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The Cultural Drivers of Subjective Well-Being*

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Abstract

The paper provides a framework of how culture affects citizens' subjective well-being. 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 the Europeans' satisfaction of these needs, controlling for income and education. We find positive impact of generalized morality (i.e. high trust and respect, low obedience). Results are robust to different checks for endogeneity, including instrumental variable regressions at country, regional and individual level as well as to panel-data estimations.

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

JEL Codes: A13, E02, P48, I31, Z13

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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

One of the main historical quests within economics is to understand why some countries perform better than others do. Traditionally, the idea of “performing well” has been interpreted in terms of “wealth of nations”, and thus identified with economic growth. In more recent times, it has been argued that the well-being of nations cannot be adequately summarized by measures of GDP (Easterlin 1974; Scitovsky 1976; Fleurbaey, 2009). Instead, measures of subjective well-being would do a better job in quantifying well-being – or so goes the argument (e.g., Frey & Stutzer, 2002; Kahneman et al., 2004; Algan & Cahuc, 2014). Inspired by research on happiness in psychology (e.g., Layard, 2006), the use of these measures has grown rapidly both in economics and public policy (Helliwell, 2006; OECD, 2013).

The keen interest in this approach has stimulated much economic research on the micro-level determinants of individuals’ well-being (e.g. Blanchflower & Oswald, 2011; Frey & Stutzer, 2002; Layard et al. 2014). While the role of income in shaping a country’s well-being is not clear cut (e.g., Easterlin, 1995; Di Tella et al., 2003; Proto & Rustichini, 2013), the explanatory power of political institutions (Bjørnskov et al., 2010), social norms, trust and social capital (Clark et al., 2012; Helliwell et al., 2016), and cultural traits (Tov & Diener, 2007) is strong. Recently it has also been suggested that the national genetic endowment matters for observed levels of well-being (Proto & Oswald, 2016). Whereas these studies appear consistent with the idea that generalized trust and well-functioning institutions bring about economic prosperity (Algan & Cahuc, 2010; Guiso et al., 2006; Tabellini, 2010; Platteau, 2000), there are no clear theoretical arguments in economics for why and how culture should affect individuals’ subjective well-being. One obvious weakness lies in the way subjective well-being is measured. The vast majority of the existing studies rely on indicators made up from the respondents’ evaluation of the overall satisfaction with their life or their level of happiness, which is usually reported on a ten-point scale. Such a measure is 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 comparability of ordinal scales across different cultures is often questionable (King et al., 2004). In essence, the current measure of subjective well-being is unhelpful in deciphering the relationship between culture and subjective well-being.

This study explores the role of culture in fostering well-being. From a theoretical point of view, we build a framework that describes how culture accounts for differences in well-being across countries. In doing so we invoke self-determination theory (SDT), stating that humans seek to satisfy innate basic psychological needs defined in terms of *autonomy* (i.e. acting concordantly with one's sense of self), *competence* (i.e. feeling a sense of accomplishment from one's own actions), and *relatedness* (i.e. feeling connected to individuals and groups). By satisfying these three needs, individuals thrive and experience higher levels of subjective well-being (for an overview see DeHaan & Ryan, 2014). In this perspective, if cultural and social variables hinder the fulfilment of basic psychological needs, well-being is also lower (e.g. Chirkov et al. 2003; DeHaan & Ryan, 2014; Sagiv & Schwartz, 2000).

The common use of overall life satisfaction or general happiness cannot disclose the underlying mechanisms at play. Conversely, measuring satisfaction with autonomy, relatedness and competence provides a deeper understanding of well-being components. Besides bringing stronger precision, this decomposition of well-being enables a closer connection between a well-being approach grounded in psychology to the definition of culture largely adopted in economics, i.e. a set of inter-generationally transmitted beliefs and values in a society (Guiso et al., 2006). In the light of this definition, we use the concept of “generalized morality”, namely the set of rules of good conduct and honest behaviour towards a generalized other that are morally accepted outside small circles of related people (Platteau, 2000). Empirically, we measure the degree of trust in a generalized other and of internalization of individualistic values (e.g. obedience and respect), both recognized as ingredients of economic growth (Tabellini, 2008 & 2010).

Building upon the SDT framework, we hypothesize that generalized morality accounts for cross-country differences in well-being, and that nation-specific cultural traits affect citizens' fulfilment of their basic psychological needs. 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, i.e. societies where hierarchy is less pronounced and the individual has priority over the group. In these societies, the 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 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 capability of identifying one's 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, 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 conditions for individuals to experience relatedness (Baard et al. 2004).

