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Carrie Exton,

Conal Smith,

Damien Vandendriessche

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This working paper was prepared by Carrie Exton and Conal Smith, OECD Statistics Directorate and Damien Vandendriessche, Paris School of Economics.

Contacts: Carrie Exton (Tel.: +(33-1) 45 24 88 28, Carrie.EXTON@oecd.org) and Conal Smith (Tel.: +(33-1) 45 24 97 05, Conal.SMITH@oecd.org)

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Carrie Exton and Conal Smith, OECD Statistics Directorate and

Damien Vandendriessche, Paris School of Economics

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ABSTRACT

The issue of cultural bias in subjective well-being data is often raised, but rarely well-documented. This paper reviews the main barriers to interpreting national differences in subjective well-being, noting the challenge of distinguishing between *cultural bias* (understood as measurement error) and *cultural impact* (where culture plays a more substantive role in shaping how people experience their lives). Several methods are then used to attempt to quantify the role of culture in subjective well-being, drawing on multiple waves of the Gallup World Poll, conducted in over 150 countries and territories. Regression analysis is used to identify country-specific fixed effects, which capture unexplained variance in subjective well-being at the country level, over and above a basic set of socio-economic and demographic controls. These country fixed effects then become the subject of three further investigations. The first examines whether survey measures of "cultural values" are able to explain the size and direction of country fixed effects; the second considers the evidence for international differences in "appraisal styles" (*e.g.* a more positive or negative outlook on life in general); and the third explores the "cultural transmission" of subjective well-being, focusing on the experiences of migrants to separate the effects of culture from those of broader life circumstances. The paper shows that, although life circumstances explain well the overall pattern of cross-country variation in subjective well-being, a gap is observed for some countries. Culture may account for some 20% of the country-specific unexplained variance. This combined effect of "cultural impact" and "cultural bias" is small when compared to the role of objective life circumstances in explaining subjective well-being outcomes.

RÉSUMÉ

Si la question des biais culturels dans les données du bien-être subjectif se pose souvent, elle a rarement été documentée de manière satisfaisante. Le présent document passe en revue les principaux obstacles à l'interprétation des différences nationales observées en termes de bien-être subjectif, tout en soulignant le défi d'établir une distinctionentre le concept de *biais culturel* d'une part (entendu comme une erreur de mesure) et celui d'*impact culturel* d'autre part (lié à l'idée que la culture contribue plus fondamentalement à façonner la manière dont les individus perçoivent leur vie). Plusieurs méthodes sont ensuite utilisées pour quantifier le rôle de la culture dans le bien-être subjectif, s'appuyant sur les nombreuses enquêtes *Gallup World Poll* menées dans plus de 150 pays et territoires. Une analyse de régression permet de repérer les effets fixes propres à un pays, ce qui permet de faire ressortir les variances inexpliquées (à la hausse ou la baisse) du bien-être subjectif national par rapport à un ensemble élémentaire de variables de contrôle socio-économiques et démographiques. Ces effets fixes propres à un pays font ensuite l'objet de trois analyses plus approfondies. La première permet de vérifier si les mesures des « valeurs culturelles » ressortant du sondage sont susceptibles d'expliquer l'ampleur et l'orientation de ces effets fixes ; la seconde permet de rechercher des preuves de l'existence de différences nationales dans les « critères d'appréciation » (une perception plus positive ou négative de la vie en général, par exemple) ; la troisième permet d'étudier la « transmission culturelle » du bien-être subjectif, en mettant l'accent sur les expériences des immigrés afin de distinguer les effets de la culture des éléments propres à un contexte national. Il ressort de cette étude que, bien que les circonstances de la vie expliquent de manière convaincante le profil des variations du bien-être subjectif d'un pays à l'autre, on observe un écart très net dans certains pays. La variable culturelle pourrait alors représenter 20 % de la variance nationale inexpliquée. Le rôle de l'effet combiné de « l'impact culturel » et du « biais culturel » est toutefois modeste par rapport à celui des circonstances objectives de la vie lorsqu'il s'agit d'expliquer les résultats des enquêtes sur le bien-être subjectif.

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1. Introduction

1. There are good reasons for wanting to compare subjective well-being across countries. Perhaps one of the most important is to gain insight into the societal conditions that matter for people's well-being.[1] So far, a wide variety of life circumstances, ranging from income and employment, through to health, social connections, freedom and trust have been found to have strong relationships with subjective well-being outcomes. Yet despite this, differences in average levels of subjective well-being among the most developed countries of the world can challenge both reasoned expectations and more dubious national stereotypes. Why should people living in France and Italy report being less satisfied with their lives than those in Denmark or Canada? What about *joie de vivre* and *la dolce vita*, the French healthcare system, and Italian food? A great deal of interest has also focused on why the very richest countries in the world aren't always the very happiest. The puzzles deepen when we look beyond wealthy countries, and beyond broad evaluative measures. For example, by several objective criteria, the average standard of living in Portugal, Greece and Italy is higher than that in India, Cameroon and Peru, and yet the percentage of people reporting more positive than negative emotions yesterday among these countries is broadly similar. While for some, these findings highlight why it is interesting to go *beyond GDP* when considering how people experience their lives, for others it raises questions about the comparability of subjective data across countries – and whether differences between countries are likely to contain information that could be valuable to policy makers.

