT outcomes of second-generation migrants, and as such, the exclusion restriction is likely to be also valid at a theoretical level.

We estimate Equations 2-3 with 2SLS considering separately the trust inherited from the mother and that inherited from the father. Standard errors are clustered by the parent's country of origin. The sample is restricted to ancestral countries with at least fifteen immigrants in order to

---

<sup>19</sup> The empirical strategy we follow is known as the epidemiological approach. In economics this approach is used to distinguish cultural traits vs. environmental characteristics (e.g. formal institutions) affecting the individual variation in the outcome of interest. The rationale of this strategy is based on the transmission of cultural beliefs from parents to children, the variation of cultural beliefs across immigrant groups and exposition to the same institutional environment for individuals living in the same area. The idea is thus that individuals with different cultural traits behave in different ways despite living in identical environments. See Fernández (2010) for an excellent overview of this approach.

reduce the potential noise deriving from just a few observations for a given country of origin (Algan & Cahuc, 2010; Ljunge, 2014).

Results are summarized in Tables 8a-b. As with the findings by Ljunge (2014), first-stage results highlight that the transmission of trust is particularly strong from the mother's side while not significant when considering the ancestral trust deriving from the father (columns 1, 3, 5, 7 in Tables 8a-b). For this reason, our instrument performs poorly in the estimates concerning the father's country of origin (Table 8b), while relatively well in those restricted to the country of origin of the mother (Table 8a). Only in this last case, do second-stage results confirm the positive and the significant role of culture (proxied for by trust) in BPNS. In particular, trust significantly contributes to autonomy and relatedness (columns 2, 4, 8 in Table 8a).

[Tables 8a-8b here]

A possible threat to our exclusion restriction, however, may derive from the fact that high social capital in the country of origin might also capture high institutional quality and larger economic opportunities, which would have in turn driven parents' education and income. Income might influence children's well-being directly through, for instance, investment in human capital and transmission of positive work-related attitudes. Such an argument is unlikely to play a role in our analysis since we control for the socio-economic status of second-generation migrants (including their education and income levels). Moreover, in an alternative specification we include, as additional controls, the parent's employment status when the respondent was fourteen and his/her highest education level achieved<sup>20</sup>.

## 6. Conclusion

This paper provides theoretical bases and empirical support to the importance of culture for well-being. Our theoretical arguments are derived from the self-determination theory (SDT), which predicts that when individuals satisfy the basic psychological needs of autonomy, competence and relatedness they reach higher levels of subjective well-being (Deci & Ryan, 2001). Besides individual intrapsychic forces, satisfaction of these needs also varies according to the characteristics of the social context. Among these characteristics, we consider, in the cultural dimension, the degree of limited morality, a feature of societies where obedience is highly valued, trust is low and

---

<sup>20</sup> Results, omitted for reasons of space, are also robust to this check. We check, too, for the robustness of our results to a different operationalization of inherited trust. Similar to Guiso et al. (2004 and 2006), and Algan and Cahuc (2010), we replace the level of trust in the country of origin in eq. 3 with a set of dummy variables for the parents' country of origin. Results do not change significantly.



respect not recognized among the fundamental values to transmit to children (Platteau, 2000; Tabellini, 2008).

In these societies, trust and respect are bounded to kinship-based relations and the individual's search for socio-economic opportunities is limited by the coercive power of the family (e.g. through the internalization of the obedience norm). As most of the socio-economic interactions are subordinated to the interests of closely-related persons, individuals achieve less self-determination. In particular, high obedience would hamper the satisfaction of autonomy and competence, while low trust and the scarce importance given to respect would limit the satisfaction of relatedness.

To test these theoretical associations, we regress the SDT outcomes (i.e. satisfaction of autonomy, competence, relatedness and the average of the scores in all of these dimensions) on proxies for limited morality (i.e. lack of trust, low respect and high obedience) at the country level, controlling for economic performance and human capital. We find a significant negative effect of limited morality on SDT outcomes.

Our results provide support for the hypothesis that a culture characterized by limited morality is detrimental to the satisfaction of psychological needs (and therefore subjective well-being). They suggest that, besides their negative effects on economic prosperity, specific cultural values (lack of trust, low respect, high obedience) have a negative impact on the fulfilment of basic psychological needs. This is an important result as, on the one hand, the satisfaction of these needs is deemed crucial in achieving a high level of subjective well-being and, on the other, it sheds light on the mechanisms underlying the link between culture and well-being. The role of the social context in well-being is, therefore, justified by the influence of limited morality on autonomy, competence and relatedness, three necessary *psychological nutrients* in letting individuals thrive.

The culture effect is also significant at a regional and individual level and when accounting for the potential endogeneity due to measurement error, uncontrolled confounders and reverse causality. In this respect, the effect of culture is found to be robust to the instrumental variable estimation at a country level in which lagged levels cultural values are used as instruments. It also remains significant in the IV estimation at the regional level when culture is instrumented with historical institutions and past educational levels. In addition, the effect partially persists when we replace SDT outcomes with life satisfaction and re-estimate the baseline model on a different sample of EU countries with panel-data methods. It finally survives in the individual-level analysis in which the cultural beliefs of second-generation migrants are instrumented with those of their parents.

Although all these strategies provide support for a causal interpretation of our findings, caution is nonetheless advised. Each empirical model we choose does help in mitigating endogeneity, yet with some caveats. For instance, country-level IV regressions are performed on a small sample, while their regional-level counterparts are carried out on a limited set of countries. Similarly, when exploiting the time-dimension in the EVS we had to replace our key SDT outcome variables with life satisfaction, due to the lack of (time-repeated) data on satisfaction of basic psychological needs. Finally, while providing us with a sound identification strategy at the individual level, the IV approach based on inherited culture considers a restricted sample (second-generation migrants) and a single cultural dimension (trust).

In conclusion, this study offers original evidence on how contextual cultural factors affect well-being. Lack of trust, high obedience and low respect not only reduce the wealth of nations, but also constrain the satisfaction of basic psychological needs, thereby hindering an individual's search for happiness.

