

Cultural and institutional drivers of basic psychological needs satisfaction*

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Abstract

Institutions and cultural values were long recognized as factors affecting national economic outcomes. More recently, it has been suggested that they also affect citizens' subjective well being. This paper provides a framework for why this might be so. In doing so, we invoke what is known in the psychology literature as self-determination theory (SDT). The theory states that satisfaction of three basic psychological needs (autonomy, relatedness and competence) drive happiness and life satisfaction. Satisfaction of these needs depends in part on the social context and its features, likely to include democracy, equity, national wealth and cultural traits. By exploiting European country level data, we assess if and to what extent institutional quality and cultural values influence the Europeans' satisfaction of these needs, controlling for GDP and education. While we find mixed results for institution (measured by quality of governance), we find a robust and positive impact of the cultural trait "generalized morality" (i.e. high trust and respect and low obedience). This feature has a strong impact on all three needs satisfaction indicators. Potential endogeneity issues are mitigated through an IV approach implemented on country and regional level data..

Keywords: self-determination theory, subjective well-being, culture, institutions, governance, basic psychological needs, happiness, life satisfaction.

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

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The professed object of Dr. Adam Smith' inquiry is the nature and causes of the wealth of nations. There is another inquiry, however, perhaps still more interesting, which he occasionally mixes with it, I mean an inquiry into the causes which affect the happiness of nations [Malthus 1798: 303]

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

Why some countries perform better than others has been one of the main historical quests within the social sciences. An integral part of this literature concerns the meaning and the determinants of “performing well”. Economists traditionally interpret well-being as “wealth of nations” and confine it within the objective boundaries of economic growth. There is however a strand within economics arguing that the well-being of nations cannot be adequately summarized by (supposedly objective) measures of GDP (Easterlin 1974, Scitovsky 1976, Fleurbaey, 2009). Instead this literature argues that measures of subjective well-being, such as reported happiness or life satisfaction, would do a better job in quantifying well-being (see, among others, Frey & Stutzer, 2002; Kahneman, Krueger, Schkade, Schwarz & Stone, 2004). A large part of this literature focuses on the micro-level determinants of an individual’s well-being (e.g. Blanchflower and Oswald, 2011; Frey and Stutzer, 2002). However several studies argue that societal characteristics contribute to a country’s well-being. Among these, political institutions (Bjørnskov, Dreher and Fischer, 2010), social norms (Frey and Stutzer, 2000; Helliwell and Huang, 2008), perceptions of trust, democracy, and corruption (Clark, Layard and Senik, 2012) have all been suggested to foster national subjective well-being. Although these findings might seem consistent with those claiming that “generalized morality”¹ and well-functioning institutions bring about economic prosperity (Banfield, 1957; Coleman, 1974; Putnam 2000; Gorodnichenko & Roland, 2011; Guiso, Sapienza & Zingales, 2006; Tabellini, 2010; Algan and Cahuc, 2010), there is no clear theoretical arguments for why culture and institutions would affect general happiness and life satisfaction.

We address this issue by specifying a refined measure of subjective wellbeing that is more coherent in light of institutional and cultural characteristics. We lean heavily on self-determination

¹ “Generalized morality” refers to the set of rules of good conduct and honest behaviour towards a “generalized other” which are morally accepted outside small circles of related people. On the contrary, in societies characterized by a culture of “limited morality”, those rules, trust and honest behaviour are applied only within the boundaries of the clan or family (Platteau, 2000; Tabellini, 2008).

theory (SDT), one of the most significant attempts to the theoretical and empirical analysis of well-being. According to SDT humans are shaped by basic psychological needs summarized 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). Importantly, needs satisfaction in psychology depends both on individual intrapsychic forces and distal factors, such as the social context. If cultural and social variables hinder the fulfilment of basic psychological needs, well-being is also lower (e.g. Chirkov, Ryan, Kim & Kaplan, 2003). Consequently the culture and the institutional characteristics of a country emerge as important determinants of the individual's ability to fulfil basic psychological needs, and by extension, their level of subjective well-being.

Whereas SDT provides a promising framework analysing the way to certain cultural traits and institutional quality might explain variation in well-being across societies, , there has been surprisingly little attention to this aspect in psychology. We hypothesize that the need of competence is satisfied in countries where personal fulfilment is supported by efficient institutions such as well-functioning labour markets and a sound educational system, as well as by a culture characterized by "generalized morality", whereby individuals' control over motivations and choices are less affected by the family (Iyengar and Lepper, 1999). Similarly, the need for autonomy is satisfied to a greater extent in "horizontal-individualistic societies" (Triandis, 1995) and in countries where low levels of corruption and less obedience to (or internalization of) family norms hampers individuals' capability of self-organizing and developing own values and interests. Finally, one's need for relatedness is better satisfied in societies where generalized trust is high, simply because in those societies social capital is stronger and reliance on the family as reference unit is weaker (Deci & Ryan, 2000).

These features play a crucial role in institutional and cultural economics as they often characterize long-standing and stable characteristics of societies which in turn affect their performance. At the same time, economics has to a large extent ignored the psychological foundations of subjective well-being, for which the three dimensions of SDT appear crucial. Drawing a link between these two fields of the literature, this paper assesses the impact of institutions and culture on those basic psychological needs satisfaction - and by extension subjective well-being. We build an index measuring basic psychological needs satisfaction. This index is very similar to what is known as the Basic Psychological Needs Satisfaction in Life Scale (Gagné, 2003; Johnston and Finney, 2010). The index is derived from data taken from the sixth round of the European Social Survey (ESS, 2012). We obtain proxies for cultural values from the last wave of

the European Value Study (EVS, 2008), as previously done by Tabellini (2005, 2010), while we measure institutional quality associated with governance from the World Bank's Worldwide Governance Indicator (WGI, 2012). These data sources are then combined to assess to what extent cultural values and institutional quality indeed relate to self-determination at the country level. To mitigate endogeneity issues, we first present an IV approach where lagged values of institutional characteristics and cultural traits are used as instruments. Secondly, 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 educational levels. Third, we estimate the effects of culture on a larger dataset (i.e. World Value Survey) using a country-level measure of happiness as dependent variable in place of the basic psychological needs satisfaction. With this larger dataset we incorporate panel fixed effects for the estimation of the effect of culture on subjective wellbeing.

Our results suggest that, when considered separately, good governance and a culture characterised by “generalized morality” (i.e., high trust and respect, low obedience) are positively related to satisfaction of basic psychological needs. When they are considered jointly, the effect of governance becomes not significant. Similarly, when mitigating endogeneity the effects of institutional characteristics fade, whereas cultural traits still play a non-negligible role. Net of country education and income effects, the greater robustness of the culture effect as opposed to the that of governance highlights, on the one hand, the importance of cultural “generalized morality” for the individuals’ satisfaction of basic psychological needs (and therefore high subjective well-being) and on the other hand a strong effect of culture on institutions.

The remainder of this paper is structured as follows. In Section 2 we discuss the background literature on culture, institutions and SDT while in Section 3 we explain how we operationalize these concepts and describe the dataset. 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, institutions and economic outcomes

The idea that culture is relevant to economic and political outcomes dates back to Max Weber (1905) and it was later recalled by Banfield (1957). As the Protestant Reformation fostered the development of capitalism by depicting the pursuit of wealth as a moral duty, Banfield’s concept of “amoral familism” (where good conduct is perceived as a moral duty only among family ties) - more recently recognized as a feature of “limited morality” (Tabellini, 2008; Platteau, 2000) -

appeared able to explain the underdevelopment of the South of Italy. The entire economic life is “embedded” in society (Polanyi, Arensberg & Pearson, 1957) and the role of culture in economic outcomes is currently well-recognized (e.g. Gorodnichenko & Roland, 2011; Guiso, Sapienza & Zingales, 2006; Tabellini, 2010; Algan and Cahuc, 2010). Most of these studies measure culture empirically relying on the definition suggested by Guiso, Sapienza & Zingales (2006, p. 23) who describe culture as “those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation”.

Another important societal aspect with respect to economic performance is institutional quality. Institutions are defined by North as “humanly devised constraints that structure political, economic and social interaction” (North 1991, p.97). Theoretically, they are made up of a cultural component, that is “informal constraints (sanctions, taboos customs, traditions, and codes of conduct)”, and a legal one, i.e. “formal rules (constitutions, laws, property rights)” (North, 1991 p.97). As previously done in the literature, in this paper we interpret North’s informal constraints as part of a nation’s culture, whereas we identify institutions with North’s formal rules. From now on, we refer to institutions as to formal institutions.