2. Measurement error is a fact of life in survey data. People cannot be observed in a vacuum, and their private thoughts, behaviours and experiences do not always translate perfectly into yes/no answers, or a single number on a 0-10 scale. Survey-based measures of subjective well-being appear to be "noisy" (*i.e.* they contain measurement error), but wide-ranging evidence also suggests that they provide a meaningful "signal" (see OECD, 2013a; National Research Council, 2013; and Diener, Inglehart and Tay, 2013 for recent reviews). An important question then, is how to extract the signal from the noise. In particular, it is important to know if there are systematic sources of error (*i.e.* biases), which influence the responses of certain groups of people in relatively predictable and consistent ways, thus affecting how group differences should be analysed and interpreted. One potential source of bias that has piqued a lot of interest in subjective well-being is cultural bias – which, if substantiated – has implications for comparing subjective well-being levels among countries.

3. The international comparability of statistics typically relies on a very high degree of co-operation between data producers. For example, comparability of objective measures (such as GDP per capita) is assured through agreed international standards (*e.g.* the System of National Accounts, most recently revised in 2008), supported by well-established networks of national statisticians. Fewer formal standards, agreements and networks exist for survey-based and self-reported measures of well-being.[2] In 2013, the OECD released its first ever set of *Guidelines on Measuring Subjective Well-Being* (OECD, 2013), which aimed to foster consensus around good survey design and measurement practice in the collection of

[1] Subjective well-being can be defined as "Good mental states, including all of the various evaluations, positive and negative, that people make of their lives and the affective reactions of people to their experiences" (OECD, 2013a, p.10). Typical measures include *life evaluations* (captured through, for example, questions about satisfaction with life overall); *affect*, which concerns positive and negative feelings and emotions, and *eudaimonia* or *psychological well-being*, which is concerned with a sense of meaning and purpose in life, or good psychological functioning.

[2] Although networks of academic specialists lie behind several international data collection efforts, such as the European Social Survey, the World Values Survey, European Values Survey, and the International Social Survey Programme.

subjective well-being data, to improve both the quality and the comparability of data between surveys and over time.

4. Comparability of survey data across countries, however, requires more than just a common methodological framework, and rigorous adherence to standardised procedures. It requires a degree of equivalence between countries in how people *understand* and *respond* to questions about their lives and experiences. If there are systematic differences between countries in these respects, the resulting data may be said to contain bias – often referred to as "cultural bias" because culture is presumed to play a role in transmitting and perpetuating the differences between groups. Two potential sources of cultural bias include the translation of questions across languages, and social norms around the expression of emotions and experiences in different countries. In the case of the former, some concepts might be difficult to translate well across countries (*e.g*. the Hungarian word "jólét" is used for both "well-being" and "wealth"). The latter might influence tendencies towards more extreme or more moderate responding (*i.e.* whether people use the full range of a numerical response scale, or only the items towards the middle of the scale) – or which emotions people are most likely to admit to experiencing. For example, if anxiety is viewed negatively in some cultural contexts, people may be less likely to tell an interviewer that they feel it regularly.

5. While the topic of culture and subjective well-being has received a great deal of attention, the existing literature on cultural *bias* is patchy, often relying on relatively small convenience samples, and comparisons between limited numbers of countries and/or cultures. Several of the largest and most informative studies (see Section 2) have tended to focus on life evaluations, ignoring the issue of whether results are consistent across a wider range of subjective well-being measures (such as recent emotional experiences or "affect", and feelings that life is worthwhile). Empirically isolating bias in subjective well-being measures is also extremely difficult, in part because the subjective nature of these measures means that it is difficult to find objective standards against which responses can be verified.

6. When measuring something as complex as how people experience the world – which is influenced by a large number of different factors – it is difficult to be confident that apparent "biases" are not simply due to unobserved factors, including personal life histories, and the historical and social context that informs how people think and feel about their lives. A person's culture more broadly could also have a meaningful impact on how people live their lives, and the way they feel about certain life circumstances. Within the social sciences, culture is increasingly seen as an important *determinant* of people's preferences and behaviours – from politics and redistributive policies (Alesina and Guiliano, 2009; Luttmer and Singhal, 2011) to trust (Rice and Feldman, 1997; Guiso, Sapienza and Zingales, 2006; Algan and Cahuc, 2010), female participation in the labour force, and fertility decisions (Fernández and Fogli, 2009). As such, the possibility that culture impacts on subjective well-being in substantive ways needs to be considered alongside the possibility that culture can lead to measurement error through biased responding.

7. Assessing the degree of cross-cultural comparability (or otherwise) of subjective well-being measures is thus fraught with empirical difficulties (OECD, 2013a). Yet despite the challenges involved, getting a better handle on international comparability is important, not only to better understand differences in levels of subjective well-being between countries, but also to better understand differences in subjective well-being among different cultural groups living within the same country. There is increasing interest in the insights from subjective well-being research for public policy (*e.g.* Diener et al., 2009; Bok, 2010; Chapple et al., 2010; Stoll, Michaelson and Seaford, 2012; National Research Council, 2013), which makes the accurate identification of people in need crucially important. Although much of the research on subjective well-being focuses on the circumstances of individuals, institutions also play a part in establishing the *societal conditions enabling individuals to become happy* (Frey and Gallus, 2013), or to avoid needless misery and suffering. Thus, the relationship between societal conditions and individual subjective well-being is of high interest.