## References

- [1] Acemoglu, D., Johnson, S., & Robinson, J. A. (2001), The Colonial Origins of Comparative Development: An Empirical Investigation, *American Economic Review*, 91, 1369-1401.
- [2] Alesina, A., & Giuliano, P. (2015). Culture and institutions. *Journal of Economic Literature*, 53(4), 898-944.
- [3] Algan, Y., & Cahuc, P. (2014). Trust, Well-being and Growth: New Evidence and Policy Implications. *Handbook of Economic Growth*, 49-120.
- [4] Algan, Y., and Cahuc, P. (2010). Inherited Trust and Growth. *American Economic Review*, 100, 2060–2092.
- [5] Arrow, K. J. (1972). Gifts and exchanges. *Philosophy & Public Affairs*, 343-362.
- [6] Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, 34, 2045-2068.
- [7] Banfield, E. C. (1957). *The Moral Basis of a Backward Society*. Glencoe, IL: The Free Press.
- [8] Barro, R., & Lee, J. W. (2013). A New Data Set of Educational Attainment in the World, 1950-2010." *Journal of Development Economics*, 104, 184-198.
- [9] Campante, F., & Yanagizawa-Drott, D. (2015). Does Religion Affect Economic Growth and Happiness? Evidence from Ramadan. *The Quarterly Journal of Economics*, 130(2), 615-658.
- [10] Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, et al. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, 39, 216-236.
- [11] Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*, 84(1), 97-110.
- [12] Chirkov, V., Ryan, R. M., & Willness, C. (2005). Cultural Context and Psychological Needs in Canada and Brazil. Testing a Self-Determination Approach to the Internalization of Cultural Practices, Identity, and Well-being. *Journal of Cross-Cultural Psychology*, 36(4), 423-443.
- [13] Clark, A., Layard, R., & Senik, C. (2012). ‘The Causes of Happiness and Misery’, in *World Happiness Report* edited by John Helliwell, Richard Layard and Jeffrey Sachs, Columbia UP: 58-89.
- [14] Deci, E. L., & Ryan, R. M. (2000). The “What” and “Why” of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, 11(4), 227–268.
- [15] Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need Satisfaction, Motivation, and Well-being in the Work Organizations of a Former Eastern Bloc Country: A Cross-Cultural Study of Self-Determination. *Personality and Social Psychology Bulletin*, 27(8), 930-942.
- [16] DeHaan, C., & Ryan, R. M. (2014). Symptoms of wellness: Happiness and eudaimonia from a self-determination perspective. In K. M. Sheldon, & R. E. Lucas (Eds.), *Stability of happiness: Theories and evidence on whether happiness can change* (pp. 37-55). Amsterdam: Elsevier.
- [17] Di Tella, R., Galiani, S., & Schargrodsky, E. (2007). The formation of beliefs: evidence from the allocation of land titles to squatters. *The Quarterly Journal of Economics*, 209-241.
- [18] Diener, E., Oishi S., & Lucas, R. E. (2003). Personality, culture and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology*, 54, 403–425.

- [19] Dinesen, P. T. (2013). Where you come from or where you live? Examining the cultural and institutional explanation of generalized trust using migration as a natural experiment. *European sociological review*, 29(1), 114-128.
- [20] Djankov, S., Glaeser, E., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2003). The new comparative economics. *Journal of Comparative Economics*, 31(4), 595-619.
- [21] Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2012). The intergenerational transmission of risk and trust attitudes. *The Review of Economic Studies*, 79(2), 645-677.
- [22] Dorn, D., Fischer, J. A., Kirchgässner, G., & Sousa-Poza, A. (2007). Is it culture or democracy? The impact of democracy and culture on happiness. *Social Indicators Research*, 82(3), 505-526.
- [23] Esping-Andersen, G. (1999). *Social Foundations of Postindustrial Economies*. New York: Oxford University Press
- [24] Fernández, R. (2010). *Does culture matter?* (No. w16277). National Bureau of Economic Research.
- [25] Fernández, R. (2013). Cultural change as learning: The evolution of female labor force participation over a century. *The American Economic Review*, 103(1), 472-500.
- [26] Fleurbaey, M. (2009). Beyond GDP: The Quest for a Measure of Social Welfare. *Journal of Economic Literature*, 47(4), 1029-1075.
- [27] Frey, B. S., & Stutzer, A. (2000). Happiness, economy and institutions. *The Economic Journal*, 110(466), 918-938.
- [28] Frey, B. S., & Stutzer, A. (2002). What Can Economists Learn from Happiness Research?. *Journal of Economic Literature*, 40(2), 402-435.
- [29] Frey, B. S., & Stutzer, A. (2005). Beyond outcomes: measuring procedural utility. *Oxford Economic Papers*, 57(1), 90-111.
- [30] Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion*, 27, 199-223.
- [31] Giuliano, P., & Spilimbergo, A. (2014). Growing up in a Recession. *The Review of Economic Studies*, 81(2), 787-817.
- [32] Glaeser, E. L., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2004). Do institutions cause growth?. *Journal of economic Growth*, 9(3), 271-303.
- [33] Gorodnichenko, Y., & Roland, G. (2012). Understanding the individualism-collectivism cleavage and its effects: Lessons from cultural psychology. In *Institutions and comparative economic development* (pp. 213-236). Palgrave Macmillan UK.
- [34] Gorodnichenko, Y., & Roland, G. (2015). *Culture, institutions and democratization* (No. w21117). National Bureau of Economic Research.
- [35] Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, 81(2), 143-154.
- [36] Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology*, 38, 508-517
- [37] Guiso, L., Sapienza, P., & Zingales, L. (2016). Long Term Persistence, *Journal of the European Economic Association*, pre-print available online.
- [38] Guiso, L., Sapienza, P., & Zingales, L. (2004). The role of social capital in financial development. *The American Economic Review*, 94(3), 526-556.
- [39] Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes?. *The journal of economic perspectives*, 20(2), 23-48.
- [40] Guiso, L., Sapienza, P., & Zingales, L. (2010). *Civic capital as the missing link* (No. w15845). National Bureau of Economic Research.