To test these hypotheses we rely on the European Social Survey to build an index measuring basic psychological needs satisfaction, which is very similar to what is known as the Basic Psychological Needs Satisfaction in Life Scale (e.g. Gagné, 2003; Johnston & Finney, 2010). For what concerns culture, we derive from the last wave of the European Value Study measures of obedience, respect and trust as in Tabellini (2010). Our empirical strategy consists in exploiting the variation in culture and needs satisfaction at different levels (country, region and individual) and assessing the robustness of the culture effect to alternative models, which are aimed at mitigating endogeneity. 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, we perform panel fixed and random effects estimations on life satisfaction (in place of basic psychological needs satisfaction) by using the four waves of the European Value Survey. Fourth, we replicate the IV analysis at the regional level as in Tabellini (2010) by exploiting within country variation and instrumenting culture 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, and instrument the latter with the trust inherited from their parents.

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 the fifth presents the robustness checks. The sixth section concludes.

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 revoked by Banfield (1957). While Weber stressed the role of the Protestant Reformation in fostering the development of capitalism, Banfield identified in “amoral familism” – i.e. good conduct as a moral duty only among family ties – the cultural root of the underdevelopment of the South of Italy. Amoral familism and low generalized trust are recently 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 have a causal role in the economic development of European regions. The cultural components of generalized morality that he considers are trust, respect, obedience and control. The first two are deemed as “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).¹ 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 the rapid growth of the empirical studies on subjective well-being and recent contributions from the behavioural economics introduced the idea that well-being cannot adequately be represented by absolute income (Fleurbaey, 2009; Algan & Cahuc, 2014). Conversely, measures of subjective well-being, such as reported happiness or life satisfaction, could do a better job (e.g. Frey & Stutzer, 2002; Kahneman et al., 2004). Studied by psychologists since the 1950s, subjective well-being was first considered by economists as a useful proxy for utility (Frey & Stutzer, 2002; Kahneman & Thaler, 2006). At the present time 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 indeed a strong predictor of subjective well-being, especially for poorer countries (e.g. Hagerty & Veenhoven, 2003), but so do many other variables. Examples include genetic

¹ As explicitly admitted in the paper, the Tabellini’s selection – even though convincingly motivated by the 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.

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, more generally, governance (Debnath & Shankar, 2014). Cultural and institutional variables thus appear to have an impact on subjective well-being at the country level, flanking or even weakening the influence of national wealth (e.g. Clark et al., 2012). For instance, Senik (2014) argues that the French “unhappiness puzzle”, is due to “mentality” rather than to extrinsic circumstances, as French emigrants seem less happy than EU migrants on average.

The social context has an unquestionable role in the individuals’ perception of well-being. What has not been understood yet 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 happiness. This approach is not free from problems as, for instance, the inner state of the respondent is often altered by current affect (Schwarz & Strack, 1999), leading to measurement error in life satisfaction or happiness in capturing latent well-being. In addition, the incomparability of ordinal scales across cultures makes cross-country results hardly interpretable (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 could be 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 detecting and correcting for comparability bias through explorative and/or confirmatory factor analyses, which are not available when a single indicator is used. We contribute in this direction 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 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, 1985, 2000). Autonomy is the need to self-organize behaviour and experiences, and to act accordingly 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 a community. The need for competence is satisfied when an individual feels able to control her actions and to make sure that these will produce the desired results, and is connected to feelings of self-efficacy and personal fulfilment. The three basic psychological needs are innate and universal *psychological nutriments* necessary for an

optimal human functioning (Deci & Ryan, 2000). Prior research has shown that as individuals experience 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), even in multiple 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, external conditions that hold back basic psychological needs satisfaction invariably lead to negative consequences for an individual's well-being and mental health.²

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 largely 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, identifying one's own values and interests, and 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, as respect is a necessary condition for good relationships between individuals, it may be easier to build good relationships in countries where respect is recognized as a fundamental cultural value. Consequently, this might increase the satisfaction of the need for relatedness. In addition, generalized trust would foster the satisfaction of the need for relatedness, as being able to trust people outside the small circle of close friends/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;

² Well-being is here intended not just as the experience of positive emotions, but as the individuals' possibility to thrive and develop their human potential, entailing both the concepts of hedonic and eudaimonic well-being (Ryan et al., 2013).

Grolnick et al., 1991; Sagiv & Schwartz, 2000). Summarizing, 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 is able to capture more precisely non-material living conditions in a 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 the societal – in particular cultural – characteristics have a significant impact on subjective well-being, as conveyed by basic psychological needs satisfaction. Apart from this study, to our knowledge, the analysis of the cultural drivers of subjective well-being – reflected by the satisfaction of basic psychological needs – is still underexplored 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.