8. This report is concerned with international comparisons of subjective well-being, as a specific form of cross-cultural comparison.[3] Both life evaluations (*e.g.* life satisfaction), and patterns of affect (feelings, moods and emotions) across the world are considered. These two types of measure offer complementary perspectives: one focused on reflections about life as a whole, the other on people's most immediate emotional experiences.[4] The report uses data from drawn from the Gallup World Poll, which offers the most wide-ranging international coverage of subjective well-being measures currently available, and combines this with other sources of international data, including World Bank data sets, the World Values Survey, and the European Values Survey. It explores some of the main barriers to interpreting differences in subjective well-being between different countries and territories around the world, with a particular focus on the variance in subjective well-being that cannot easily be explained by differences in measurable life circumstances. There is also an emphasis on whether global and more nationally representative samples seem to tell the same story about people's experiences as smaller scale studies. Finally, the paper discusses what the possibility of cultural bias means for how international data on subjective well-being should be analysed, interpreted and reported.

9. Section 2 provides a brief taxonomy of the possible roles for culture in subjective well-being, emphasising a conceptual distinction between *cultural bias* (understood as measurement error), and *cultural impact* (where culture might play a more substantive role in shaping how people experience their lives). Insights from the wide-ranging literature on culture and subjective well-being are then briefly outlined. Section 3 to 8 then explore subjective well-being responses drawn from the Gallup World Poll, a large-scale international survey that asks a consistent set of core questions in over 160 countries and territories across the globe. First, a descriptive account details how subjective well-being outcomes are distributed worldwide. The correlations between subjective and objective measures of well-being are then explored. Regression analysis is then used to identify country-specific fixed effects[5] – *i.e.*, holding individual socio-demographics, income, employment status, education and a variety of other controls constant, does the country or territory in which a person lives in have a positive or negative impact on their subjective well-being?

10. These country-specific fixed effects then become the subject of three separate sets of analyses, in an attempt to examine why some places seem to be happier than others, after basic life circumstances have been taken into account. In Section 6, relationships between country fixed effects and a variety of country-level variables are examined, including Inglehart and Welzel's secular and emancipative values; religiosity; and self-reported elements of well-being. In Section 7, systematic positive and negative appraisal styles are investigated: *i.e*. do people in happy places also view other aspects of their lives – such as their income or the economy at large – more positively? Finally, in Section 8, the *cultural transmission* of subjective well-being among migrants is explored, in an attempt to separate the effects of culture from those of wider living circumstances. More specifically, we test whether the ambient level of subjective well-being in a migrant's country or territory of origin helps to explain variance in their subjective well-being, over and above the ambient level of subjective well-being in their current country or territory of residence.

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3 Other types of cross-cultural comparisons can of course be made, and cultures are not synonymous with countries and territories. As made clear by the later discussion of how culture is defined in the literature, some aspects of culture can vary *within* a given territory, while other aspects of culture can be similar *across* groups of territories. Thus, a person's place of residence is only one lens through which to explore cultural phenomena. .

4 The most important category of measure missing from this report is eudaimonia, or "psychological well-being", which cannot be examined due to the lack of global data.

5 Although the analysis presented here refers to both countries and territories, the statistical term "country-specific fixed effects" is used for consistency with other literature investigating these effects.

2. The roles of culture in subjective well-being

2.1. Concepts of culture

11. The word culture has several common language uses, which can lead to considerable confusion. It is also an extremely broad notion, as illustrated by UNESCO's (2001) inclusive definition: "Culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs". Several researchers have offered various descriptions: Guiso, Spienza and Zingales (2006) define culture as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation". Senik (2014) emphasises the notion of *mentality*: "the set of specific intrinsic attitudes, beliefs, ideals and ways of apprehending reality that individuals engrain during their infancy and teenage, via education and socialization instances such as school, peer groups, firms and organisations". For Senik, the term "culture" refers to mentality that endures over time – *i.e.* "the long-run persistent attitudes, beliefs and values that characterise groups of people" (p.381). Triandis (1997) defines a *cultural syndrome* as "a shared set of beliefs, attitudes, norms, values and behaviour organized around a central theme and found among speakers of one language, in one time period, and in one geographic region".

12. One early and subsequently very influential attempt to formalise and measure cultural values and beliefs was made by Hofstede (1980), who developed an elaborate system for characterising different elements of culture argued to be particularly relevant in organisational contexts. The most recent iteration of the Hofstede model (Hofstede, Hofstede and Minkov, 2010) includes six dimensions: *power distance*, relating to hierarchies, relationships with authority and perceptions of inequalities; *individualism-collectivism*, referring to the strength and manner of social ties between individuals and groups; *masculinity-femininity*, relating to assertiveness and competition vs. nurturance and concern for relationships; uncertainty avoidance – *i.e*, tolerance for uncertain or unpredictable situations; *long-term versus short-term orientation*, referring to factors such as persistence, and thrift, versus respect for tradition and personal stability; and *indulgence versus restraint*, with the former associated with a permissive attitude towards the pursuit of pleasure and leisure, and the latter emphasising the need for self-control and regulation through strict social norms.