- [41] Hagerty, M. R., & Veenhoven, R. (2003). Wealth and Happiness Revisited – Growing National Income *Does* Go with Greater Happiness. *Social Indicators Research*, 64(1), 1-27.
- [42] Helliwell, J. F. (2006). Well - Being, social capital and public policy: What's new?. *The Economic Journal*, 116(510), C34-C45.
- [43] Helliwell, J. F., Huang, H., & Wang, S. (2016). New Evidence on Trust and Well-being, *NBER Working Papers* 22450, National Bureau of Economic Research.
- [44] Hofstede, G. H., & Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage.
- [45] Hudson, J. (2006). Institutional trust and subjective well-being across the EU. *Kyklos*, 59(1), 43-62.
- [46] Inglehart, R., Foa, R., Peterson, C., & Welzel, C. (2008). Development, freedom, and rising happiness: A global perspective (1981–2007). *Perspectives on Psychological Science*, 3(4), 264–285.
- [47] Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology*, 76, 349–366.
- [48] Johnston, M. M. & Finney, S. J. (2010). Measuring basic needs satisfaction: Evaluating previous research and conducting new psychometric evaluations of the Basic Needs Satisfaction in General Scale. *Contemporary Educational Psychology*, 35, 280-296.
- [49] Kahneman, D., & Thaler, R. H. (2006). Anomalies: Utility maximization and experienced utility. *The Journal of Economic Perspectives*, 20(1), 221-234.
- [50] Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. (2004). Toward National Well-being Accounts. *American Economic Review*, 94(2), 429-434.
- [51] Kahneman, D., & Riis, J. (2005). Living, and thinking about it: Two perspectives on life. *The science of well-being*, 285-304.
- [52] Kaufmann, D., Kraay, A., & Mastruzzi, M. (2009). Governance matters VIII: aggregate and individual governance indicators, 1996-2008. *World bank policy research working paper*, (4978).
- [53] King, G., Murray, C. J. L., Salomon, J., and Tandon, A. (2004). *American Political Science Review*, 98, 191–207.
- [54] La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The economic consequences of legal origins. *Journal of economic literature*, 46(2), 285-332.
- [55] La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and Finance. *Journal of Political Economy*, 106(6).
- [56] Ljunge, M. (2014). Trust issues: Evidence on the intergenerational trust transmission among children of immigrants. *Journal of Economic Behavior & Organization*, 106, 175-196.
- [57] Lucas, R.E., Diener, E., Grob, A., Suh, E.M., & Shao, L. (2000). Cross-cultural evidence for the fundamental features of extraversion. *Journal of Personality and Social Psychology*, 79(3), 452-468.
- [58] Luechinger S., Raschky P.A. (2009). Valuing flood disasters using the life satisfaction approach. *Journal of Public Economics*, 93(3–4):620–633
- [59] Milyavskaya, M., & Koestner, R. (2011). Psychological needs, motivation, and well-being: A test of self-determination theory across multiple domains. *Personality and Individual Differences*, 50(3), 387-391.
- [60] Nannicini, T., Stella, A., Tabellini, G., and Troiano, U. (2013). Social Capital and Political Accountability. *American Economic Journal: Economic Policy*, 5(2), 222-250.
- [61] Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality*, 43, 291–306.
- [62] OECD. (2013). *OECD Guidelines on Measuring Subjective Well-being*, Paris: OECD Publishing.

- [63] Phinney, J. S., Kim-Jo, T., Osorio, S., & Vilhjálmsdóttir, P. (2005). Autonomy and relatedness in adolescent-parent disagreements ethnic and developmental factors. *Journal of Adolescent Research*, 20(1), 8-39.
- [64] Platteau, J.-P. (2000). *Institutions, Social Norms and Economic Development*. Amsterdam: Harwood Academic Publishers.
- [65] Proto, E., & Oswald, A. J. (2016). National happiness and genetic distance: A cautious exploration. *The Economic Journal*.
- [66] Putnam, R. (1993). *Making democracy work: civic traditions in modern Italy*. Princeton University press.
- [67] Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and social psychology bulletin*, 26(4), 419-435.
- [68] Ryan, R. M., Huta, V., & Deci, E. L. (2013). Living well: A self-determination theory perspective on eudaimonia. In *The Exploration of Happiness* (pp. 117-139). Springer Netherlands.
- [69] Sagiv, L., & Schwartz, S. H. (2000). Value priorities and subjective well-being: Direct relations and congruity effects. *European journal of social psychology*, 30(2), 177-198.
- [70] Schwarz, N., & Strack, F. (1999). Reports of subjective well-being: Judgmental processes and their methodological implications. *Well-being: The foundations of hedonic psychology*, 7, 61-84.
- [71] Senik, C. (2014). The French unhappiness puzzle: The cultural dimension of happiness. *Journal of Economic Behavior & Organization*, 106, 379-401.
- [72] Sijtsma, K. (2009). On the use, the misuse, and the very limited usefulness of Cronbach's Alpha. *Psychometrika*, 74(1), 107-120.
- [73] Suh, E., Diener, E., Oishi, S., & Triandis, H.C. (1998). The shifting basis of life satisfaction judgments across cultures: Emotions versus norms. *Journal of Personality and Social Psychology*, 74(2), 482-493.
- [74] Tabellini, G. (2008). Institutions and Culture. *Journal of the European Economic Association*, 6(2-3), 255-294.
- [75] Tabellini, G. (2010). Culture and Institutions: Economic Development in the Regions of Europe. *Journal of the European Economic Association*, 8(4), 677-716.
- [76] Triandis, H. C. (1995). *Individualism & collectivism*. Westview press.
- [77] Van Praag, B.M.S., Baarsma, B.E. (2005). Using happiness surveys to value intangibles: the case of airport noise. *The Economic Journal*, 115, 224-246.
- [78] Weber, Max (1905), *The Protestant Ethic and the Spirit of Capitalism*.

Table 1: Descriptive statistics

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
BPNS	29	4.386	0.188	3.990	4.776
Autonomy	29	4.259	0.185	3.884	4.597
Competence	29	3.985	0.256	3.465	4.507
Relatedness	29	4.857	0.200	4.380	5.166
Education	29	3.552	0.827	1	5
pc_culture	27	0.000	1.408	-2.601	2.114
Obedience	27	0.281	0.104	0.117	0.571
Respect	27	0.732	0.123	0.499	0.911
Lack of trust	27	0.633	0.191	0.239	0.910
pc_culture (1999)	27	0.000	1.303	-3.038	1.886
Respect (1999)	27	0.747	0.103	0.570	0.925
Obedience (1999)	27	0.308	0.131	0.119	0.575
Lack of trust (1999)	24	0.669	0.155	0.335	0.900
pc_WGI	28	0.000	2.298	-5.770	2.932
Government Effectiveness	28	1.093	0.737	-0.583	2.214
Control of Corruption	28	0.980	1.022	-1.028	2.391
Rule of Law	28	1.026	0.821	-0.821	1.949
Regulatory quality	28	1.080	0.612	-0.611	1.890
Political Stability / Absence of Violence	28	0.652	0.613	-1.070	1.400
Voice and accountability	28	1.016	0.630	-0.980	1.750
pc_WGI (2000)	28	0.000	2.347	-5.396	2.804

Table 2a: Correlation results of PCA (principal component analysis) for governance and culture

<i>Variable</i>	<i>pc_culture</i>
Obedience	0.4363
Respect	-0.6123
Lack of trust	0.6594

Table 2b: Pairwise correlation coefficients for culture

	Obedience	Respect	Lack of Trust
Obedience	1		
Respect	-0.240 (0.228)	1	
Lack of trust	0.428 (0.026)	-0.754 (0.000)	1

P-values are reported in brackets.