In the economic literature the measurement of institutional quality is done in three ways: 1) emphasis on property rights and protection against expropriation (e.g., Knack & Keefer, 1995; Acemoglu, Johnson & Robinson, 2001; Rodrik, Subramanian & Trebbi, 2004)², 2) the legal origins of institutions (La Porta, Lopez-De-Silanes, Schleifer & Vishny, 1997 and 1998) and 3) assessment of governance quality (Kaufmann, Kraay & Mastruzzi, 1999 and 2009). Most of these studies find institutional quality to correlate with economic development, no matter how institutions are measured. In brief, both culture and institutions are positively correlated with the wealth of nations. The more recent study put focus on causality of this relationship, and they do so with the help of historical and geographical data (e.g., past institutions, colonial origins, inherited trust) as instruments (see, among others, Acemoglu, Johnson & Robinson, 2001 and 2002; Tabellini, 2010; Grosjean, 2011; La Porta, Lopez-De-Silanes, Schleifer & Vishny, 1999; Algan and Cahuc 2010; Guiso, Sapienza & Zingales, 2006). However, consistently with North (1991), since culture and institutions are respectively “informal” and “formal” forms of institutional constraints, they should be conceived as two sides of the same coin. This implies that they endogenously influence each other³ and may conceptually overlap if conceived both as moral norms and “shared patterns of thought” (Dequech, 2009). In fact, formal institutions often require informal rules to operate (Hodgson, 2006) and informal rules frequently turn into legal prescriptions (e.g., conventions;

² The use of protection of property rights as a proxy for institutional quality has been criticized as being more a political outcome rather than a durable constraint as it rises with per capita income, it is highly volatile and may have the same level both in dictatorships and democracies (Gleaser, La Porta, Lopez-De-Silanes, Schleifer, 2004).

³ For a literature review on this issue see Alesina & Giuliano (2014).

Sugden, 1986). While the causal link between these forms of institutions and the economic outcomes have been extensively investigated in the recent years, the analysis on subjective wellbeing is limited.

2.2 Subjective well-being and societal characteristics

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 (for an overview, see Fleurbaey, 2009). As recently argued by Algan and Cahuc, “there is a growing consensus that economic development is poorly measured by income per capita alone, and should include measures of well-being” (Algan and Cahuc, 2014, p. 99). As a result, several economists have argued that measures of subjective well-being, such as reported happiness or life satisfaction, could better reflect well-being (e.g. Frey & Stutzer, 2002; Kahneman, Krueger, Schkade, Schwarz & Stone, 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). However subjective well-being is now recognized as a distinct outcome, and by many preferred over the standard utility concept because it provides more complex and comprehensive information - not least because it reveals undisclosed preferences (e.g. Welsch, 2002 and Luechinger, 2009; Frey et al., 2009; van Praag and Baarsma, 2005; Luechinger and Raschky, 2009).

From a macro perspective, absolute income seems indeed a strong predictor of country variations in subjective well-being, especially in poorer countries (e.g. Hagerty and Veenhoven, 2003). However, other variables also matter in important ways. Examples include health as measured by life expectancy, perceptions of freedom and corruption (Inglehart et al., 2008), social support (Clark, Layard and Senik, 2012), political well-being among rich countries (Veenhoven, 2000), perceptions of freedom, individualism as opposed to collectivism (Diener et al., 2003), government decentralization (Frey and Stutzer, 2000), democracy (Dorn, Fischer, Kirchgassner & Sousa-Poza, 2007) and, more generally, governance (Ott, 2010; Debnath & Shankar, 2014) all correlate positively with life satisfaction and/or happiness. 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 (Clark, Layard and Senik, 2012; Fischer and Boer, 2011). For instance, Senik (2014) argues that the French “unhappiness puzzle”, is due to “mentality” rather than extrinsic circumstances as French emigrants seem less happy than EU migrants on average. Others (e.g. Helliwell and Wang, 2011; Hudson, 2006) provide cross-country empirical evidence that trust is positively correlated with subjective well-being. Consistently with this result, the

experimental evidence (Zack, Kursban & Matzner, 2004; Fehr, 2009) suggests that an act of trust universally generates higher happiness in the receiver through increases in oxytocin, i.e. the neurotransmitter related to the part of our brain responsible for pleasure or fright.

2.3 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, 1980, 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 fulfillment. The three basic psychological needs are innate and universal *psychological nutriments* necessary for an optimal human functioning (Deci & Ryan, 2000). A large amount of literature show that as individuals experience satisfaction on these needs, they also experience self-determination and by consequence higher well-being (e.g. Baard, Deci & Ryan, 2004; Deci, Ryan, Gagné et al., 2001; Reis, Sheldon, Gable et al., 2000; Ryan, Bernstein & Brown, 2010), even in multiple life domains (Milyavskaya & Koestner, 2011). In this perspective, life conditions and social contexts able to satisfy these needs foster the individual's well-being and personal growth. In contrast, external conditions that hold back basic psychological needs invariably lead to negative consequences for the individual's well-being and mental health. 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, Huta & Deci, 2008).

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, Vansteenkiste, Beyers et al., 2015; Church, Katigbak, Locke et al., 2013; Chirkov, Ryan & Willness, 2005; Deci et al., 2001; Vansteenkiste, Lens, Soenens & Luyckx, 2006). Importantly, these psychological needs lend themselves naturally to the institutional economics literature. As a matter of fact, DeHaan and Ryan argue that

democracy, national wealth, economic distribution and justice affect a population's well-being mainly through their direct and indirect effects on basic psychological needs.

Consequently, one can easily imagine that certain characteristics of culture and institutions may hamper or facilitate the satisfaction of basic psychological needs. For example, well-functioning institutions, able to protect the individuals' equal rights and opportunities, should foster feelings of autonomy and competence for the individuals whose economic actions and activities are in this way supported. In contrast, hierarchical market and political structures, an excess of regulation and a slow-moving bureaucracy may discourage the individuals' economic initiative and several other actions that are tied to feelings of competence and autonomy.⁵

From a cultural point of view, individuals residing in a country where obedience is recognized a fundamental value may feel less autonomous than individuals in countries where the cultural importance of obedience is not endorsed. This might be particularly relevant in European countries, which are more inclined to individualism than Asian countries (e.g. Lucas, Diener, Grob, Suh and Shao, 2000; Oyserman and Markus, 1998; Suh, Diener, Oishi and Triandis, 1998). Conversely, studies have shown that obeying authorities is a way to exercise autonomy in collectivistic countries (Sheldon et al., 2005).

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 fundamental cultural value. Consequently, this might increase the satisfaction of the need for relatedness. Also perceived generalized trust in a country should foster the satisfaction of the need for relatedness, as being able to trust other people is connected to a better evaluation of a generalized other.

Summarizing, satisfaction of basic psychological needs appears to be the process through which culture and institutions affect subjective well-being, but in contrast to crude measures of subjective well-being itself, such as general life-satisfaction or overall happiness, they are able to capture more precisely non-material living conditions in a country.

Interestingly, basic psychological needs have been already called up by Frey and Stutzer (2004) 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 idea that the

⁵ Regarding the role of institutions in the development of individuals' autonomy, Guiso et al. (2016) show that Italian cities which achieved self-government during the Middle Ages enjoy higher civic capital today. The authors argue that this effect is mainly due to the intergenerational transmission of self-efficacy beliefs fostered by the independence period.

institutional and cultural systems have a significant impact on subjective well-being, as conveyed by basic psychological needs satisfaction.

3. Data and variables

We combine data from the European Social Survey (ESS, 2012), the European Value Survey (EVS, waves 2-4, 1990-2008) and the Worldwide Governance Indicators dataset (WGI, 2000 and 2012) to have our measures of basic psychological needs satisfaction, culture and institutions.

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 (Gagné, 2003; Johnston and 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 are also enjoy higher subjective well-being as commonly measured by levels of happiness and life satisfaction⁶. The scatterplots in Figure 1a 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, Bulgaria, Hungary) perform relatively worse on both. The same pattern is reproduced when replacing life satisfaction with happiness (see scatterplots in Figure 1.b). Overall,

⁶ 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”. Happiness is the average of the respondents’ answer on a scale from 0 to 10 to the question “Taking all things together, how happy would you say you are?”.

this descriptive analysis shows that all the SDT variables work well in predicting life satisfaction and happiness.