13. An alternative system of cultural classification has been proposed by Inglehart and Welzel, based on analyses of World Values Survey data, the collection of which began 1981, and has been extended to over 90 different countries. Inglehart and Welzel (*e.g.* 2010; Inglehart, Foa, Peterson and Welzel, 2008), use two over-arching dimensions to summarise a range of cultural attributes: survival versus self-expression values, and traditional versus secular-rational values. Survival values tend to be found in places characterised by low material wealth and limited physical security; self-expression values are meanwhile found among those who can afford to take survival for granted, and include tolerance for diversity, higher levels of trust, demand for participation in decision-making, and prioritising issues like environmental protection. The traditional versus secular-rational dimension is meanwhile concerned with the extent to which religion, parent-child ties, traditional family values, and deference to authority are emphasised. Welzel (2013) re-casts earlier work around a focus on emancipative values – those emphasising freedom of choice, freedom from constraints, and equality of opportunities. Other alternative categorisations of cultural values or systems have also been proposed, for example, by Schwartz (1992) and Smith, Dugan and Trompenaars (1996), and Gelfand *et al.* (2011).

14. Among the diverse definitions and concepts outlined above, culture can encompass factors such as language, religion, beliefs, values, norms, lifestyles, family and other social systems, geographies, and behaviours. These are, on the whole, substantive factors that could conceivably influence people's experiences of subjective well-being, rather than principally acting as sources of "bias". One exception to

this is perhaps very specific norms around conformity, social desirability, and the expression of emotions, which could influence how people *report* their experiences of subjective well-being, regardless of their true feelings.

2.2. Cultural impact vs. cultural bias

15. As first set out in the *OECD Guidelines on Measuring Subjective Well-Being* (2013a), there are several different ways in which unexplained differences in countries' average levels of subjective well-being can potentially arise, and cultural bias only plays a partial role in these (Box 1). A useful distinction (Van de Vijver and Poortinga 1997) is that between *cultural impact*, which refers to valid sources of variance between cultures, and *cultural bias*, which refers to inter-cultural differences that result from measurement artefacts.

Box 1. Four possible sources for unexplained country differences in subjective well-being

Over and above differences in basic objective life circumstances (such as income, education, employment), there are often relatively large unexplained differences in subjective well-being outcomes between countries. These can have at least four possible sources:

- *Unmeasured country circumstances, and differences in how live is lived*

Economic development is one driver of subjective well-being, but a wide variety of other factors can also play a role in determining people's evaluations and experiences of life (*e.g.* health, social relationships, and freedom of choice). Many such drivers are very hard to measure in objective terms and are therefore often omitted from analyses. Yet they can produce significant country differences in both life circumstances and subjective well-being. Examples include levels of democracy, tolerance of outgroups, or trust in others (Inglehart et al., 2008; Bjørnskov, 2010), and perceived freedom, levels of corruption and the quality of social relationships (Helliwell, 2008; Helliwell et al., 2010; Helliwell et al., 2012), but there are likely to be other factors that are currently not only unmeasured, but unidentified.

- *Differences in how people feel about their lives*

There may be differences between countries in how people *feel* about their current life circumstances, which produce valid variation in subjective well-being even where objective circumstances are the same. These might include an individual's perceived reference group (*i.e.* frame-of-reference effects), past life experiences, the past or present political and economic situation, the policy environment and the country's religious, cultural and historical roots. These differences may contribute to *appraisal styles* that influence the connection between objective life circumstances and subjective feelings – for example, due to the degree of optimism or pessimism people feel about the future, or factors in a person's life history that make them particularly resilient or particularly vulnerable in the face of changing life circumstances.

- *Language differences that influence scale use*

Systematic differences between countries may also arise as a result of imperfect translatability of subjective well-being constructs, or verbally labelled response scales (such as "very happy" and "pretty happy"). In this instance, linguistic differences would produce biases in how people respond to subjective well-being questions regardless of how individuals actually feel about their lives – and thus it would be desirable to remove this bias from the data.

- *Cultural response styles or biases*

Finally, there may be country-specific differences in how individuals *report* their feelings – regardless of their actual experiences. For example, in a culture that places a lot of emphasis on rigid conformity to social norms, expressing an undesirable emotion (such as anxiety) or a socially divisive emotion (such as anger) may be less socially acceptable, as might expressing extremely strong views on a response scale (*e.g.* using response categories at the extremes of a 0-10 scale).

Source : Adapted from the OECD Guidelines on Measuring Subjective Well-Being (OECD, 2013a)

16. It is important to distinguish between these four potential sources of country differences, as they have different implications for the validity of between-country comparisons, and for the actions one might take to address country-specific differences in subjective well-being. In the case of unmeasured life circumstances, there is a genuine country-specific effect that should not be treated as bias. In the second case, differences between countries can reflect cultural impact – *i.e.* differences in how respondents actually experience their lives, and which could therefore add to the validity of the overall subjective well-

being measure (*e.g.* improving the prediction of future behaviour, and other well-being outcomes). This may be the case even if it means that people's views about life differ strongly from what objective indicators might tell us. It would not be desirable to correct subjective well-being scores for either the first or the second of these country-specific differences. Linguistic differences or cultural response styles, on the other hand, can be expected to add bias to the data, reducing its overall validity and predictive ability. In these instances, it would be desirable to find a way to either minimise the problem at source through survey design or somehow control for it at the analysis stage.