Figure 1: Life Satisfaction and Basic Psychological Need Satisfaction

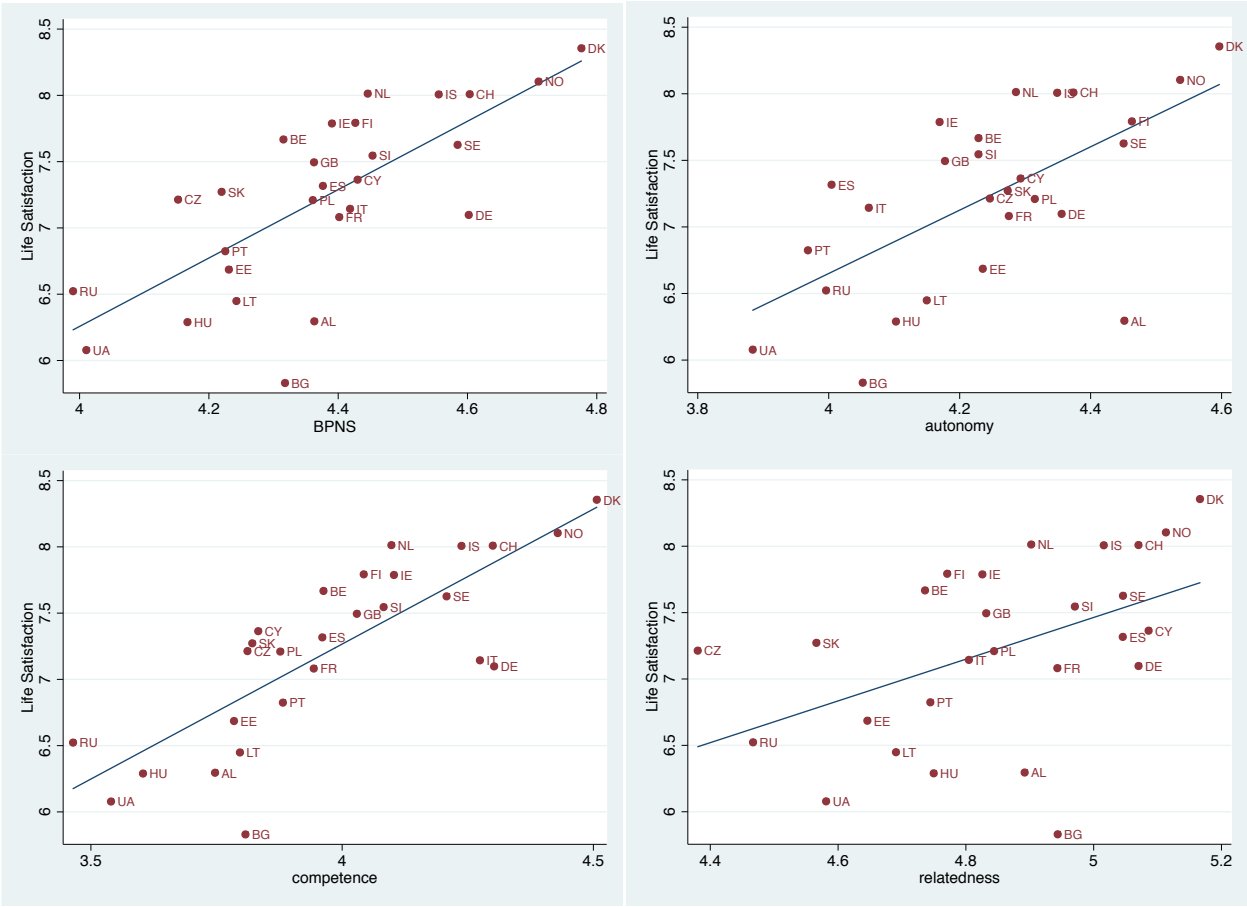




Figure 2: Basic Psychological Need Satisfaction and Culture

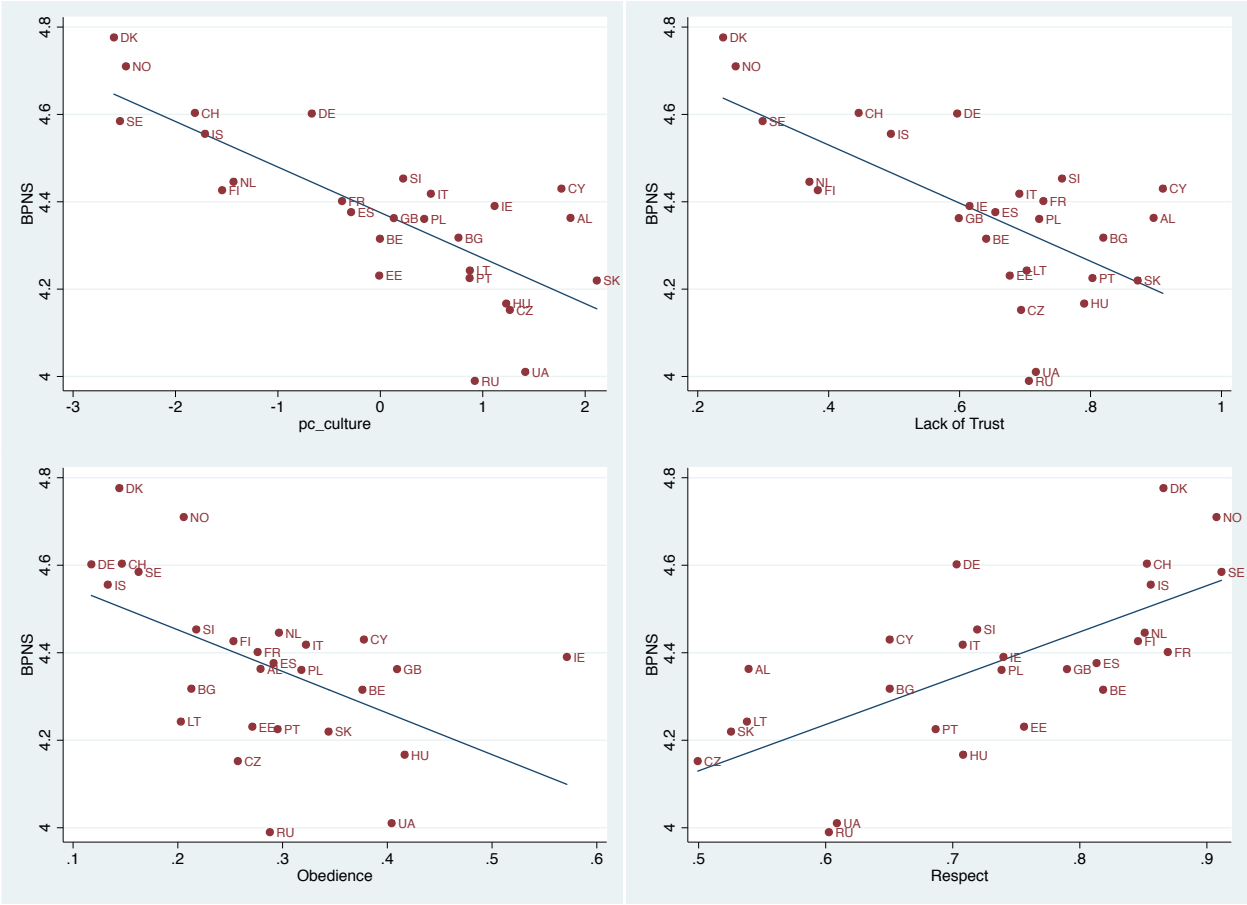


Table 3a: Determinants of Basic Psychological Needs Satisfaction

	(1)	(2)	(3)	(4)	(5)
Education	-0.00528 (0.0325)	-0.00990 (0.0343)	-0.0320 (0.0365)	-0.0159 (0.0306)	-0.00374 (0.0252)
logGDP	0.148 (0.0882)	0.225*** (0.0715)	0.137 (0.0978)	0.101 (0.0893)	-0.0196 (0.134)
pc_WGI					0.0361 (0.0266)
Respect	0.635*** (0.224)				
Obedience		-0.705*** (0.225)			
Lack of trust			-0.425** (0.196)		
pc_culture				-0.0783*** (0.0227)	-0.0654*** (0.0226)
Observations	27	27	27	27	27
Adjusted R-squared	0.488	0.552	0.505	0.597	0.620

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 3b: Determinants of Autonomy

	(1)	(2)	(3)	(4)	(5)
Education	0.0449 (0.0393)	0.0453 (0.0370)	0.0233 (0.0400)	0.0391 (0.0361)	0.0657** (0.0257)
logGDP	0.133 (0.130)	0.166 (0.101)	0.0782 (0.146)	0.0601 (0.135)	-0.203 (0.163)
pc_WGI					0.0790*** (0.0189)
Respect	0.369 (0.270)				
Obedience		-0.706*** (0.193)			
Lack of trust			-0.421* (0.225)		
pc_culture				-0.0688** (0.0270)	-0.0406* (0.0234)
Observations	27	27	27	27	27
Adjusted R-squared	0.193	0.337	0.281	0.334	0.532

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 3c: Determinants of Competence

	(1)	(2)	(3)	(4)	(5)
Education	-0.00575 (0.0341)	-0.00805 (0.0351)	-0.0356 (0.0361)	-0.0144 (0.0328)	-0.00728 (0.0229)
logGDP	0.318*** (0.0848)	0.376*** (0.0748)	0.250*** (0.0835)	0.239*** (0.0814)	0.168 (0.195)
pc_WGI					0.0213 (0.0470)
Respect	0.540** (0.251)				
Obedience		-0.756** (0.308)			
Lack of trust			-0.568*** (0.191)		
pc_culture				-0.0863*** (0.0247)	-0.0787*** (0.0252)
Observations	27	27	27	27	27
Adjusted R-squared	0.585	0.645	0.654	0.679	0.672

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 3d: Determinants of Relatedness

	(1)	(2)	(3)	(4)	(5)
Education	-0.0423 (0.0396)	-0.0551 (0.0481)	-0.0726 (0.0511)	-0.0600 (0.0422)	-0.0531 (0.0448)
logGDP	-0.0116 (0.101)	0.132* (0.0729)	0.0681 (0.110)	-0.00141 (0.105)	-0.0698 (0.137)
pc_WGI					0.0205 (0.0355)
Respect	1.013** (0.378)				
Obedience		-0.607** (0.257)			
Lack of trust			-0.323 (0.284)		
pc_culture				-0.0810** (0.0367)	-0.0737* (0.0423)
Observations	27	27	27	27	27
Adjusted R-squared	0.377	0.271	0.226	0.357	0.340

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 4: Determinants of Culture and Governance (*first stage regressions*)