3.1 SDT and subjective well-being

In order to measure self-determination in the ESS data we construct an individual-level basic psychological needs satisfaction indicator that is as similar as possible to the well-known Basic Needs Satisfaction in Life General Scale (BNSG-S), composed by 21 items equally shared among the three needs (e.g. Gagné, 2003; Johnston & Finney, 2010). We select the items most consistent to the BNSG-S and we test the resulting scale through confirmatory factor analysis, after having rescaled the items to have equal range of values and same direction for all the items. The resulting scale is composed by 11 items: four for relatedness need (“I feel appreciated by the people I am close to”, “I feel people treat me with respect”, “I receive help and support”, “I provide help and support”), four for competence need (“I have little chance to show how capable I am”, “I feel accomplishment from what I do”, “There are lots of things I feel I am good at”, “I learn new things in life”), and three for autonomy (“I am free to decide how to live my life”, “I make time to do things I really want to do”, “I have a sense of direction in my life”). Then, the satisfaction of the three basic psychological needs

is computed separately for every need as the mean of the items portraying that need, while self-determination is calculated by averaging across all the 11 items.

As predicted by SDT, countries with higher scores for BPNS, autonomy, competence and relatedness also enjoy higher subjective well-being as commonly measured by levels of life satisfaction³. The scatterplots in Figure 1 document the positive correlation between the SDT variables and life satisfaction, 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.

3.2 Culture

To operationalize generalized vs. limited morality we follow the approach developed by Tabellini (2008, 2010)⁴. In our measure of culture we include *lack of trust*, *respect* and *obedience* while, in order to mitigate endogeneity, we exclude *control* as it is likely to be jointly determined with our dependent SDT variables, in particular autonomy⁵. *Lack of trust* in our analysis is measured as the percentage of respondents in a country who answer that “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 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)⁶. Similarly, the variable *obedience* is 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

³ 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).

⁴ 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 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.

⁵ Consider also that in the 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.

⁶ 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.

collinearity among these cultural variables as they are correlated among themselves (see Table 2b)⁷. 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.

From a descriptive point of view, as predicted by SDT (see section 2.2), limited morality appears to be harmful for 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 Czech Republic instead tend to be characterized by limited morality and register lower scores of BPNS.

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:

$$Y_i = \beta_0 + \beta_1 \log GDP_i + \beta_2 \text{education}_i + \beta_3 S_i + \varepsilon_i$$

Eq. 1

where Y_i is the country-average score for satisfaction of basic psychological needs (BPNS) or – depending on the specification – a specific psychological need (i.e. *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 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, i.e. *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)⁸. These indicators represent a “good summary of the institutional qualities associated with governance” (Alesina & Giuliano, 2015, p. 21)⁹. We

⁷ 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).

⁸ 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 jointly with margins of error see Kaufmann et al. (2009) or visit www.govindicators.org.

⁹ We use the WGIs since other standard country measures of institutions which are linked to constitutional/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 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.

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 from *respect* (column 1). In regard to 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.¹⁰ 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 provide support to 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 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., 2012). Institutions and culture influence each other (Alesina & Giuliano, 2015) and, despite institutions are generally classified as “formal” and “informal” normative constraints (North, 1991), both can be thought as two sides of the same coin. 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)¹¹.

¹⁰ 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 largely 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.

¹¹ 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 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 common-law toward avoiding state abuse. In terms of 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

5. Dealing with endogeneity

OLS results previously shown 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 empirical counterparts used as 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 our results. In this section we try to 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 strategies. In particular, we use the four-waves data in the European Value Study (EVS) and replace the SDT outcomes with life satisfaction (Section 5.2). Third, we exploit the 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 2012; 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 quality of governance to instrument *pc_culture* with its lagged values. More specifically, we instrument *pc_culture* with *pc_culture (1999)*, i.e. 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)*, i.e. 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 similar result is obtained when comparing the distribution of *pc_WGI* with its distribution in 2000

by greater independence of the judicial power with better contract enforcement as well as security of property rights. Results are reported in Table A1 in the Appendix 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 due also to the lack of a sizeable variability in legal traditions across the EU countries in our dataset and/or to the possibility that they affect SDT outcomes through country income and education.

(Figure A2 in the Appendix). The recent changes in cultural values and governance quality of countries within waves are further detailed in Figure A3 (in the Appendix).¹²

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 the effects of culture in the past influence current SDT outcomes only through the current values of culture and institutions. However, this assumption could be questionable on the basis of 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 that 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 confidently large, 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).

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 the 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). Moreover, the significant impact of culture, net of governance effects, on all the SDT dimensions is confirmed also 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.

¹² The largest change in about ten years in terms of generalized morality is reached by 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 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 (Fernandez, 2013; Di Tella et al. , 2007), macroeconomic shocks (Giuliano & Spilimbergo, 2014), migration (Senik, 2014; Dinesen, 2013), international regulations.