2.3. Previous research on culture and subjective well-being

Subjective well-being as a facet of culture

17. Some conceptualisations of culture explicitly include aspects of subjective well-being as *cultural characteristics*. Various methods for quantifying culture include tendencies towards being emotional versus neutral, or tendencies towards pleasure-seeking and hedonism (see Taras 2008 and Taras et al. 2009 for overview). For example, Hofstede *et al.*'s (2010; Minkov 2009a) "indulgence versus restraint" dimension emphasises freedom from control, and the importance of leisure and enjoying life as specifically cultural phenomena. The world's top ten highest scoring countries and territories on this dimension (out of the 93 studied) include six in Latin America and the Caribbean (Venezuela, Mexico, Puerto Rico, El Salvador, Colombia and Trinidad and Tobago), two in Africa (Nigeria and Ghana), one in Europe (Sweden) and one English-speaking country (New Zealand). Those characterised by low scores, and thus a high degree of restraint, include one South Asian country (Pakistan), two Middle Eastern countries (Egypt and Iraq) and Latvia, Ukraine, Albania, Belarus, Lithuania, Bulgaria and Estonia. From this perspective, cultural values might determine both the extent to which subjective well-being - and especially positive experiences - are likely to be sought out, and the extent to which they are likely to be openly expressed (see also Box 2).

18. It is often reported that people in more individualist countries report higher subjective well-being than those in more collectivist cultures[6] (*e.g.* Basabe, Paez, Valencia, Gonzalez, Rimé and Diener, 2002; Diener, Diener and Diener 1995; Flavin, Pacek and Radcliff, 2011). Triandis and Suh (2002) suggest that this could relate to the higher self-esteem and greater degree of optimism found among more individualistic cultures. Diener, Oishi and Lucas (2003) point to fewer self-serving biases[7] and higher self-critical tendencies among more collectivist East Asian cultures, relative to more individualistic cultures such as that of the USA. Triandis (2000) meanwhile proposes a wide range of factors that could influence how subjective well-being varies among cultures, including various traits such as extraversion, openness to new experiences, feelings of mastery, personal growth, and self-acceptance. In practice, however, these factors are more descriptive than explanatory: often traits prove difficult to separate from the experience of subjective well-being itself, and they offer little insight into *how* cultures came to be that way in the first instance. Why is it, for example, that some cultures would be more extraverted than others? Or more hedonistic than others?

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6 Individualistic cultures are those in which the independent self is emphasised; "people are expected to become independent from others and to pursue and assert individual goals" (Eid and Diener, 2001, p.870). This is contrasted with collectivistic cultures, which are "characterised by the belief that the self cannot be separated from others or from the social context" and thus the social norm is to "fulfill one's social duties", which includes maintaining harmony and meeting social obligations (Eid and Diener, 2001, p.870).

7 "Self-serving biases" relate to cognitive biases in people's interpretations or recollections of events that serve to enhance their self-esteem (e.g, a tendency to over-estimate success rates on a task performed a week earlier; or to attribute success to individual effort, but to attribute failure to the effects of circumstances).

19. A number of studies have suggested that cultural traits can influence the correlates or drivers of subjective well-being. For example, facets such as self-esteem and autonomy have been found to be stronger correlates of life satisfaction in more individualist cultures (e.g. North America and Europe), relative to more collectivistic ones (e.g. East Asia)(Suh, 2000; Oishi, 2000; Uchida, Norasakkunkit and Kitayama, 2004).[8] Ng and Diener (2014) found that a nation's GDP per capita moderates the relationships between various subjective well-being outcomes (life evaluation, positive feelings, negative feelings) and factors such as financial satisfaction, autonomy and social support. The degree of correlation between affect and life satisfaction also seems to vary across countries, with a stronger relationship found in more individualistic cultures and a weaker correlation in collectivistic ones (Suh, Diener, Oishi and Triandis, 1998; Suh, 2000). This has been interpreted to mean that positive emotions are more important to overall well-being in individualistic cultures. However, given that life satisfaction and affect have different patterns of covariates (Boarini, Comola, Smith, Manchin, and de Keulenaer, 2012; Exton and Smith, forthcoming; Kahneman and Deaton, 2010), it is also possible that these differences simply reflect differences in unmeasured life circumstances across countries.

Social norms around emotions and emotional expression

20. Affect and the experience of emotions have long been the subject of cross-cultural research, perhaps because emotions are often viewed as fundamentally social phenomena. Societal norms for emotions can differ from culture to culture, and this in turn may influence the experience of subjective well-being (Diener, Oishi and Ryan, 2013). Tsai, Knutson and Fung (2006) found that European-Americans' ideal affective states involved higher levels of high-arousal states (*e.g*. excitement), while Asian-Americans and Chinese respondents reported ideal states with comparatively greater levels of low-arousal (*e.g*. calm) emotions. Eid and Diener (2001) meanwhile investigated differences in norms around emotions among college students living in the United States, Australia, People's Republic of China (hereafter, China), and Chinese Taipei. They found more consistent norms among the more individualistic societies (the United States and Australia), who were more likely to see positive emotions as desirable and appropriate, and negative emotions as undesirable and inappropriate. The most striking differences related to feelings about pride, which was more likely to be seen as desirable in individualistic cultures, relative to collectivistic ones. Pride has been identified as a culturally sensitive emotion in other studies since (Scollon, Diener, Oishi and Biswas-Diener, 2004; Biswas-Diener, Vittersø, and Diener, 2005). Other emotions (e.g. joy, affection) had fewer variations in terms of their normative interpretation.

[8] In contrast, other covariates, such as good social relationships and social capital, seem to be strongly related to subjective well-being across a wide range of different cultural settings (Oishi, 2000; Fleche, Smith and Sorsa, 2013).

Box 2. Do some cultures value happiness more than others?