Dep Var:	(1) pc_culture	(2) pc_culture	(3) pc_WGI
pc_culture (1999)	0.680*** (0.126)	0.666*** (0.152)	0.0566 (0.131)
pc_WGI (2000)		-0.0320 (0.121)	1.067*** (0.190)
Education	0.0251 (0.162)	0.00124 (0.209)	0.407** (0.147)
LogGDP	-0.900 (0.529)	-0.792 (0.604)	-0.219 (0.744)
Observations	25	25	25
Adjusted R-squared	0.747	0.734	0.928
Partial R-squared of excluded instruments	0.5781	0.5787	0.7205
Test of excluded instruments:			
$F =$	29.09	15.35	22.77
$Prob > F =$	0.0000	0.0001	0.0000
Underidentification Test:			
<i>Kleibergen-Paap rk LM statistic</i>	7.12		7.65
<i>p-value</i>	0.0076		0.0057
Weak identification test			
<i>Kleibergen-Paap rk Wald F statistic</i>	29.09		10.441
<i>Critical value for 10% maximal IV size</i>	16.38		7.03

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5a: Determinants of BPNS (*second stage regressions*)

	(1)	(2)
pc_culture	-0.103*** (0.0300)	-0.0920*** (0.0355)
pc_WGI		0.0181 (0.0342)
Education	-0.0219 (0.0272)	-0.0152 (0.0241)
LogGDP	0.0480 (0.105)	-0.00337 (0.134)
Observations	25	25
Adjusted R-squared	0.625	0.630

Excluded instruments: *pc\_culture* (1999) in model 1; *pc\_culture* (1999) and *pc\_WGI* (2000) in model 2. Instrumented variables: *pc\_culture* in model 1; *pc\_culture* and *pc\_WGI* in model 2. Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5b: Determinants of Autonomy (*second stage regressions*)

	(1)	(2)
pc_culture	-0.0964** (0.0414)	-0.0797* (0.0442)
pc_WGI		0.0279 (0.0262)
Education	0.0337 (0.0331)	0.0441 (0.0323)
LogGDP	0.00425 (0.161)	-0.0751 (0.165)
Observations	25	25
Adjusted R-squared	0.342	0.437

Excluded instruments: *pc\_culture* (1999) in model 1; *pc\_culture* (1999) and *pc\_WGI* (2000) in model 2. Instrumented variables: *pc\_culture* in model 1; *pc\_culture* and *pc\_WGI* in model 2. Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5c: Determinants of Competence (*second stage regressions*)

	(1)	(2)
pc_culture	-0.0977*** (0.0358)	-0.0835* (0.0452)
pc_WGI		0.0237 (0.0485)
Education	-0.0147 (0.0314)	-0.00583 (0.0238)
LogGDP	0.214** (0.0960)	0.146 (0.164)
Observations	25	25
Adjusted R-squared	0.650	0.642

Excluded instruments: *pc\_culture* (1999) in model 1; *pc\_culture* (1999) and *pc\_WGI* (2000) in model 2. Instrumented variables: *pc\_culture* in model 1; *pc\_culture* and *pc\_WGI* in model 2. Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5d: Determinants of Relatedness (*second stage regressions*)