5.2 *Life satisfaction and culture – longitudinal estimates*

We carry out an additional robustness check by using the European Value Study that contains repeated measures of culture and general well-being within European countries. We use the country average level of life satisfaction (instead of BPNS) as dependent variable, given the lack of longitudinal questions necessary to build the BPNS scale. In fact, 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 relies also on the assumed zero (or low) correlation between lagged BPNS and lagged *pc_culture* or on a little 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 our knowledge there are no broad and longitudinal surveys that would allow us to construct longitudinal measures of the three SDT dimensions and culture.

As showed in Figure 1, SDT dimensions predict life satisfaction fairly well as higher scores for autonomy, competence and relatedness are correlated with higher subjective well-being. This evidence induces us to confidently use measures of life satisfaction from the EVS data. In doing this, we also exploit the longitudinal dimension of the dataset by running OLS panel random and fixed effects estimations based on four waves¹³. Fixed effects regressions are particularly helpful in mitigating endogeneity, as they allow us to net out the confounding effects of time-invariant, unobserved characteristics of the country. Consistently with the previous models, we control also for the country per capita GDP in US\$PPP (source: World Bank) and, as a proxy for education, for the country average years of total schooling (for respondents aged 25 and above; source: Barro & Lee, 2013). 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 of a country (+ Lack of trust – Obedience + Respect).

Results from the random and fixed effects models are reported in Tables 6a-b and are consistent with main findings, especially for what concerns *Lack of trust* and *Respect*. This suggests that a society in which generalized trust is high and respect largely valued enjoys also higher well-being (as proxied for by life satisfaction).

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

¹³ 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 16 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.

We run an additional robustness check by using an alternative set of instruments and considering a sample of EU regions. We replicate the Tabellini's (2010) IV approach by instrumenting current culture with past institutional features across regions of selected EU countries, i.e. France, Western Germany, UK, Italy, 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. Such characteristics are past education and past political institutions. The former is measured by the literacy rate around 1880, while the second by constraints on the 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 sound liberal institutions reinforce positive cultural values when some conditions are realized. These conditions are higher citizens' perceived match between beliefs and outcomes (Platteau 2000), large political participation of productive entrepreneurs (when the rule of law is respected and the discretionary political power of the authority is limited) (Putnam 1993), higher awareness about 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 the early self-government experience fostered higher levels of civic capital through the development of inter-generationally transmitted beliefs of self-efficacy.¹⁴

To check the robustness of the culture effect on SDT outcomes, we combine the Tabellini's dataset with the ESS (2012) and compute – in each region considered by the author – 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 (1880)*) in order to assess the effect of generalized morality on SDT outcomes; we control for contemporaneous GDP, gross enrolment rate of primary and secondary schools in 1960 (*School*

¹⁴ Tabellini's first-stage regressions display a positive impact of 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 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 economic development that would induce a spurious correlation between culture and growth.

(1960)) and past urbanization rates (*Urbanization (1850-1860)*)¹⁵. All the variables considered vary at the regional level.

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) classification¹⁶.

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 a EU country with at least one parent born in another country. As in Ljunge (2012), we instrument their level of trust with the level of trust of her mother's or father's country of origin. The latter 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 = Most people can be trusted; 1 = Can't be too careful]. Children of migrants' level of trust is measured in the ESS dataset (wave 6) through 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". 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:

$$Y_{ica} = \beta_0 + \beta_1 Trust_{ica} + \beta_2 X_{ica} + \gamma_c + \varepsilon_{ica}$$

Eq. 2

$$Trust_{ica} = \beta_0 + \beta_1 Lack_of_Trust_a + \beta_2 X_{ica} + \gamma_c + \varepsilon_{ica}$$

Eq. 3

¹⁵ In order to have comparable results, we exclude "control" from the 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, Netherlands, Portugal, Spain, 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>.

¹⁶ 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* (Netherlands, Belgium, France, Germany, Austria and Switzerland); iii) *Mediterranean* (Greece, Italy and Spain); iv) *Former socialist* (Czech Rep., Poland).

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 , γ_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 γ_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.¹⁷

The relevance of the chosen instrument hinges on the intergenerational transmission of trust (or, more in general, 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, on a 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. The exclusion restriction is likely to be valid at a theoretical level. 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.

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 15 immigrants in order to reduce the potential noise deriving from few observations in countries of origin (Algan & Cahuc, 2010; Ljunge, 2012).

Results are summarized in Tables 8a-b. Consistently with the findings by Ljunge (2012), 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

¹⁷ The empirical strategy we follow is known as epidemiological approach. In economics this approach is used to distinguish between 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.

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, second-stage results confirm the positive and 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).