Diener and Suh (2000) argue that some measures of subjective well-being, and particularly those that require people to reflect on and evaluate their lives as a whole "*represent the degree to which people in each society are accomplishing the values they hold dear*" (p.4). As such, evaluative and eudaimonic aspects of subjective well-being could be seen as important societal outcomes, regardless of any cultural differences in *what* people choose to value, and thus *how* they achieve good mental states. By contrast, an emphasis on happiness and the emotional components of subjective well-being can be viewed as a cultural phenomenon in itself (Pawin, 2013; Hofstede et al, 2010), and one that can vary either across time or between countries. In particular, a focus on experiencing positive emotions and avoiding negative ones has been argued to be more characteristic of Western individualistic cultures, while emotional balance (or even the importance and acceptance of suffering) might be more emphasized in other non-Western cultures (Bastian, Kuppens, Hornsey, Park, Koval and Uchida, 2012; Uchida, Norasakkunkit and Kitayama, 2004).

There is some evidence for international variations in the importance that people place on certain components of subjective well-being when asked to rate them directly. For example, Diener (2000) reported that respondents in Latin America typically give higher importance ratings to happiness and life satisfaction than those around the Pacific Rim and Asia. Diener, Oishi and Lucas (2003) discuss this in the context of other evidence suggesting that people from East Asian societies may be more willing to sacrifice positive emotions in the short term for longer-term goal achievement. Diener, Napa Scollon, Oishi, Dzkoto and Suh (2000) report on data collected from over 7,000 college students in 41 countries and territories, who were asked to indicate how they thought the "ideal" person would respond across the 5-item *Satisfaction With Life Scale*. On a scale ranging between 5 and 35, the average "ideal" responses ranged from a low of 19.80 in China, 22.09 in Tanzania, and just under 24 in Nepal and Zimbabwe to a high of 31.14 in Australia, 31.02 in Colombia and Spain, and just below 31 in Puerto Rico, Egypt and Norway. Respondents' own levels of life satisfaction meanwhile ranged from high of 26.40 in Colombia to a low of 16.43 in China. Diener, Suh, Smith and Shao (1995) also found that Chinese college students rated life satisfaction, happiness, joy and contentment as less important than Korean and North American college students did.

Bastian et al. (2012) argue that positive affect is seen as more desirable among Western cultures, relative to East Asian cultures. For example, Anglo-European Australian undergraduates reported perceiving stronger social pressure against feeling negative emotions, relative to East Asian undergraduates studying at an Australian university; and this was also replicated in a comparison between undergraduates studying in Australia, and those studying in Japan (Bastian et al., 2012). Perversely, however, at the individual level greater perceived social pressure against feeling negative emotions actually led to negative emotions being reported with *greater* frequency and intensity in this study. For both Australian and Japanese students, greater social pressure against feeling negative emotions was also associated with higher depression and lower life satisfaction – and effect that was largely mediated through negative self-evaluations. In a larger study of over 9,000 undergraduates in 47 countries, Bastian, Kuppens, De Roover and Diener (2014) found that college students living in countries that place higher value on positive emotions tend to report higher levels of life satisfaction. However, for students who tended to experience more negative emotions, living in a country that places a high value on positive emotions had weaker association with life satisfaction..

21. Matsumoto, Yoo and Fontaine (2008) argue that culture plays a key role in the development of norms around emotions, and especially norms around emotional expressions or "display rules" (Ekman and Friesen, 1969; Izard, 1980) – *i.e*. the cultural conventions that govern when emotional expressions can be expected or considered appropriate in different social settings. Matsumoto et al. (2008) examined the display rules governing emotional expressivity among university students in 32 different cultural contexts. The most individualistic cultures (in this study, the United States, Australia, Canada) were, on average, found to have the most emotionally expressive norms, while the least individualistic cultures (Indonesia, Korea, Hong Kong, China, and Malaysia) were found to have the least expressive norms, particularly for positive emotions. Kang, Shaver, Sue, Min and Jing (2003) similarly found higher levels of emotional expression among Euro-American university students, relative to Asian-American, Korean and Chinese students. In a simple bivariate analysis, emotional expressivity was positively correlated with positive affect for all groups of participants, but was only related to life satisfaction among the Euro-American and Asian-American students. Looking at a different aspect of culture, Matsumoto, Nezlek and Koopman (2007) found that greater long-term orientation (*i.e.* cultural values encouraging delayed gratification) was

associated with lower emotional expressivity and fewer physiological sensations associated with emotions. However, these authors also noted that the vast majority of variance (more than 90% in all cases) in emotion ratings was at the individual-level, with only small differences between countries overall.

22. While these studies indicate that cultures may differ in terms of how they both value and express certain emotions, they do not enable clear-cut predictions as to how social norms might affect international comparisons of different subjective well-being *levels*. A naive interpretation might be that where positive emotions and subjective well-being are seen as desirable, people would report higher levels of both. Yet there are many other determinants of subjective well-being outcomes (*e.g.*, income, social connections, health *etc*.) that also vary across countries and potentially disrupt relationships between the outcomes people value and their achievement of those outcomes. Bastian *et al.*'s findings also tentatively indicate that under certain circumstances, strong norms around emotions could actually have perverse effects, particularly among those whose emotional experiences are least consistent with prevailing norms. Few studies appear to have fully unpicked the impact of norms from those other factors that determine differences in subjective well-being levels between countries.

Positive and negative outlooks on life?