	(1)	(2)
pc_culture	-0.119*** (0.0318)	-0.113*** (0.0354)
pc_WGI		0.00975 (0.0384)
Education	-0.0720** (0.0363)	-0.0683* (0.0382)
LogGDP	-0.0854 (0.0990)	-0.113 (0.147)
Observations	25	25
Adjusted R-squared	0.504	0.478

Excluded instruments: *pc\_culture* (1999) in model 1; *pc\_culture* (1999) and *pc\_WGI* (2000) in model 2. Instrumented variables: *pc\_culture* in model 1; *pc\_culture* and *pc\_WGI* in model 2. Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 6a: Determinants of Life Satisfaction – Panel random-effects estimates (*EVS, 1981-2010*)

	(1)	(2)	(3)	(4)
Lack of trust	-0.913** (0.432)			
Obedience		0.196 (0.457)		
Respect			1.510*** (0.511)	
pc_culture				-0.316* (0.180)
Education	0.0311 (0.0462)	0.0466 (0.0436)	0.0397 (0.0475)	0.0341 (0.0458)
LogGDP	1.283*** (0.167)	1.410*** (0.143)	1.284*** (0.138)	1.364*** (0.142)
Year dummies	YES	YES	YES	YES
Observations	86	86	86	86
Number of Countries	26	26	26	26

Robust standard errors in parentheses. \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 6b: Determinants of Life Satisfaction - Panel fixed-effects estimates (*EVS, 1981-2010*)

	(1)	(2)	(3)	(4)
Lack of trust	-1.349* (0.737)			
Obedience		0.344 (0.549)		
Respect			1.886** (0.712)	
pc_culture				-0.426 (0.260)
Education	0.0430 (0.0785)	0.0205 (0.0732)	0.0114 (0.0653)	0.0292 (0.0765)
LogGDP	1.215*** (0.354)	0.971*** (0.345)	1.186*** (0.321)	1.333*** (0.383)
Year dummies	YES	YES	YES	YES
Observations	86	86	86	86
Number of Countries	26	26	26	26
Adjusted R-squared	0.448	0.428	0.499	0.448

Robust standard errors in parentheses. \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 7a: Correlation results of principal component analysis for “generalized morality” (source: Tabellini, 2010)

<i>Variable</i>	<i>pc culture</i>
Obedience	-0.6948
Respect	0.6706
Trust	0.8506

Table 7b: Determinants of “generalized morality” (*first stage regressions* - source: Tabellini, 2010)

Dep. Var.: <i>pc culture</i> (2000)	(1)	(2)	(3)	(4)
logGDP	-0.0801 (0.121)	-0.0801 (0.118)		
School (1960)	0.0197 (0.0151)	0.0197 (0.0168)	0.0213 (0.0150)	0.0213 (0.0166)
Urbanization (1850-1860)	-0.00298 (0.00780)	-0.00298 (0.00805)	-0.00403 (0.00745)	-0.00403 (0.00760)
Literacy (1880)	0.0189** (0.00826)	0.0189 (0.0110)	0.0168** (0.00758)	0.0168* (0.00862)
pc_institutions	0.408** (0.157)	0.408*** (0.0911)	0.423** (0.159)	0.423*** (0.0977)
Country dummies	YES	YES	YES	YES
Observations	64	64	64	64
Adjusted R-squared	0.708	0.711	0.708	0.711
Partial R-squared of excluded instruments	0.655	0.655	0.666	0.666
Test of excluded instruments:				
<i>F</i> =	13.87	766.26	14.53	628.68
<i>Prob &gt; F</i> =	0.000	0.000	0.000	0.000
Underidentification Test:				
<i>Kleibergen-Paap rk LM statistic</i>	27.44	7.33	28.44	6.71
<i>p-value</i>	0.0003	0.3957	0.0002	0.4596
Weak identification test				
<i>Kleibergen-Paap rk Wald F statistic</i>	13.87	766.26	14.529	628.68

Columns 1 and 3: robust standard errors in parentheses; columns 2 and 4: robust standard errors in parentheses clustered by country. 10% maximal IV relative bias: 11.29; 20% maximal IV maximal bias: 12.48. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 7c: Determinants of SDT outcomes (*second stage regressions* - source: Tabellini, 2010)

Dep. var:	(1) BPNS	(2) Autonomy	(3) Competence	(4) Relatedness
pc_culture (2000)	0.0565 (0.0170)*** (0.0287)**	0.00778 (0.0219) (0.0329)	0.0845 (0.0228)*** (0.0282)***	0.0588 (0.0286)** (0.0331)*
logGDP	0.0118 (0.0185) (0.0230)	-0.00300 (0.0221) (0.0267)	0.0478 (0.0268)* (0.0219)**	-0.0110 (0.0271) (0.0248)
School (1960)	-0.00243 (0.00232) (0.00308)	-0.00243 (0.00267) (0.00335)	-0.00301 (0.00257) (0.00206)	-0.00207 (0.00402) (0.00405)
Mediterranean welfare regime	-0.129 (0.0475)*** (0.0479)***	-0.326 (0.0598)*** (0.0644)***	-0.0270 (0.0616) (0.108)	-0.102 (0.0771) (0.0953)
Nordic welfare regime	-0.136 (0.0498)*** (0.0642)**	-0.0308 (0.0617) (0.0737)	-0.15 (0.0739)** (0.0667)**	-0.186 (0.0815)** (0.0867)**
Liberal welfare regime	-0.11 (0.0322)*** (0.0260)***	-0.117 (0.0352)*** (0.0227)***	-0.0861** (0.0370) (0.0203)***	-0.114 (0.0430)*** (0.0442)***
Observations	64	64	64	64
Adjusted R-squared	0.254	0.379	0.220	0.044

Standard errors in parentheses: robust above and clustered by country below. Columns 1-4 refer to first stages models in columns 1-2 in Table 6b (*logGDP* is added among exogenous regressors). Omitted category: Conservative welfare regime. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 7d: Determinants of SDT outcomes (*second stage regressions* - source: Tabellini, 2010)

	(1) BPNS	(2) Autonomy	(3) Competence	(4) Relatedness
pc_culture (2000)	0.0596 (0.0191)*** (0.0329)*	0.00672 (0.0230) (0.0362)	0.0981 (0.0264)*** (0.0340)***	0.0555 (0.0295)* (0.0318)*
School (1960)	-0.00262 (0.00223) (0.00297)	-0.00239 (0.00258) (0.00312)	-0.00371 (0.00266) (0.00241)	-0.00191 (0.00387) (0.00372)
Mediterranean welfare regime	-0.141*** (0.0382) (0.0308)***	-0.323*** (0.0583) (0.0562)***	-0.0762 (0.0550) (0.108)	-0.0906 (0.0689) (0.102)
Nordic welfare regime	-0.158 (0.0500)*** (0.0767)**	-0.0247 (0.0588) (0.0841)	-0.24 (0.0656)*** (0.0806)***	-0.165 (0.0754)** (0.0721)**
Liberal welfare regime	-0.108 (0.0320)*** (0.0270)***	-0.118 (0.0346)*** (0.0208)***	-0.0793 (0.0358)*** (0.0231)***	-0.116 (0.0423)*** (0.0419)***
Observations	64	64	64	64
Adjusted R-squared	0.254	0.390	0.156	0.061