A possible threat to our exclusion restriction, however, may derive from the fact that higher social capital in the country of origin captures better institutions and larger economic opportunities, which would have fostered higher parents' education and income. The latter might influence directly children's well-being through, for instance, higher investment in human capital and transmission of positive work-related attitudes. We can exclude this argument as we control for 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 14 and his/her highest education level achieved. Results, omitted for reasons of space, are robust also to this check.¹⁸

6. Discussion

Stimulated by the pioneering studies by Banfield (1957) and Coleman (1974), the economic literature has recognized culture and institutions as drivers of countries' well-being in terms of economic growth (e.g., Gorodnichenko & Roland, 2011; Guiso et al., 2006; Tabellini, 2010; Algan & Cahuc, 2010). However, non-economic outcomes may perform better in predicting the well-being of nations, increasingly measured by citizens' self-assessed levels of life satisfaction and happiness. These measures have proved robustly correlated with individual socio-economic characteristics (e.g. Blanchflower & Oswald, 2011; Frey & Stutzer, 2002), as well as with societal factors such as cultural traits and institutional features (e.g. Bjørnskov et al., 2010; Frey & Stutzer, 2000). Nevertheless, the economic analysis of subjective well-being often lacks an explanation to its underlying dimensions (Layard, 2006).

Our paper combines the empirical economic evidence on the objective and subjective well-being of nations with the theoretical paradigm of self-determination theory (SDT). SDT 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). In this respect, besides individual

¹⁸ We also check 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 parent's country of origin. Results do not change significantly.

intrapyschic forces, needs-satisfaction also varies according to the characteristics of the social context (e.g. Chirkov et al., 2003; DeHaan & Ryan, 2014; Sagiv & Schwartz, 2000).

We investigate the role played by cultural traits in the satisfaction of basic psychological needs across European countries. SDT theory allows us to formulate specific hypotheses on whether the heterogeneous performance of EU countries in terms of subjective well-being depends on the extent to which generalized vs. limited morality shape attitudes and beliefs. More specifically, we hypothesized that nation-specific cultural traits traceable to limited morality would have negatively affected citizens' fulfilment of their basic psychological needs. We expected that high internalization of the value of obedience would have hampered in particular the satisfaction of autonomy and competence, while high generalized trust and large importance given to the value of respect would have fostered the satisfaction of relatedness.

To test our hypotheses, we regress the SDT outcomes (i.e. satisfaction of autonomy, competence, relatedness and the average of the scores in all of these dimensions) on cultural variables at the country level, controlling also for economic performance (GDP level) and human capital (median education level). We implement the empirical analysis also at the regional and individual levels and with different approaches. This allows us to assess how robust is the culture effect to endogeneity due to measurement error, uncontrolled confounders and reverse causality.

As predicted by SDT theory and our hypotheses, we find a significant negative correlation between limited morality and the SDT outcomes. The culture effect is robust to the instrumental variable estimation at a country level in which lagged levels cultural values are used as instruments. It is also robust to a IV estimation at the regional level as in Tabellini (2010), where 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. Finally, a positive role of cultural values in SDT outcomes is also found at the individual level when instrumenting the cultural beliefs of second-generation migrants with those of their parents. Our results provide support to the hypothesis that a culture characterized by limited morality is detrimental to the satisfaction of psychological needs (and therefore subjective well-being). In countries with limited morality 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).

Our findings suggest that, besides their established contribution to economic prosperity, specific cultural values (high trust and respect, low obedience) have a causal 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 to achieve 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 its influence on autonomy, competence and relatedness, three necessary *psychological nutrients* to let individuals thrive.

Although the culture effect remains significant in most of our econometric strategies (in which education and income are controlled for), 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 epidemiological approach considers a specific sample (second-generation migrants) and a single cultural dimension (trust).

Despite these methodological issues, to our knowledge this is the first empirical attempt to open the life-satisfaction black-box through the self-determination theory. This approach allows us to shed more lights on the how culture affects subjective well-being and provides us with a rich set of well-being measures, which are grounded on a well-established psychological theory. Multiple indicators based on satisfaction of basic psychological needs allow us also to mitigate the methodological problems commonly arising in cross-country comparisons of well-being with a single indicator (i.e. life satisfaction or happiness).

Concluding, this study offers original evidence on how contextual cultural factors affect well-being. Lack of trust, high obedience and low respect (i.e. limited morality) not only reduce the wealth of nations, but also constraint individuals' satisfaction of basic psychological needs, thereby hindering the individual's search for happiness.