23. Cross-country differences in perception-based measures are sometimes attributed to a generalised tendency to view things in either a positive or negative light (also described as generalised optimism and pessimism). For example, Gallup and Healthways (2014), found that a high proportion of the top ten scoring countries on a range of different subjective well-being measures were Latin American, suggesting that this result may "*at least partly reflects the cultural tendency in the region to focus on the positives in life"* (p.5). Diener, Napa Scollon, Oishi, Dzkoto and Suh (2000) attempted to measure the general "positivity" of college students by comparing their views on specific aspects of their experiences in a range of domains (education, recreation, grades and health) and global ratings of these domains as a whole. For example, the students were asked to rate their satisfaction with their professors, textbooks and lectures, as well as their satisfaction with their education as a whole. They found that in Puerto Rico, Colombia and Spain, overall satisfaction scores tended be *more positive* than satisfaction with specific domains of life, while the opposite was true in Japan, Korea, and China. Furthermore, the gap (*i.e.* the residual of the relationship) between the overall satisfaction and the domain-specific evaluations had a significant correlation with life satisfaction (0.57, $p < 0.001$) – meaning that a tendency to view the whole more positively than the sum of its parts was associated with higher life satisfaction overall.

24. Using European Social Survey (ESS) data, Senik (2014) finds evidence of a persistently negative outlook among French respondents, relative six other wealthy European nations[9]. This includes in relation to an evaluative subjective well-being measure, life satisfaction, satisfaction with the economy, satisfaction with national government, satisfaction with democracy, and satisfaction with the education system. France also exhibited a strong positive country fixed effect on a depressiveness index, and on agreement with the statements "it is difficult to be hopeful about the future of the world" and "life is getting worse for most people in the country".[10] First and second generation immigrants to France, however, rarely shared the same view of France as French natives. As a variety of life circumstances are controlled in these analyses, the results were taken to imply that the French have a pervasive tendency to *perceive* their circumstances to be worse, on the whole, than the average perception across the other six countries.

[9] Belgium, Switzerland, Germany, the United Kingdom, the Netherlands and Sweden.

[10] The only measure on which French respondents were reported to be *more* positive than other nations was in relation to satisfaction with the health system.

25. Other work has considered the role of retrospective reporting in generating these perception gaps. Oishi (2002) found no differences between European Americans and Asian Americans in their online reporting of emotions (via experience sampling), but a significant difference in their retrospective reports of satisfaction with the week as a whole – which were more positive in the European American case. Scollon, Diener, Oishi and Biswas-Diener (2004) failed to replicate the retrospective bias found by Oishi (2002), but did note cultural differences in the extent to which the frequency of recalled emotions mapped onto the intensity with which those emotions were reported in an experience sampling study. Specifically, the intensity of positive emotion experienced was related to the frequency of emotions recalled among European American, Indian and Hispanic American respondents, but not among Japanese respondents. Meanwhile, for Japanese and Indian respondents, the intensity of negative emotion was associated with the recalled frequency of negative emotions, whereas this was not the case among Hispanic Americans.

26. While these results support of the notion that some cultures might be more or less likely to view (or remember) their experiences in more positive or negative ways, there is much to investigate in terms of what might lie behind these dispositional appraisal tendencies – and whether past, present or potential future life circumstances may partly be responsible for these effects. At present, it remains unclear whether these differences are best attributed to "bias", or whether they contribute to meaningful differences in how people experience their lives overall.

Religiosity, beliefs, and subjective well-being

27. Religion is often seen as a key transmission mechanism for cultural norms (Rice and Steele, 2004), but there are also wide differences between countries in the extent to people say that religion plays an important role in their lives. Examining national data from the Gallup Daily Poll in the United States, and international data from the Gallup World Poll, Deaton and Stone (2013) report a sharp contrast in the *experiences* of more religious people[11] at the individual level (more religious people tend to report higher life evaluations and more happiness yesterday), and the *places* where more religious people live, which tend to have worse objective living conditions (including health, crime, and income, and lower average levels of life evaluation). Helliwell and Putnam (2004) meanwhile find a positive relationship between the importance of god/religion and both life satisfaction and an evaluative happiness question in Waves 1-3 of the World Values Survey, both at the individual and the country level, after controlling for a range of socio-demographic and life circumstance variables. These findings suggest a role for religiosity in accounting for unexplained variance in subjective well-being outcomes at the country level, after controlling for objective life circumstances.

28. Eichorn (2011) emphasises the importance of the context in which higher levels of religiosity occur, finding that among European and English-speaking countries included in the World Values Survey, individual-level religiosity was only associated with higher life satisfaction in countries where religiosity was higher on average overall. Inglehart, Foa, Ponarin and Welzel (2013) highlight the role that *any* strong belief system might play in supporting higher life evaluations – perhaps through the sense of meaning and purpose such belief that systems provide, or by shifting expectations and promoting perseverance under conditions of hardship. Inglehart *et al*. go on to propose two broad routes to subjective well-being: one through development and prosperity ("getting what one likes") – which includes tolerance, democracy, freedom and social solidarity; and one through adopting belief systems that encourage people to accept whatever their prevailing life circumstances are ("liking what one gets"). They note, for example, the strongly religious tendencies among several Latin American nations whose average reported life

[11] Religiosity is defined by the yes/no answer to a question about whether religion is "an important part of your daily life".

evaluations come close to those of secular Europe, but where objective life circumstances tend to be markedly worse. Lelkes (2006) finds that among a Hungarian sample money is a less important driver of life evaluation among more religious people after controlling for personal characteristics. Helliwell and Putnam (2004) meanwhile emphasise the role that religious practice (such as church attendance) and religious communities can play in building social capital and trust – which can also support higher subjective well-being levels. These findings imply that the relationships between religiosity and subjective well-being are quite complex, and religion could moderate the relationships between life circumstances and people's subjective experiences of those circumstances.