3.2 Culture

To operationalize “generalized” versus “limited” morality we follow the approach developed by Tabellini (2008, 2010). He builds on the Platteau’s (2000) and Banfield’s (1958) idea that in hierarchical societies with strong family ties norms on what is good or bad are salient only within the boundaries of small circles of related persons, whereas in democratic societies good behaviour is extended to generalized (non-kin) others.⁷ In the lights of this distinction, he selects the cultural traits mostly connected with “generalized morality” that matter for economic development and identifies among the latter those with measurable counterparts in the World Value Survey. The chosen cultural traits are *trust*, *respect*, *obedience* and *control*. As highlighted in section 2.1, the first two are deemed as “lubricant” of economic exchanges (Arrow, 1972) as they stimulate social relationships, the provision of public goods, efficient governance and therefore are considered as important for economic growth⁸. The other two represent the extent to which individuals value individualism and therefore would capture the “entrepreneurial environment where individuals seek to take advantage of economic opportunities” (Tabellini, 2010).⁹

In our measure of culture we consider *lack of trust*, *respect* and *obedience* and in order to mitigate endogeneity we exclude *control* as it is likely to be jointly determined with our dependent SDT variable(s)¹⁰. *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). As values are usually transmitted inter-generationally, we measure the value of *respect* for others as

⁷The spread of “generalized morality” is also associated with the emancipation from feudal arrangements (Weber, 1970).

⁸ In particular trust and generalized morality are often treated as synonymous as high trust implies high social and civic capital (Alesina & Giuliano, 2014; Guiso, Sapienza & Zingales, 2006 and 2008). Another important way of measuring culture is through the individualism-collectivism cleavage (Gorodnichenko & Roland, 2014). Studies in cultural psychology (e.g., Markus & Kitayama, 1991) have shown that an independent self interact in the same way with everybody while an interdependent self is more likely to change behaviour according to in-group or out-group peers. Since in collectivistic (individualistic) cultures the latter (former) type of self is more likely to emerge, this might be a reason why levels of generalized trust are rather low (high). An operationalization procedure of the individualistic vs. collectivistic type of culture - jointly with an index of individualism - is provided by Hofstede (2001). 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 the individualism measure across EU countries.

⁹ As explicitly admitted in his 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 (see Tabellini, 2010).

¹⁰ Notice also that in the Tabellini’s (2010) analysis the positive effect of *control* on growth was only marginally significant in baseline OLS regressions and not robust to the IV estimation.

percentage of respondents in each country that mentioned “tolerance and respect for other people” as being important¹¹ 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). To empirically capture to what extent individual initiative and cooperation with others is valued in a country we use the variable *obedience* as a proxy for the coercive cultural context where the children grow up. *Obedience* is the percentage of respondents that mention “obedience” as being important to the question above (i.e., the same as the one used to build the *respect* variable).

Similarly to Tabellini (2010), we have three cultural variables proxying for “limited morality” with *lack of trust* and *obedience* which are expected to negatively influence SDT variables (as they do for economic growth) and *respect* which is expected to affect them positively. Given the small sample size, we limit the number of variables to add in our econometric models. We therefore aggregate the three cultural traits through a principal component analysis and extract the first principal component (*pc_culture*) which is an average of “limited morality” for each country. By doing this, we also avoid problems of perfect collinearity among these cultural variables as they are in fact correlated among themselves (see Table 2b)¹². As showed in Table 2a, *pc_culture* is positively correlated with *respect* and negatively with *lack of trust* and *obedience*. From a descriptive analysis, as suggested by the SDT (see section 2.3), “limited morality” appears to be harmful for satisfaction of basic psychological needs (see the scatterplots in Figure 2). Also under this comparison 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 culture; Russia, Ukraine, Bulgaria, Hungary, Albania, Slovakia and Czech Republic instead tend to be characterized by “limited morality” (i.e., higher values of the *pc_culture* variable) and register lower scores of BPNS.

3.3 Institutional quality

To measure institutional quality we rely on the World Bank’s WGI dataset. It is described as a “good summary of the institutional qualities characteristics associated with governance” (Alesina & Giuliano, 2014, p. 21) and largely used to proxy for efficiency-of-governance component of institutions. We use the WGI since other standard country measures of institutions which are linked to constitutional/legal characteristics (e.g., constraints on the executive, legal origins, protection

¹¹ 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; unselfishness.

¹² 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).

against expropriation) vary little across EU countries today¹³. The WGI instead have the advantage of providing larger cross-country variation in our dataset.

Governance is defined as “traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them” (Kaufmann, Kraay & Mastruzzi, 2009, p. 5). These aspects of governance are measured through six aggregate indicators which are based on hundreds of specific individual variables measuring various dimensions of governance, taken from 35 data sources provided by 33 different organizations¹⁴; the indicators reflect subjective views of diverse informed stakeholders (household and firms, experts working for the private sector, NGOs, and public sector agencies).¹⁵ As argued by Kaufmann, Kraay & Mastruzzi (2009), the subjective feature of the WGI do not necessarily imply that they are less reliable than more objective measures of formal institutions. First, citizens usually behave consistently with their own perceptions and if they feel that some institutions are inefficient they do not benefit fully from them in terms of well-being. Second, there are some aspects related to institutional quality which are intuitively related to well-being (both in terms of growth and satisfaction of basic psychological needs) and which cannot be objectively measured without relying on subjective statements (e.g., the degree of corruption). Third, the WGI correlate with the standard and more objective measure of protection of property rights (Easterly & Levine, 2003) which is largely used in the related economic literature to measure institutions.

Given the small sample size we summarize the six WGI through a principal component analysis and use the first extracted component as a proxy for quality of institutions for our econometric analysis (*pc_WGI*). This component correlates positively with all the six dimensions of governance (Table 2a) and significantly with the principal component of culture and its dimensions

¹³ 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.

¹⁴ For further details on the aggregation procedure jointly with margins of error see Kaufmann, Kraay & Mastruzzi, 2009 and visit www.govindicators.org.

¹⁵ The six aggregated indicators are: i) *Voice and Accountability* (perceptions of the extent to which a country's citizens are able to participate in selecting their government, freedom of expression, freedom of association, and a free media); ii) *Political Stability and Absence of Violence* (perceptions of the likelihood that the government will be destabilized by unconstitutional or violent means); iii) *Government Effectiveness* (perceptions of the quality of public services, the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies); iv) *Regulatory Quality* (perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development); v) *Rule of Law* (perceptions of the extent to which agents have confidence in and accept the rules of society with particular reference to the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence); vi) *Control of Corruption* (perceptions of the extent to which public power is exercised for private gain, including forms of corruption and "capture" of the state by elites and private interests).

(Table 2b). This additional evidence motivates further the use of the principal component analysis for summarizing both the cultural and institutional variables. Interestingly, *respect* is positively and significantly correlated with all the six dimensions of governance while *lack of trust* is negatively correlated with it, especially with *control of corruption*. Such correlation underlines that formal and informal institutions are indeed as two sides of the same coin (see Section 2.1) and that a culture of “limited morality” is often associated with scarce attention (and monitoring) of citizens’ towards the behaviour of local administrators as well as little involvement into the “res publica”.

In terms of self-determination outcomes, as expected, a sound governance is associated with higher satisfaction of basic psychological needs; also in this case Northern European countries score better both in terms of governance and BPNS than former communist ones (see left-up scatterplot in Figure 2).

4. Regression Results

We assess the role of cultural and institutional characteristics on satisfaction of basic psychological needs by estimating the following cross-country regression:

$$Y_i = b_0 + b_1 \log GDP_i + b_2 education_i + b_3 S_i + \epsilon_i \quad \text{Eq. 1}$$

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 and institutional characteristics. In some specifications S represents the country cultural traits (*pc_culture* or its components, i.e. *lack of trust*, *respect* and *obedience*), while in others it captures the country’s governance characteristics (*pc_WGI*). Additionally, we have also models in which both *pc_culture* and *pc_WGI* are jointly 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 the *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 impacts on relatedness and competence.¹⁷ All these results provide support to the hypothesis that a culture of “limited morality” is detrimental for the satisfaction of psychological needs (and therefore subjective well-being); in countries with such a cultural characteristic trust and respect are bounded to kinship-based relations and the individual’s search for socio-economic opportunities is limited by the coercitive power of the family (i.e. obedience).

When it comes to institutions, good governance (when considered alone) explains part of the variation in BPNS even though it is only marginally significant (variable *pc_WGI* in Table 3a, column 5). However, enjoying a sound country governance seems to be of a great advantage for the fulfilment of autonomy (Table 3b, column 5).

In order to evaluate which of the two institutional effects prevails (i.e. culture vs. governance), we re-estimate equation 1 and control jointly for the “limited morality” and quality of governance (i.e., *pc_culture* and *pc_WGI* respectively). Results show that the effect of culture outperforms that of governance for BPNS and for most of the SDT domains. More specifically, the negative effect of “limited morality” remains significant for BPNS, competence and relatedness while the positive effect of governance gets weaker in terms of statistical significance (Tables 3a, 3c, 3d, column 6). On the contrary, the governance-effect stays robust for autonomy, while for this domain the culture-effect loses significance and decreases in magnitude (Tables 3b, column 6). The lack of significance of institutions when controlling also for culture may be due to the great power of “limited morality” in determining also the governance structure of a country. This result is consistent with the theoretical and empirical evidence – historically grounded on the path-breaking study by Banfield (1957) – in support to the hypothesis the quality of governance of a country strongly depends on the social or “civic” capital of its citizens (Guiso, Sapienza & Zingales, 2010; Gorodnichenko & Roland, 2013; Nannicini et al., 2012).