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Table 1a: 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	1	
Lack of trust	0.428	-0.754	1
	0.026	0.000	

Figure 1a: Life Satisfaction and Basic Psychological Need Satisfaction

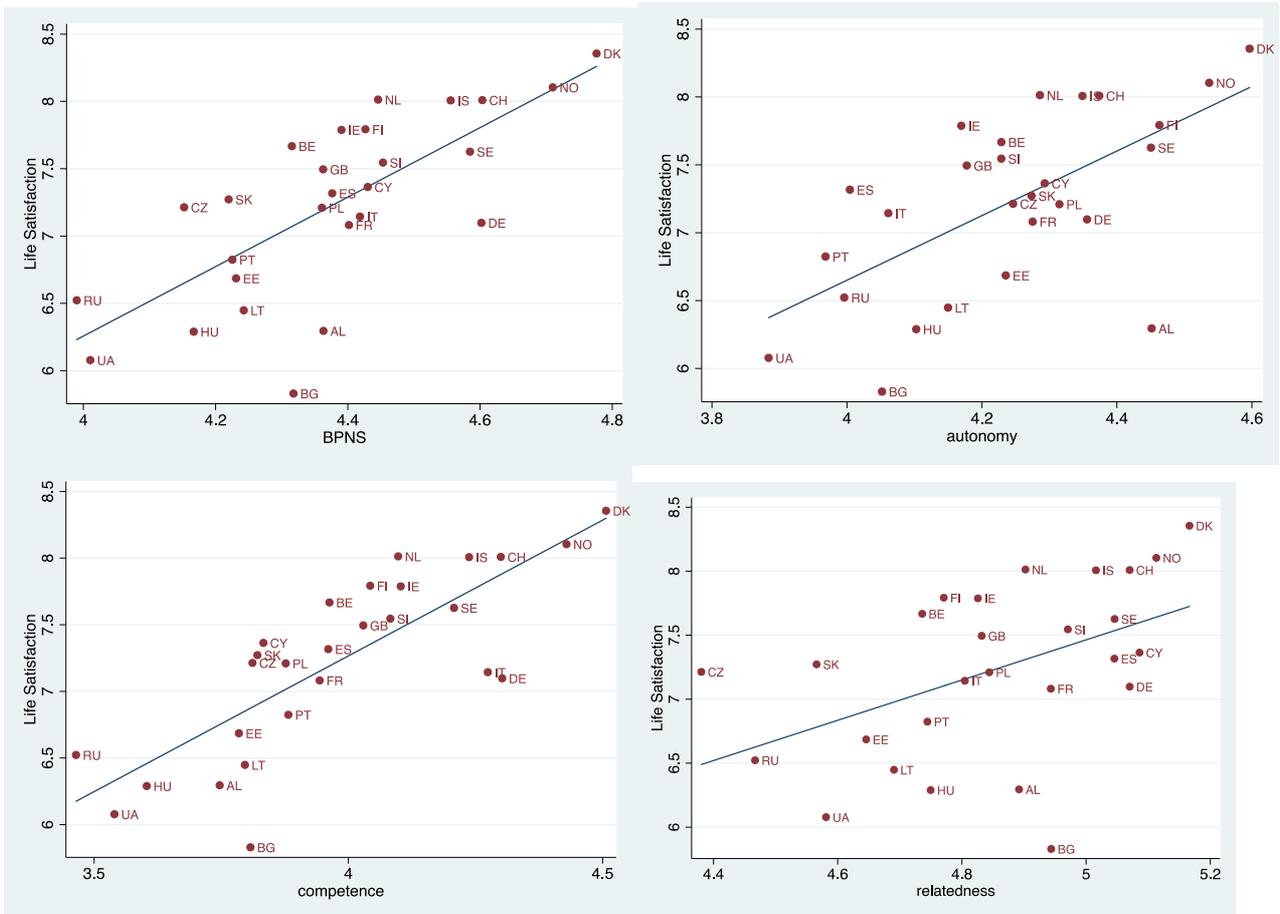


Figure 2: Basic Psychological Need Satisfaction and Culture

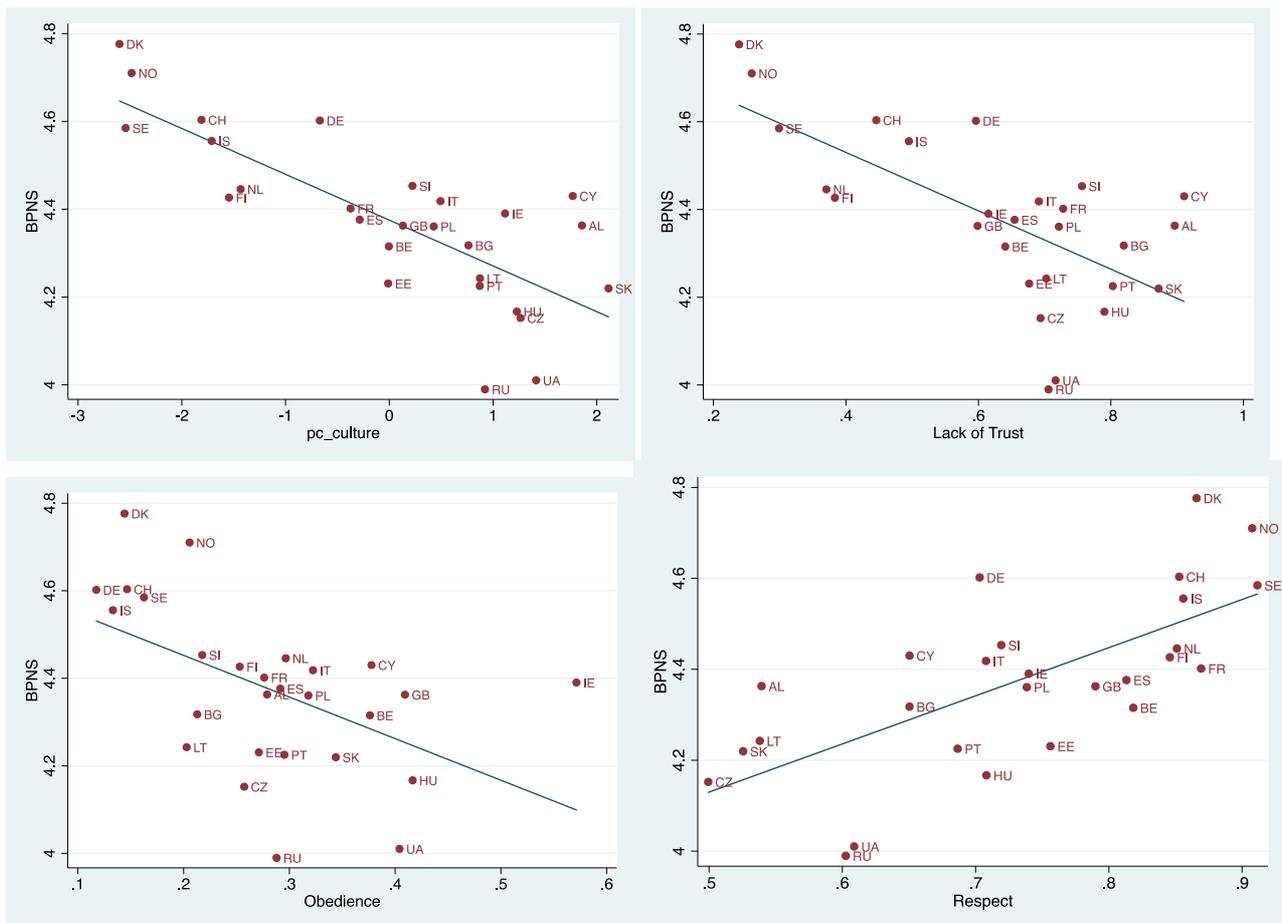


Table 3a: Determinants of Basic Psychological Needs Satisfaction

	(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<0.01, ** p<0.05, * p<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<0.01, ** p<0.05, * p<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<0.01, ** p<0.05, * p<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<0.01, ** p<0.05, * p<0.1

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

Dep Var:	(1)	(2)	(3)
	pc_culture	pc_culture	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:			
<i>F</i> =	29.09	15.35	22.77
<i>Prob > F</i> =	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<0.01, ** p<0.05, * p<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<0.01, ** p<0.05, * p<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 > 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 _{ica}	BPNS	Trust _{ica}	Auton.	Trust _{ica}	Comp.	Trust _{ica}	Related.
Lack_of_Trust_a	-1.520*** (0.368)		-1.529*** (0.382)		-1.375*** (0.411)		-1.429*** (0.375)	
Trust _{ica}		0.211*** (0.0760)		0.173* (0.0969)		0.124 (0.139)		0.217** (0.111)