Standard errors in parentheses: robust above and clustered by country below. Columns 1-4 refer to first stages models in columns 3-4 in Table 6b (*logGDP* is removed from the set of regressors). Omitted category: Conservative welfare regime. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



Table 8a: Inheritance of trust - mothers' country of origin (2SLS estimates)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep var:	Trust <sub>ica</sub>	BPNS	Trust <sub>ica</sub>	Auton.	Trust <sub>ica</sub>	Comp.	Trust <sub>ica</sub>	Related.
<i>Lack_of_Trust<sub>a</sub></i>	-1.520*** (0.368)		-1.529*** (0.382)		-1.375*** (0.411)		-1.429*** (0.375)	
Trust <sub>ica</sub>		0.211*** (0.0760)		0.173* (0.0969)		0.124 (0.139)		0.217** (0.111)
X <sub>ica</sub>	YES	YES	YES	YES	YES	YES	YES	YES
Y <sub>c</sub>	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,168	2,168	2,257	2,257	2,261	2,261	2,254	2,254
R-squared (centered)	0.124	-0.151	0.119	-0.061	0.118	0.152	0.123	-0.067
Partial R-squared of excluded instruments	0.0049		0.0048		0.004		0.0042	
Test of excluded instruments:								
	F = 17.07		15.98		11.18		14.54	
	Prob > F = 0.0001		0.0002		0.0015		0.0003	
Underidentification Test:								
Kleibergen-Paap rk LM statistic	10.59		11.27		9.457		9.795	
p-value	0.0011		0.0008		0.0021		0.0018	
Weak identification test								
Kleibergen-Paap rk Wald F statistic	10.613		10.96		8.738		9.426	
[Critical value for 15% maximal IV size = 8.96]								
Robust standard errors in parentheses clustered by mothers' country of origin								
*** p<0.01, ** p<0.05, * p<0.1								

Table 8b: Inheritance of trust – fathers' country of origin (2SLS estimates)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep var:	Trust <sub>ica</sub>	BPNS	Trust <sub>ica</sub>	Auton.	Trust <sub>ica</sub>	Comp.	Trust <sub>ica</sub>	Related.
<i>Lack_of_Trust<sub>a</sub></i>	-0.329 (0.432)		-0.260 (0.478)		-0.205 (0.461)		-0.279 (0.438)	
Trust <sub>ica</sub>		0.243 (0.328)		0.0484 (0.485)		-0.101 (1.049)		0.473 (0.616)
X <sub>ica</sub>	YES	YES	YES	YES	YES	YES	YES	YES
Y <sub>c</sub>	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,347	2,347	2,447	2,447	2,461	2,461	2,443	2,443
R-squared (centered)	0.128	-0.173	0.120	0.083	0.120	0.101	0.129	-1.095
Partial R-squared of excluded instruments	0.0002		0.0001		0.0001		0.0002	
Test of excluded instruments:								
	F = 0.58		0.3		0.2		0.41	
	Prob > F = 0.45		0.5885		0.6581		0.5269	
Underidentification Test:								
Kleibergen-Paap rk LM statistic	0.629		0.332		0.218		0.437	
p-value	0.4276		0.5645		0.6403		0.5086	
Weak identification test								
Kleibergen-Paap rk Wald F statistic	0.579		0.296		0.198		0.405	
[Critical value for 15% maximal IV size = 8.96]								
Robust standard errors in parentheses clustered by fathers' country of origin								
*** p<0.01, ** p<0.05, * p<0.1								

# APPENDIX A

Figure A1: Distribution of “limited morality” in 1999 and 2008 (source: *EVS*, waves 3 and 4)

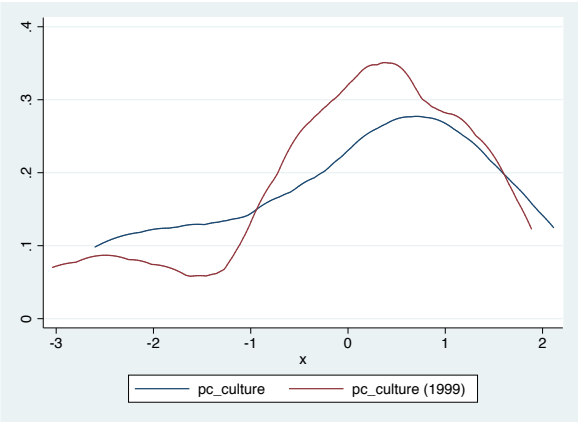


Figure A2: Distribution of quality of governance in 2000 and 2012 (source: *WGI*s, *World Bank*)

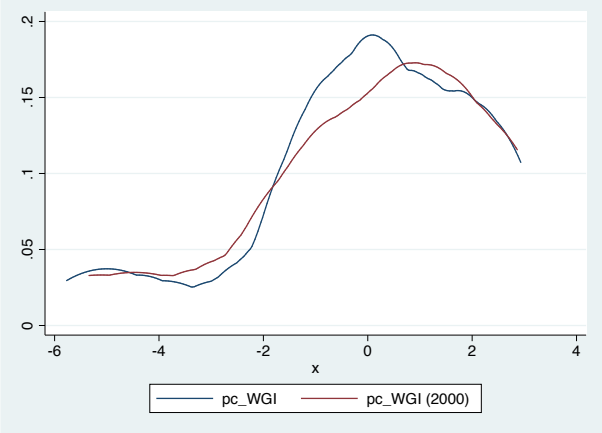


Figure A3: Time variations in culture and quality of governance (sources: *WGI*s and *EVS*)