As discussed in Section 2.1, institutions and culture admittedly influence each other and, despite institutions are commonly distinguished in “formal” and “informal” normative constraints, both can be thought as two sides of the same coin. This is even more relevant when measuring institutions through quality of governance as the latter might represent a product of particular cultural traits. For instance, in societies with high civic engagement, good governance can be intuitively a product of a “generalized morality” culture (Guiso, Sapienza & Zingales, 2010). From

¹⁷ 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 from this check are omitted for reasons of space but available upon request.

the econometric point of view, this would imply that, instead of measuring the country's institutional efficiency, the WGI - especially when cultural traits are not controlled for – would capture the combined effect of “formal” (i.e. laws) and “informal” (i.e. social norms) institutions. However, the use WGI to proxy for institutions has been criticized as they would represent outcomes of the political process rather than policy constraints (Gleaser, La Porta, Lopez-De-Silanes, Schleifer, 2004). For this reason, as a robustness check, we use the countries' legal origin¹⁸ to isolate the effect of the “formal” component of institutions from the “informal” one which is more related to culture. To this purpose we replace the *pc_WGI* variable with a dummy equal to one if the country has a *civil law* legal tradition (and zero if it ruled by a common-law legal origin)¹⁹. 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. Admittedly, this might be due also to the lack of a sizeable variability in legal traditions across the EU countries in our dataset (see Section 3.3) and/or to the possibility that they affect SDT outcomes through country income and education.

This last point requires a further clarification. The significant effects documented so far can be conceived as *direct* (or *net*) effects of culture and institutions since, by controlling for income and education, we net out the *indirect* impact they might have on the SDT outcomes (i.e. through GDP and human capital). As a consequence, for instance, when we document the “lack of significance” of governance in some specifications, we refer only to its *direct* effects on SDT outcomes. Lack of *direct* significant effects does not automatically exclude, however, the possibility that governance plays an *indirect* role on SDT outcomes, e.g. through the improvement of the country GDP and/or average education level.

5. Robustness checks

As pointed out in the previous section, institutions and culture influence each other and therefore - from an empirical point of view - are likely to be affected by simultaneity or reverse causality. In addition, the empirical counterparts used as proxies for institutions and culture could be measured with error. In order to mitigate these potential sources of endogeneity we implement an instrumental

¹⁸ According to Djankov, Glaeser, La Porta, Lopez-de-Silanes & Shleifer (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, Lopez-de-Silanes, Shleifer & Vishny, 1998; La Porta, Lopez-de-Silanes & Shleifer, 2008). The latter are also shown to have higher government ownership and regulation than the former. Additionally, common-law countries are characterized by greater independence of the judicial power with better contract enforcement as well as security of property rights.

¹⁹ Country classification on the basis of their legal origins is taken from La Porta, Lopez-de-Silanes & Shleifer (2008).

variable estimation both for culture and institutions (Section 5.1). Finally, in order to check for the robustness of the culture effect in a larger sample of countries we re-estimate the baseline models exploiting the last three waves of the World Value Survey (WVS) and replacing the SDT outcomes with the happiness variable (Section 5.2).

5.1 IV estimation at country level

We exploit the non-perfect persistency of cultural values and quality of governance to instrument *pc_culture* and *pc_WGI* with their 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, we instrument *pc_WGI* with *pc_WGI (2000)*, i.e. the principal component for the six WGIIs measured in 2000 (source: World Bank).

While very similar, *pc_culture* and *pc_WGI* are statistically different from their respective lagged values. 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 (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). The largest change in about ten years from “limited” to “generalized” morality is reached by Norway (especially through improvements in generalized trust) and Portugal, while cultural traits moved in the opposite direction 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 WGIIs.²⁰

As far as instrument relevance is concerned, lagged culture and WGIIs are likely to be highly correlated with their current level since we do not consider their historical values but a smaller time span which is nonetheless necessary to produce enough variation between past and present values. The high relevance of our instruments is also supported by the empirical studies on trust and institutions showing the path-dependency of these societal features over time (see, among others, Algan & Cahuc, 2010; Guiso, Sapienza & Zingales, 2006; Butler, Giuliano & Guiso, 2012)

The validity of our exclusion restriction hinges on the assumption that the effects of culture and institutions in the past affect 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 institutional features or cultural traits on current

²⁰ A large number of empirical and theoretical study show that culture and institutions coevolve. For an accurate summary on the topic see Alesina & Giuliano (2014). In this respect, changes in governance and culture can be due to a combination of a variety of factors, e.g. institutional changes (Bowles, 1998; Fernandez, 2013; Di Tella, Galiani & Schargrodsy, 2007), macroeconomic shocks (Giuliano & Spilimbergo, 2014), migration (Senik, 2014; Dinesen, 2013), international regulations, etc.

economic outcomes (see, among others, Acemoglu, Johnson & Robinson, 2001; Guiso, Sapienza & Zingales, 2006; Tabellini, 2010). However, two novel aspects of our approach have to be emphasized. First, 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 influenced later economic outcomes (and, therefore, well-being), such an effect would have been captured by the *logGDP* and *education* variables that account for country heterogeneity in income and human capital trajectories. Second, many empirical studies on the contribution of *historical* institutions or culture to *current* economic performance do not control for heterogeneity of countries in terms of their *current* institutional or cultural features. In our analysis we consider the SDT variables as outcomes and therefore we can assess the effects of *current* institutions and culture (instrumented by their respective lags) on a broader definition of well-being after controlling for *current* economic performance.

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); similarly, past governance is positively correlated with current governance when we instrument only *pc_WGI* (column 2). In both cases, the statistical diagnostics support our exclusion restriction since i) the F-statistics of the first stage are confidently large, and ii) the weak-identification test suggests that our instruments are not weak (the Kleibergen-Paap rk Wald F statistics is above the relative 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). As in the OLS results, governance is significant when the dependent variable is autonomy (Table 5b, column 2) or BPNS (Table 5a, column 2). The significant impact of culture (as opposed to governance) on all the SDT dimensions is confirmed also under the IV approach. More specifically, we re-estimate the models in column 6 of Tables 3a-3d and instrument both culture and governance with their respective lagged values. First-stage IV estimation results are reported in Table 4 (columns 3-4), while results from the second stage are in column 3 of Tables 5a-5d. Also under this check, *pc_culture* stays significant in all the SDT domains, especially for BPNS (Table 5a, column 3) and relatedness (Table 5d, column 3).

5.2 IV estimation at the regional level – Tabellini (2010)'s approach

Since we carry out our analysis at a country level we have to account for statistical power of our results in a small sample as well as for country fixed unobserved characteristics that might influence culture and SDT outcomes.

To this purpose, we replicate the Tabellini's (2010) IV approach by instrumenting current culture with past institutional features across selected EU regions. In his empirical study Tabellini claim a causal link between a culture of "generalized" morality and economic growth by comparing European regions with different historical characteristics. Such characteristics are past education and past political institutions. The former are measured by the literacy rate around 1880, while the second by constraints on the executive power in the years 1600-1850.

The exclusion restriction hinges 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 through higher citizens' perceived match between beliefs and outcomes (Platteau 2000), political participation of productive entrepreneurs when the rule of law is respected and the discretionary political power of the authority constrained (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.

Tabellini's first-stage regressions show 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.²¹

To check for 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. The cultural variable (*pc_culture*) captures "generalized morality" and is operationalized as the first principal component of *Respect*, *Trust* and *Obedience*. It is negatively correlated with *Obedience* and positively correlated with *Respect* and *Trust* (Table 6a).

²¹ 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.

We replicate the 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 (1960)*) and past urbanization rates (*Urbanization (1850-1860)*)²². All the variables considered vary at the regional level.

First-step estimations highlight a positive correlation between past institutions and “generalized” morality across EU regions (Table 6b). Second-stage estimations with and without controlling for GDP are reported in Table 6c, column 1 and 2 respectively. Results confirm the positive effect of generalized morality on BPNS, and 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) classification²³.

5.3 Happiness and culture in the world

The regression results described in Section 5 admittedly rely on a small sample of EU countries. In order to carry out a broader comparison analysis of SDT outcomes one would need survey data on autonomy, relatedness and competence for a larger sample of countries. Unfortunately, apart from the ESS, to our knowledge there are no larger cross-country surveys that would allow us to construct a valid measure of the three SDT dimensions. For this reason, we carry out an additional robustness checks with a larger number of countries using the level of happiness as dependent variable as measured in the World Values Survey (WVS). As showed in Figure 1b, SDT dimensions predict happiness fairly well ---higher scores for autonomy, competence and relatedness are correlated with higher happiness. In addition, when using happiness instead of BPSN as dependent variable in the baseline model, the significant effect of the cultural variables is confirmed (Table 7a). This evidence regarding EU countries induces us to confidently run the same regression on the larger sample of countries in the WVS. In doing this, we also exploit the panel dimension of

²² 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/KaaID9>.