X_{ica}	YES	YES	YES	YES	YES	YES	YES	YES
Y_c	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:								
	<i>F</i> =	17.07	15.98		11.18		14.54	
	<i>Prob > F</i> =	0.0001	0.0002		0.0015		0.0003	
Underidentification Test:								
	<i>Kleibergen-Paap rk LM statistic</i>	10.59	11.27		9.457		9.795	
	<i>p-value</i>	0.0011	0.0008		0.0021		0.0018	
Weak identification test								
	<i>Kleibergen-Paap rk Wald F statistic</i>	10.613	10.96		8.738		9.426	
		<i>[Critical value for 15% maximal IV size = 8.96]</i>						
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 _{ica}	BPNS	Trust _{ica}	Auton.	Trust _{ica}	Comp.	Trust _{ica}	Related.
Lack_of_Trust_a	-0.329 (0.432)		-0.260 (0.478)		-0.205 (0.461)		-0.279 (0.438)	
Trust _{ica}		0.243 (0.328)		0.0484 (0.485)		-0.101 (1.049)		0.473 (0.616)
X_{ica}	YES	YES	YES	YES	YES	YES	YES	YES
Y_c	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:								
	<i>F</i> =	0.58	0.3		0.2		0.41	
	<i>Prob > F</i> =	0.45	0.5885		0.6581		0.5269	
Underidentification Test:								
	<i>Kleibergen-Paap rk LM statistic</i>	0.629	0.332		0.218		0.437	
	<i>p-value</i>	0.4276	0.5645		0.6403		0.5086	
Weak identification test								
	<i>Kleibergen-Paap rk Wald F statistic</i>	0.579	0.296		0.198		0.405	
		<i>[Critical value for 15% maximal IV size = 8.96]</i>						
Robust standard errors in parentheses clustered by fathers' country of origin								
*** p<0.01, ** p<0.05, * p<0.1								