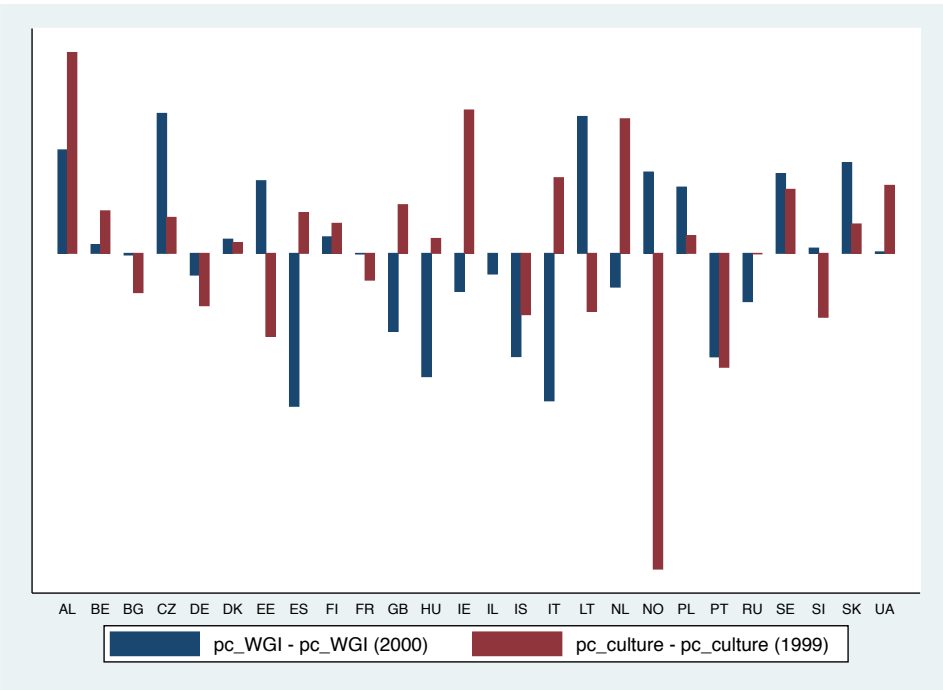


Table A1: Determinants of basic psychological needs: the role of culture and legal origins

Dep. Var.:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	BPNS		Autonomy		Competence		Relatedness	
Education	-0.0127 (0.0381)	-0.0209 (0.0301)	0.0446 (0.0409)	0.0376 (0.0369)	-0.00826 (0.0381)	-0.0171 (0.0343)	-0.0618 (0.0509)	-0.0704* (0.0401)
logGDP	0.261*** (0.0825)	0.0446 (0.101)	0.208* (0.111)	0.0436 (0.163)	0.422*** (0.0817)	0.209* (0.101)	0.152* (0.0842)	-0.117 (0.103)
civil_law	0.00106 (0.0663)	-0.123 (0.0913)	0.0445 (0.0693)	-0.0359 (0.0972)	0.0446 (0.0722)	-0.0647 (0.0854)	-0.0690 (0.0939)	-0.253 (0.154)
pc_culture		-0.0980*** (0.0244)		-0.0745* (0.0369)		-0.0967*** (0.0330)		-0.122*** (0.0294)
Observations	28	27	28	27	28	27	28	27
Adjusted R-squared	0.393	0.613	0.178	0.307	0.553	0.669	0.184	0.455

Robust standard errors in parentheses; \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

## APPENDIX B

The original BNSG-S is composed of the items reported in the table below. The response scale of the BNSG-S goes from 1 (*not at all true*) to 7 (*very true*).

### BNSG-S original items

---

1. I feel like I am free to decide for myself how to live my life.
2. I really like the people I interact with.
3. Often, I do not feel very competent.
4. I feel pressured in my life.
5. People I know tell me I am good at what I do.
6. I get along with people I come into contact with.
7. I pretty much keep to myself and don't have a lot of social contacts.
8. I generally feel free to express my ideas and opinions.
9. I consider the people I regularly interact with to be my friends.
10. I have been able to learn interesting new skills recently.
11. In my daily life, I frequently have to do what I am told.
12. People in my life care about me.
13. Most days I feel a sense of accomplishment from what I do.
14. People I interact with on a daily basis tend to take my feelings into consideration.
15. In my life I do not get much of a chance to show how capable I am.
16. There are not many people that I am close to.
17. I feel like I can pretty much be myself in my daily situations.
18. The people I interact with regularly do not seem to like me much.
19. I often do not feel very capable.
20. There is not much opportunity for me to decide for myself how to do things in my daily life.
21. People are generally pretty friendly towards me.

Autonomy: 1, 4 reversed, 8, 11 reversed, 14, 17, 20 reversed

Competence: 3 reversed, 5, 10, 13, 15 reversed, 19 reversed

Relatedness: 2, 6, 7 reversed, 9, 12, 16 reversed, 18 reversed, 21

---

The ESS 11-item version of the BNSG-S has three items almost equal to the original: two for competence, i.e. item 13 “Most days I feel a sense of accomplishment from what I do” and item 15 “In my daily life I get very little chance to show how capable I am”, and one for autonomy, i.e. item 1 “I feel I am free to decide for myself how to live my life”. Other items are very similar. For what concerns relatedness, the ESS item “I feel appreciated by the people I am close to” mimics the reversed version of item 18, while the ESS item “I receive help and support from people I am close to when I need it” has a connection with item 12 of the BNSG-S. Concerning autonomy, ESS items “I make time to do things I really want to do” and “I have a sense of direction in my life” capture something comparable to the reversed version of items 4 and 10. As for competence, the ESS item “I learn new things in life” is very similar to item 10 of the BNSG-S, whereas the ESS item “There are lots of things I feel I am good at” mimics the reversed versions of items 3 and 19.

The Cronbach’s alphas of our scale are reported for each ESS country in the table below, first separately for relatedness, for competence, and for autonomy items, and secondly for the total set of the items measuring basic psychological needs satisfaction.

<b>Country</b>	<b>N</b>	<b>Relatedness</b>	<b>Competence</b>	<b>Autonomy</b>	<b>BPN</b>
AL	1,201	0.56	0.30	0.46	0.64
BE	1,869	0.66	0.41	0.44	0.71
BG	2,260	0.77	0.69	0.61	0.83
CH	1,493	0.69	0.43	0.39	0.70
CY	1,116	0.66	0.45	0.43	0.70
CZ	2,009	0.78	0.57	0.59	0.83
DE	2,958	0.65	0.47	0.44	0.71
DK	1,650	0.66	0.61	0.55	0.76
EE	2,380	0.71	0.48	0.51	0.77
ES	1,889	0.65	0.37	0.48	0.69
FI	2,197	0.69	0.52	0.48	0.74
FR	1,968	0.65	0.40	0.49	0.69
GB	2,286	0.66	0.53	0.57	0.77
HU	2,014	0.78	0.59	0.63	0.84
IE	2,628	0.79	0.61	0.66	0.84
IS	752	0.73	0.59	0.50	0.76
IT	960	0.68	0.49	0.51	0.76
LT	2,109	0.80	0.60	0.58	0.83
NL	1,845	0.64	0.53	0.39	0.71
NO	1,624	0.69	0.54	0.52	0.74
PL	1,898	0.69	0.56	0.50	0.75
PT	2,151	0.77	0.49	0.46	0.76
RU	2,484	0.75	0.54	0.43	0.77
SE	1,847	0.69	0.47	0.54	0.76
SI	1,257	0.73	0.54	0.58	0.78
SK	1,847	0.71	0.56	0.58	0.81
UA	2,178	0.76	0.41	0.39	0.74