²³ 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).

the latter by running OLS panel fixed effects based on four waves. Results are reported in Table 7b and are consistent with main findings ---a culture of “limited morality” has a negative impact on country well-being when the latter is proxied for by country-average levels of happiness.

6. Conclusions

On the basis of the pioneering studies by Banfield (1957), Coleman (1974) and Putnam (2000), culture and institutions are recognized in the economic literature among the drivers affecting countries’ well-being in terms of economic growth (e.g., Gorodnichenko & Roland, 2011; Guiso, Sapienza & Zingales, 2006; Tabellini, 2010; Algan and Cahuc, 2010). Only recently economists are recognizing that non-economic outcomes may perform better in predicting the well-being of nations (see, among others, Easterlin, 1974; Scitovsky, 1976; Frey & Stutzer, 2002; Kahneman, Krueger, Schkade, Schwarz & Stone, 2004). Well-being is increasingly measured by citizens’ self-assessed levels of life satisfaction and happiness which are showed to be robustly correlated with individual socio-economic characteristics (e.g. Blanchflower & Oswald, 2011; Frey & Stutzer, 2002) as well as societal factors such as cultural traits and institutional features (e.g. Bjørnskov, Dreher & Fischer, 2010; Frey & Stutzer, 2000; Helliwell & Wang, 2008 and 2011). However, the empirical evidence on subjective well-being often lacks of a psychological explanation to the dimensions underlying subjective well-being and its determinants.

Our paper combines the empirical economic evidence on the objective and subjective well-being of nations with the well-known 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 (e.g., Deci & Ryan, 2001). In this respect, besides individual intrapsychic forces, needs-satisfaction also varies according to the characteristics of the social context (Chirkov, Ryan, Kim & Kaplan, 2003).

We investigate the role played by cultural traits and the institutional quality in the satisfaction of basic psychological needs across European countries. To this purpose, we build an index for basic psychological needs satisfaction following the Basic Needs Satisfaction in Life Scale (Gagné, 2003; Johnston and Finney, 2010). As in Tabellini (2010), we operationalize culture with measures of lack of trust, obedience and respect, with high (low) lack of trust and obedience and low (high) respect implying higher “limited (generalized) morality”. For what concerns institutions, we consider the country’s quality of governance; this is measured by the principal component for the six World Governance Indicators (WDIs). To test for the hypothesis that cultural and/or institutional features matters for individuals’ satisfaction of basic psychological needs, we regress the country’s SDT

outcomes (i.e. satisfaction of autonomy, competence, relatedness and the average of the scores in all of these dimensions) on its cultural variables (or the principal component for trust, obedience and respect), on its institutional quality (WGIs) and on both. All estimates account also for heterogeneity in economic performance (GDP level) and human capital (median education level). Results show a robust and significant effect of culture on SDT outcomes, while the evidence is mixed for governance. Specifically, when the effect of culture and institutions are estimated separately, we find a negative correlation between “limited morality” (low trust, low respect, high obedience) and the SDT outcomes, while having sound institutions (high WGIs scores) is positively associated with basic psychological needs satisfaction (especially autonomy). When considered jointly, the effect of institutions is eclipsed by that of culture. This finding, while admittedly due to the interaction between culture and institutions (Alesina & Giuliano, 2015), suggests that most of the governance effect on well-being in our analysis can be explained by the cultural characteristics of the country when other economic characteristics (income and education) are controlled for. Importantly, the culture effect is showed to be robust to the instrumental variable estimation in which lagged levels of governance and cultural values are used as instruments in order to mitigate reverse causality and omitted variables bias. The positive effect of “generalized morality” on SDT outcomes is robust also 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 persists also when we repeat the analysis on a larger sample of countries by netting out country time-invariant fixed characteristics.

To our knowledge this is the first empirical attempt to open the subjective well-being box by explaining the happiness of nations through the lens of the self-determination theory. The latter allows us to formulate and tests hypothesis on whether the heterogeneous performance of EU countries in terms happiness depends on to their cultural and institutional characteristics. Our results generally confirm our hypotheses by highlighting the importance of specific cultural features for the fulfilment of basic psychological needs, the satisfaction of which are deemed fundamental to enjoy a high level of subjective well-being. While quality of governance plays a minor role, lack of trust, high obedience and low respect (i.e. a culture with “limited morality”) not only hinder economic development as showed by Tabellini (2010) but are also detrimental to the satisfaction of the basic psychological needs (and therefore subjective well-being) of EU countries.

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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 |
| Government Effectiveness (2000) | 28 | 0.929 | 0.931 | -1.244 | 1.938 |
| Control of Corruption (2000) | 28 | 1.101 | 0.925 | -0.826 | 2.134 |
| Rule of Law (2000) | 28 | 1.092 | 1.086 | -1.072 | 2.586 |
| Regulatory quality (2000) | 28 | 1.026 | 0.693 | -0.564 | 2.077 |
| Political Stability / Absence of Violence (2000) | 28 | 0.699 | 0.817 | -1.420 | 1.670 |
| Voice and accountability (2000) | 28 | 1.025 | 0.616 | -0.650 | 1.660 |

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

| <i>Variable</i> | <i>pc_WGI</i> |
|---|---------------|
| Government Effectiveness | 0.4241 |
| Control of Corruption | 0.4196 |
| Rule of Law | 0.4283 |
| Regulatory Quality | 0.4132 |
| Political Stability / Absence of Violence | 0.3287 |
| Voice and Accountability | 0.4264 |