APPENDIX

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

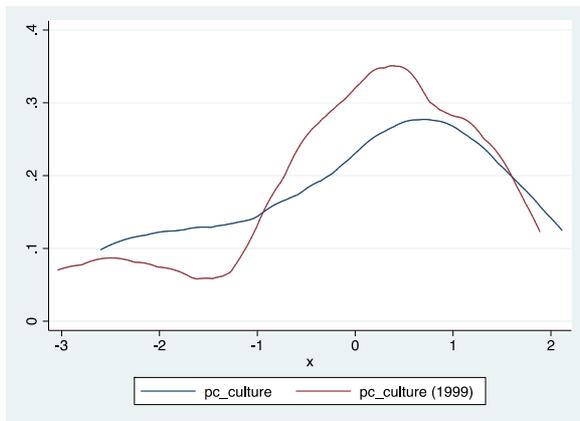


Figure A2: Distribution of quality of governance in 2000 and 2012 (source: *WGI*, *World Bank*)

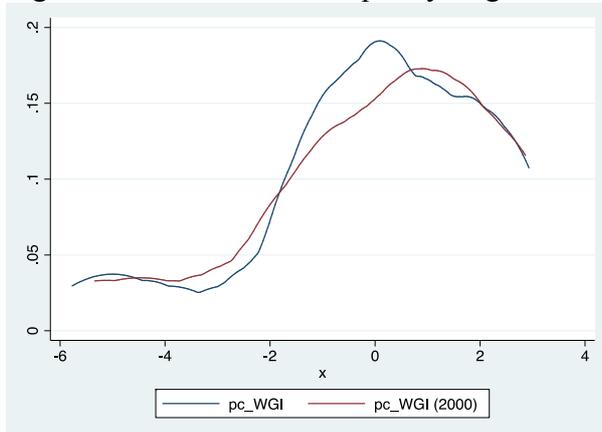


Figure A3: Time variations in culture and quality of governance (sources: *WGI*s and *EVS*)

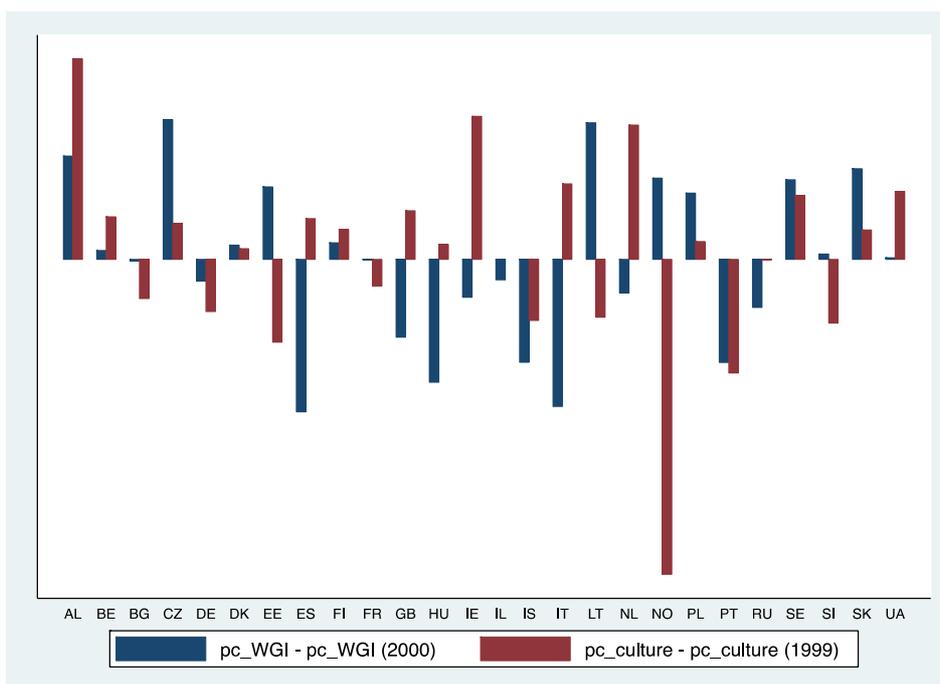


Table A1: Determinants of basic psychological needs: the role of culture and legal origins

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<0.01, ** p<0.05, * p<0.1