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

Figure 1a: Life Satisfaction and Basic Psychological Need Satisfaction

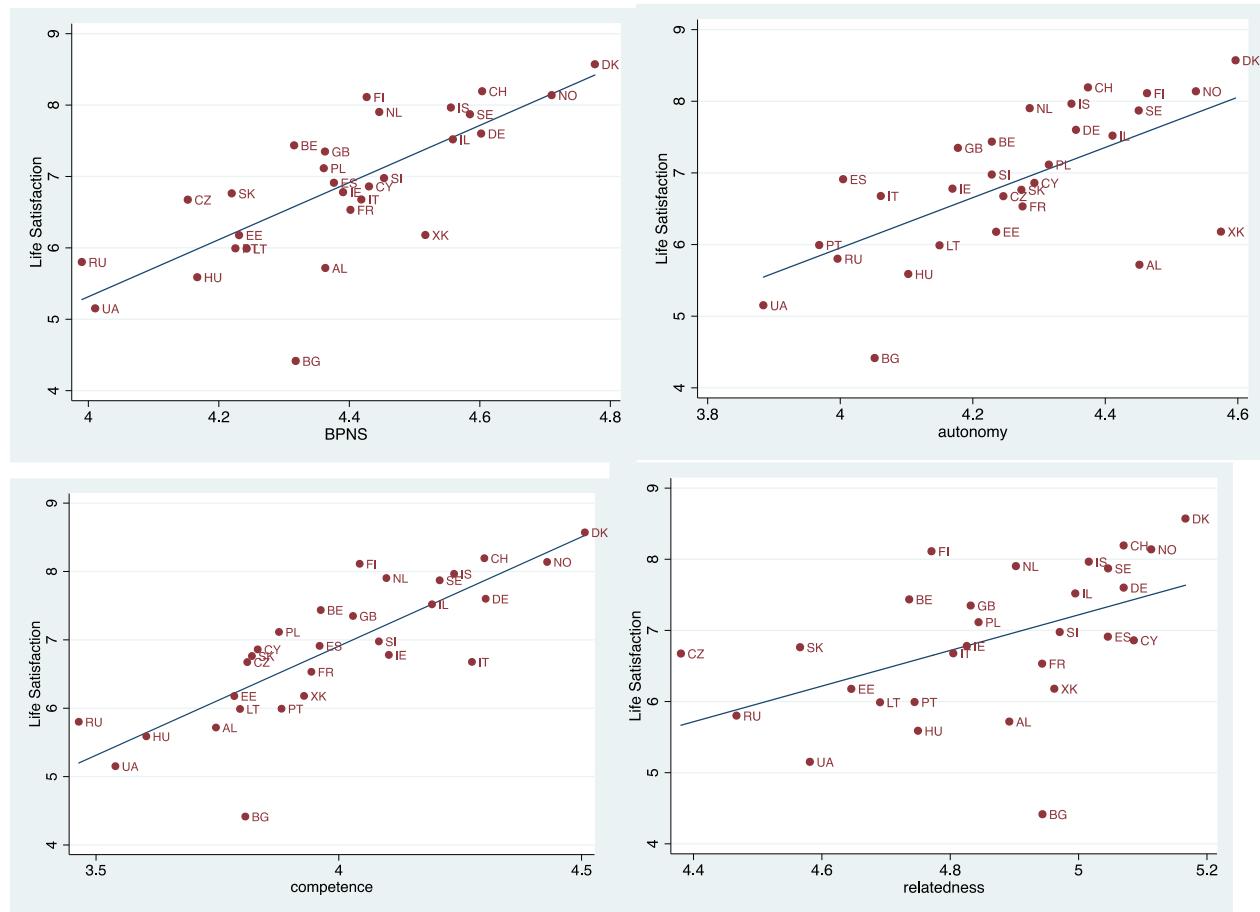


Figure 1b: Happiness and Basic Psychological Need Satisfaction

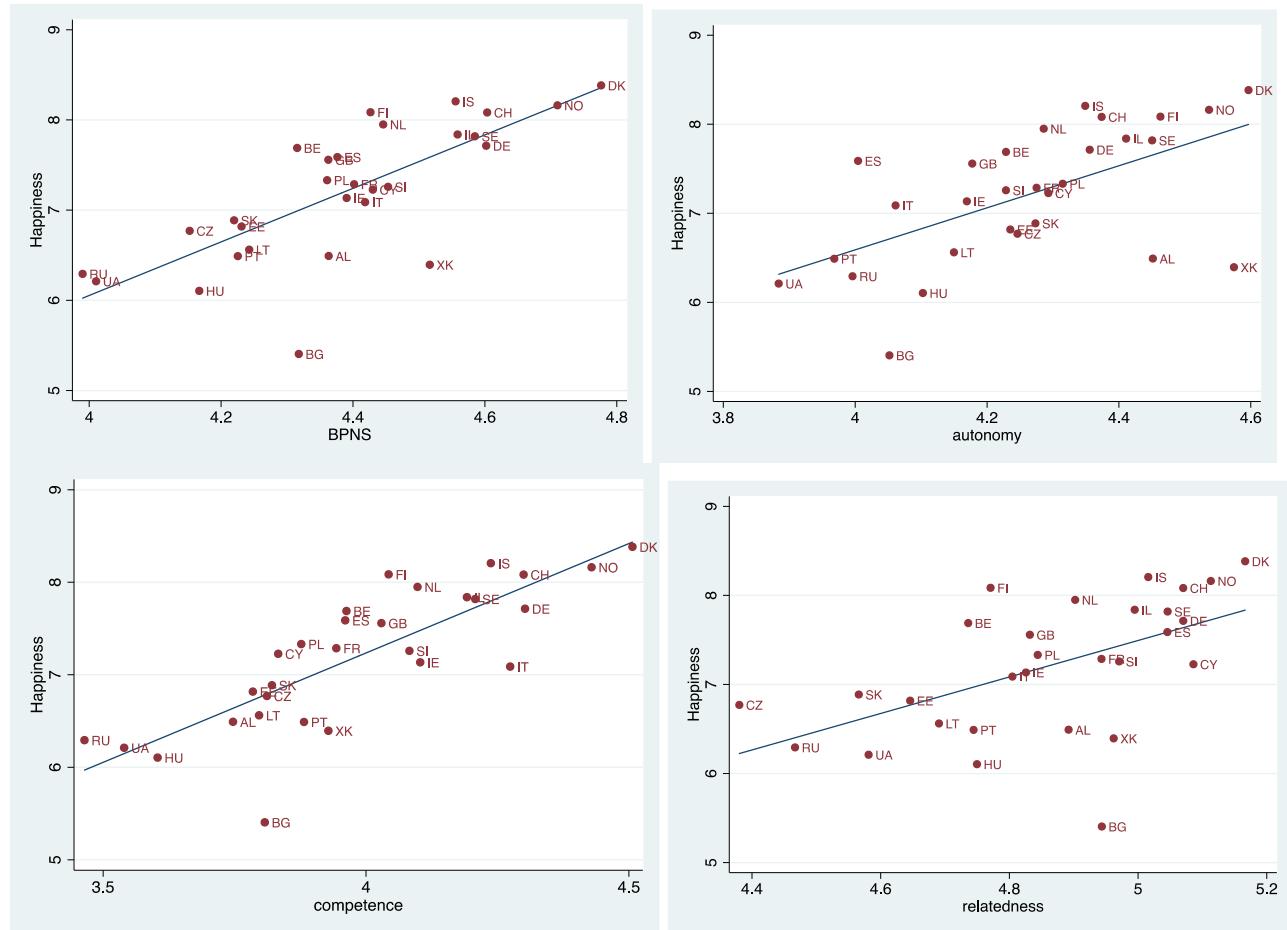


Figure 2: Basic Psychological Need Satisfaction, Culture and Governance

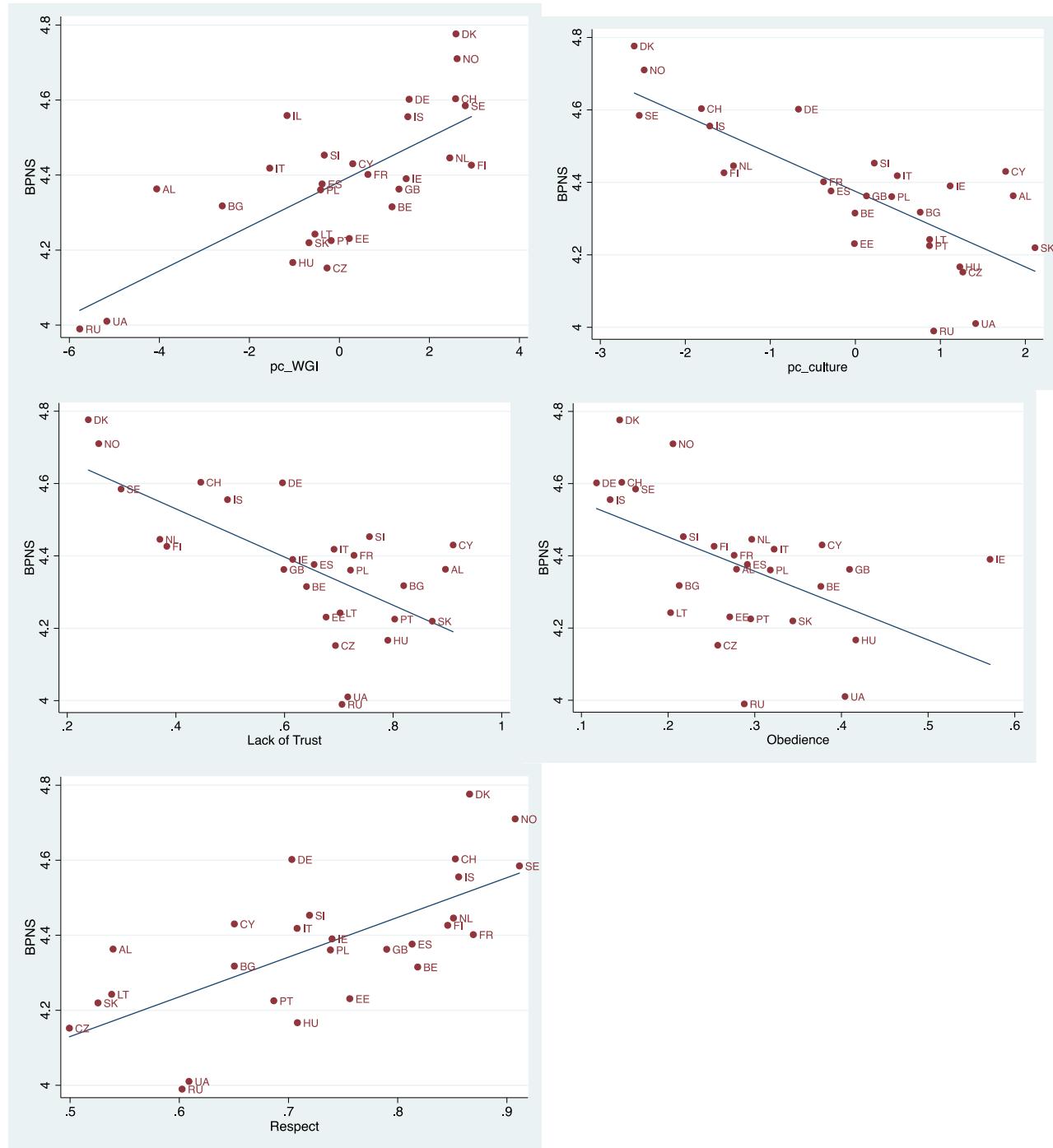


Table 2b: Pairwise correlation coefficients for governance and culture

| | pc_WGI | Gov. Effect. | Control of Corruption | Rule of Law | Regulatory quality | Political Stability Ab. of Violence | Voice and accountability | pc_culture | Obedience | Respect | Lack of Trust |
|--|-----------------|-----------------|-----------------------|-----------------|--------------------|-------------------------------------|--------------------------|-----------------|-----------------|-----------------|---------------|
| pc_WGI | 1 | | | | | | | | | | |
| Government Effectiveness | 0.975 0.000 | 1 | | | | | | | | | |
| Control of Corruption | 0.964 0.000 | 0.974 0.000 | 1 | | | | | | | | |
| Rule of Law | 0.984 0.000 | 0.979 0.000 | 0.971 0.000 | 1 | | | | | | | |
| Regulatory quality | 0.950 0.000 | 0.932 0.000 | 0.896 0.000 | 0.933 0.000 | 1 | | | | | | |
| Political Stability / Abs. of Violence | 0.755 0.000 | 0.628 0.000 | 0.622 0.000 | 0.669 0.000 | 0.626 0.000 | 1 | | | | | |
| Voice and accountability | 0.980 0.000 | 0.928 0.000 | 0.921 0.000 | 0.952 0.000 | 0.920 0.000 | 0.784 0.000 | 1 | | | | |
| pc_culture | -0.719 0.000 | -0.723 0.000 | -0.810 0.000 | -0.718 0.000 | -0.631 0.000 | -0.517 0.006 | -0.681 0.000 | 1 | | | |
| Obedience | -0.271 0.172 | -0.261 0.188 | -0.315 0.110 | -0.241 0.227 | -0.211 0.291 | -0.266 0.180 | -0.266 0.180 | 0.615 0.001 | 1 | | |
| Respect | 0.719 0.000 | 0.727 0.000 | 0.826 0.000 | 0.738 0.000 | 0.619 0.001 | 0.450 0.019 | 0.695 0.000 | -0.862 0.000 | -0.240 0.228 | 1 | |
| Lack of trust | -0.689 0.000 | -0.696 0.000 | -0.755 0.000 | -0.690 0.000 | -0.633 0.000 | -0.509 0.007 | -0.6329 0.0004 | 0.929 0.000 | 0.428 0.026 | -0.754 0.000 | 1 |

Table 3a: Determinants of Basic Psychological Needs Satisfaction

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------|----------------------|----------------------|---------------------|------------------------|---------------------|------------------------|
| Education | -0.00528 (0.0325) | -0.00990 (0.0343) | -0.0320 (0.0365) | -0.0159 (0.0306) | 0.00517 (0.0284) | -0.00374 (0.0252) |
| logGDP | 0.148 (0.0882) | 0.225*** (0.0715) | 0.137 (0.0978) | 0.101 (0.0893) | 0.0811 (0.134) | -0.0196 (0.134) |
| 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) |
| pc_WGI | | | | | 0.0454* (0.0245) | 0.0361 (0.0266) |
| Observations | 27 | 27 | 27 | 27 | 28 | 27 |
| Adjusted R-squared | 0.488 | 0.552 | 0.505 | 0.597 | 0.469 | 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) | (6) |
|--------------------|--------------------|----------------------|--------------------|-----------------------|-----------------------|-----------------------|
| Education | 0.0449 (0.0393) | 0.0453 (0.0370) | 0.0233 (0.0400) | 0.0391 (0.0361) | 0.0725** (0.0266) | 0.0657** (0.0257) |
| logGDP | 0.133 (0.130) | 0.166 (0.101) | 0.0782 (0.146) | 0.0601 (0.135) | -0.110 (0.163) | -0.203 (0.163) |
| 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) |
| pc_WGI | | | | | 0.0783*** (0.0225) | 0.0790*** (0.0189) |
| Observations | 27 | 27 | 27 | 27 | 28 | 27 |
| Adjusted R-squared | 0.193 | 0.337 | 0.281 | 0.334 | 0.428 | 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) | (6) |
|--------------------|----------------------|----------------------|----------------------|------------------------|---------------------|------------------------|
| Education | -0.00575 (0.0341) | -0.00805 (0.0351) | -0.0356 (0.0361) | -0.0144 (0.0328) | 0.00278 (0.0253) | -0.00728 (0.0229) |
| logGDP | 0.318*** (0.0848) | 0.376*** (0.0748) | 0.250*** (0.0835) | 0.239*** (0.0814) | 0.273 (0.173) | 0.168 (0.195) |
| 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) |
| pc_WGI | | | | | 0.0358 (0.0374) | 0.0213 (0.0470) |
| Observations | 27 | 27 | 27 | 27 | 28 | 27 |
| Adjusted R-squared | 0.585 | 0.645 | 0.654 | 0.679 | 0.574 | 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) | (6) |
|--------------------|---------------------|---------------------|---------------------|-----------------------|---------------------|----------------------|
| Education | -0.0423 (0.0396) | -0.0551 (0.0481) | -0.0726 (0.0511) | -0.0600 (0.0422) | -0.0436 (0.0474) | -0.0531 (0.0448) |
| logGDP | -0.0116 (0.101) | 0.132* (0.0729) | 0.0681 (0.110) | -0.00141 (0.105) | 0.0301 (0.133) | -0.0698 (0.137) |
| 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) |
| pc_WGI | | | | | 0.0338 (0.0269) | 0.0205 (0.0355) |
| Observations | 27 | 27 | 27 | 27 | 28 | 27 |
| Adjusted R-squared | 0.377 | 0.271 | 0.226 | 0.357 | 0.206 | 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) pc_culture | (2) pc_WGI | (3) pc_culture | (4) pc_WGI |
|--|--|---------------------|--|---------------------|
| pc_culture (1999) | 0.680*** (0.126) | | 0.666*** (0.152) | 0.0566 (0.131) |
| pc_WGI (2000) | | 1.050*** (0.134) | -0.0320 (0.121) | 1.067*** (0.190) |
| Education | 0.0251 (0.162) | 0.378*** (0.117) | 0.00124 (0.209) | 0.407** (0.147) |
| LogGDP | -0.900 (0.529) | -0.219 (0.611) | -0.792 (0.604) | -0.219 (0.744) |
| Observations | 25 | 28 | 25 | 25 |
| Adjusted R-squared | 0.747 | 0.934 | 0.734 | 0.928 |
| Partial R-squared of excluded instruments | 0.5781 | 0.7390 | 0.5787 | 0.7205 |
| Test of excluded instruments: | | | | |
| <i>F</i> = | 29.09 | 61.32 | 15.35 | 22.77 |
| <i>Prob > F</i> = | 0.0000 | 0.0000 | 0.0001 | 0.0000 |
| Underidentification Test: | | | | |
| <i>Kleibergen-Paap rk LM statistic</i> | 7.12 | 4.66 | 7.65 | |
| <i>p-value</i> | 0.0076 | 0.0308 | 0.0057 | |
| Weak identification test | | | | |
| <i>Kleibergen-Paap rk Wald F statistic</i> | 29.09 (10% maximal IV size = 16.38) | 61.32 | 10.441 (10% maximal IV size = 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) | (3) |
|--------------------|-----------------------|---------------------|------------------------|
| pc_culture | -0.103*** (0.0300) | | -0.0920*** (0.0355) |
| pc_WGI | | 0.0461* (0.0266) | 0.0181 (0.0342) |
| Education | -0.0219 (0.0272) | 0.00546 (0.0258) | -0.0152 (0.0241) |
| LogGDP | 0.0480 (0.105) | 0.0782 (0.131) | -0.00337 (0.134) |
| Observations | 25 | 28 | 25 |
| Adjusted R-squared | 0.625 | 0.469 | 0.630 |

Excluded instruments: *pc_WGI* (2000) in model 2; *pc_culture* (1999) in model 1; *pc_culture* (1999) and *pc_WGI* (2000) in model 3. Instrumented variables: *pc_WGI* in model 2; *pc_culture* in model 1; *pc_culture* and *pc_WGI* in model 3.
 Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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

| | (1) | (2) | (3) |
|--------------------|-----------------------|----------------------|----------------------|
| pc_culture | -0.0964** (0.0414) | | -0.0797* (0.0442) |
| pc_WGI | | 0.0512** (0.0211) | 0.0279 (0.0262) |
| Education | 0.0337 (0.0331) | 0.0617** (0.0291) | 0.0441 (0.0323) |
| LogGDP | 0.00425 (0.161) | -0.00231 (0.145) | -0.0751 (0.165) |
| Observations | 25 | 28 | 25 |
| Adjusted R-squared | 0.342 | 0.397 | 0.437 |

Excluded instruments: *pc_WGI* (2000) in model 2; *pc_culture* (1999) in model 1; *pc_culture* (1999) and *pc_WGI* (2000) in model 3. Instrumented variables: *pc_WGI* in model 2; *pc_culture* in model 1; *pc_culture* and *pc_WGI* in model 3. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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

| | (1) | (2) | (3) |
|--------------------|------------------------|---------------------|----------------------|
| pc_culture | -0.0977*** (0.0358) | | -0.0835* (0.0452) |
| pc_WGI | | 0.0445 (0.0343) | 0.0237 (0.0485) |
| Education | -0.0147 (0.0314) | 0.00621 (0.0227) | -0.00583 (0.0238) |
| LogGDP | 0.214** (0.0960) | 0.238 (0.158) | 0.146 (0.164) |
| Observations | 25 | 28 | 25 |
| Adjusted R-squared | 0.650 | 0.573 | 0.642 |

Excluded instruments: *pc_WGI* (2000) in model 2; *pc_culture* (1999) in model 1; *pc_culture* (1999) and *pc_WGI* (2000) in model 3. Instrumented variables: *pc_WGI* in model 2; *pc_culture* in model 1; *pc_culture* and *pc_WGI* in model 3. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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

| | (1) | (2) | (3) |
|--------------------|-----------------------|---------------------|-----------------------|
| pc_culture | -0.119*** (0.0318) | | -0.113*** (0.0354) |
| pc_WGI | | 0.0505 (0.0352) | 0.00975 (0.0384) |
| Education | -0.0720** (0.0363) | -0.0361 (0.155) | -0.0683* (0.0382) |
| LogGDP | -0.0854 (0.0990) | -0.0370 (0.0433) | -0.113 (0.147) |
| Observations | 25 | 28 | 25 |
| Adjusted R-squared | 0.504 | 0.573 | 0.478 |

Excluded instruments: *pc_WGI* (2000) in model 2; *pc_culture* (1999) in model 1; *pc_culture* (1999) and *pc_WGI* (2000) in model 3. Instrumented variables: *pc_WGI* in model 2; *pc_culture* in model 1; *pc_culture* and *pc_WGI* in model 3. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6a: 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 6b: 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) |
| <i>pc_institutions</i> | 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 6c: 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 | -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 | -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 | -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” group of countries. *** p<0.01, ** p<0.05, * p<0.1

Table 6d: 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 | -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 | -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 | -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” group of countries. *** p<0.01, ** p<0.05, * p<0.1

Table 7a: Determinants of Happiness (*ESS, 2012*)

| | (1) | (2) | (3) | (4) |
|--------------------|---------------------|---------------------|----------------------|-----------------------|
| Education | 0.0434 (0.0909) | 0.0128 (0.112) | -0.0622 (0.105) | 0.00335 (0.0892) |
| logGDP | 0.838*** (0.293) | 1.176*** (0.276) | 0.743*** (0.263) | 0.740** (0.284) |
| Respect | 2.354*** (0.654) | | | |
| Obedience | | -1.327 (0.782) | | |
| Lack of Trust | | | -1.762*** (0.466) | |
| pc_culture | | | | -0.250*** (0.0650) |
| Observations | 27 | 27 | 27 | 27 |
| Adjusted R-squared | 0.672 | 0.625 | 0.711 | 0.721 |

Robust standard errors in parentheses

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

Table 7b: Determinants of Happiness – Panel fixed-effect regressions (*WVS, 1989-2007*)

| | (1) | (2) | (3) | (4) |
|--------------------|-----------------------|----------------------|-----------------------|-----------------------|
| logGDP | 0.179* (0.0901) | 0.0528 (0.0998) | 0.121 (0.0904) | 0.0783 (0.0798) |
| Education | -0.0622 (0.0958) | -0.0425 (0.106) | -0.0456 (0.117) | -0.0920 (0.0937) |
| Lack of Trust | -0.421** (0.193) | | | |
| Obedience | | -0.459* (0.248) | | |
| Respect | | | 0.182 (0.283) | |
| pc_culture | | | | -0.353*** (0.0981) |
| Wave 1994-1999 | -0.175*** (0.0477) | -0.140** (0.0649) | -0.166*** (0.0493) | -0.120** (0.0475) |
| Wave 1999-2004 | -0.276*** (0.0734) | -0.198** (0.0927) | -0.257*** (0.0764) | -0.221*** (0.0692) |
| Wave 2005-2007 | -0.325*** (0.0894) | -0.225** (0.113) | -0.304*** (0.0933) | -0.234*** (0.0853) |
| Observations | 149 | 149 | 149 | 149 |
| Number of Country | 81 | 81 | 81 | 81 |
| Adjusted R-squared | 0.278 | 0.275 | 0.237 | 0.347 |

Robust standard errors in parentheses

*** 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*)

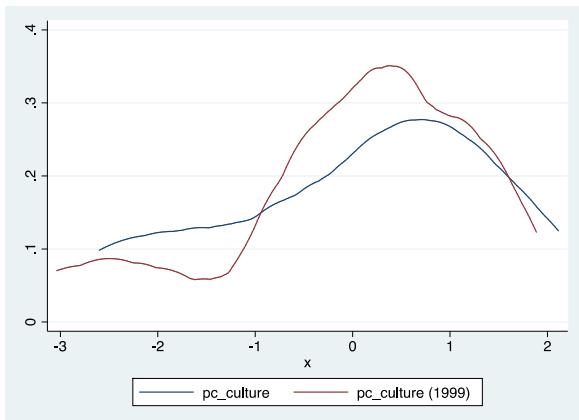


Figure A2: Distribution of quality of governance in 2000 and 2012 (source: *WGIs, World Bank*)

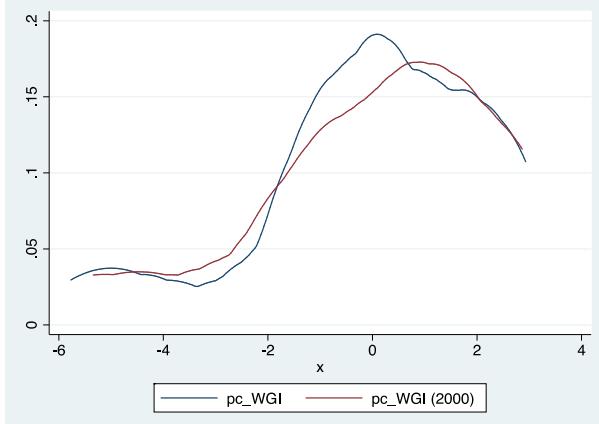


Figure A3: Time variations in culture and quality of governance (sources: *WGIs* and *EVS*)

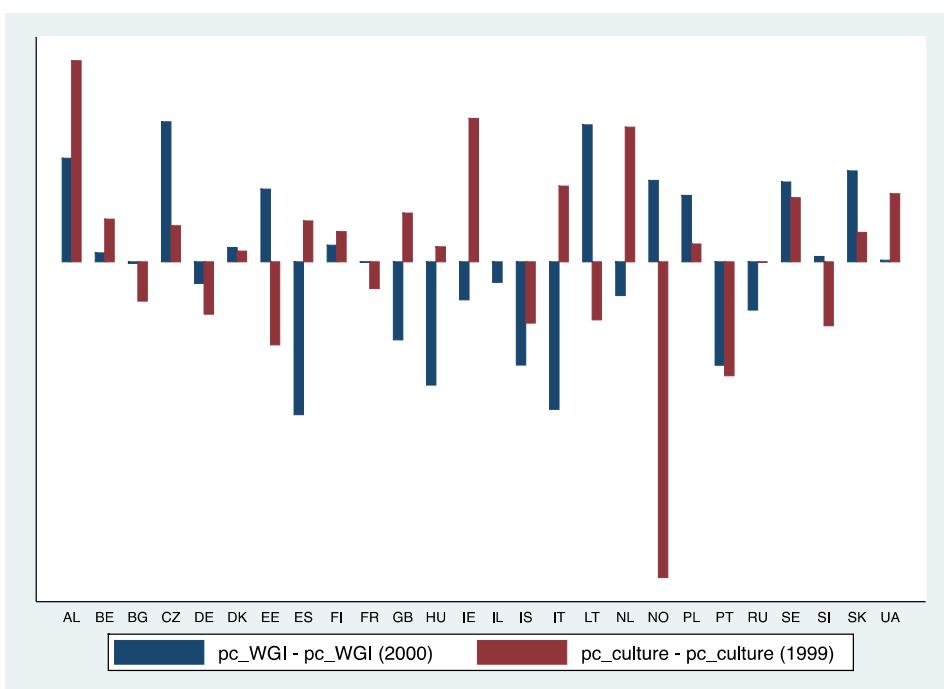


Table A1: Determinants of basic psychological needs: the role of culture and legal origins

| 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