Migrant studies: Separating culture from country circumstances

29. One of the major difficulties in interpreting the results of cross-cultural studies of subjective well-being is the challenge of separating cultural effects from those of country circumstances. To address this problem, several studies have made use of migrant data as a method for isolating cultural effects (*e.g.*, Luttmer and Singhal 2011; Guiso, Sapienza and Zingales, 2006; Fernández and Fogli, 2009; Fernández, 2010; Algan and Cahuc, 2010; Helliwell, Wang and Xu, 2014). The assumption underpinning these analyses is that migrants are likely to share some common cultural factors with their country of birth, but their country circumstances are determined by their country of residence.

30. These migrant studies provide evidence of some "cultural transmission" of subjective well-being across borders and over time (Rice and Steele, 2004; Veenhoven, 1994; Kashima, Kent and Kashima, 2014; Senik 2011; 2014). For example, Rice and Steele (2004) found a 0.62 correlation ($p< 0.01$) between the average happiness reported by 20 nations in the World Values Study, and the average happiness among United States residents with ancestors from those nations (as measured in the United States General Social Survey).[12] Thus, Swedish-origin respondents living in the United States reported some of the highest average levels of happiness, as did Swedish respondents living in Sweden. Conversely, Lithuanian-origin respondents living in the United States had one of the lowest average happiness scores, reflecting the low happiness reported by Lithuanians living in Lithuania. One of the most notable outliers in this analysis was Mexico: while Mexican respondents living in Mexico reported around average happiness levels in the World Values Survey, Mexican-origin respondents living in the United States had the lowest average score of all the immigrant groups examined. In a regression analysis predicting happiness among United States residents of all origins, the happiness level reported in a respondent's country of ancestry had a significant impact (unstandardized coefficient = 0.08, $p< 0.01$), even after controlling for a range of individual-level and aggregate-level variables.[13] This suggests that differences between respondents from different countries of origin were not simply due to differences in these life circumstances. Finally, Rice and Steele found the ancestry effect to be strongest among United States residents who attended church at least once a week –suggesting that religious networks may play a role in cultural transmission.

31. Kashima *et al.* (2014) also found a significant relationship between the life satisfaction of immigrants in Australia and the average level of life satisfaction in their country of origin, after controlling for income, age, sex, education, marital status and English skills. In addition, they report evidence of a significant relationship between immigrant life satisfaction and the overall prevalence of a genetic marker

12 The World Values Survey (WVS) question was coded 1 = not at all happy, 2 = not very happy, 3 = quite happy, and 4 = very happy. The General Social Survey (GSS) question was meanwhile coded 1 = not too happy, 2 = pretty happy, 3 = very happy.

13 In this analysis, the World Values Survey happiness scores for each respondent's country of origin were used as an independent variable. Thus, Swedish-Americans were assigned a score of 3.32, which is the average happiness score for Swedes living in Sweden, while Mexican-Americans were assigned as core of 3.03, the average happiness score for Mexicans living in Mexico.

that has been associated with resilience to life stress in the immigrants' countries of origin (Kashima *et al.*, 2014). This implies that inherited differences in subjective well-being might reflect inherited physical characteristics rather than cultural traits.

32. Senik (2011; 2014) compared the life evaluations (using an "overall happiness" measure) of natives and migrants across seven European countries, using the gap between these groups (after controlling for a variety of life circumstances) to estimate the impact of native "mentality" on life evaluations. Senik found evidence suggesting a more negative mentality among French, German and Dutch natives, but a more positive mentality among Belgian, Swiss, Swedish and British natives. Senik focuses on French native unhappiness (the strongest country mentality effect), ultimately attributing it to "values, beliefs and perception of reality rather than to the country's objective general circumstances" (p.389). However, far from viewing this as a bias or measurement error, Senik regards French unhappiness as evidence of substantive "cultural traits" that exert a genuine impact on how people feel about their lives.

Translation issues and differential item functioning

33. Several methods have been used to consider translation issues indirectly. For example, Veenhoven and Ouweneel (1991) report a high degree of consistency in the rank-order of thirteen countries and regions across three life evaluation questions with different wordings – suggesting that subtle differences in the meaning of specific response options is unlikely to account for these relatively persistent country differences. These same authors also explored differences within countries where more than one language is spoken. For example, they report that French-speaking Canadians were more satisfied than English-speaking Canadians on average, yet English-speakers in the United Kingdom rank above French speakers in France. French-speaking Belgians on the other hand report lower happiness than their Dutch-speaking counterparts, and this is in line with the fact that average happiness in the Netherlands is higher than that in France. Senik (2014) replicates Veenhoven and Ouweneel's results while applying a more robust test in which differences in measurable socio-economic circumstances are also controlled. Senik also finds that, on average, French-speaking Swiss respondents were happier than Italian-speakers and not different from German-speakers living in Switzerland. A study of Mandarin Chinese and English bilinguals also indicated that the language used had little impact on the response given to the Satisfaction with Life Scale (Shao, 1993; cited in Diener and Suh, 2000). Each of these results suggests that there is more to country differences than simple language effects, but they cannot rule out the possibility that language matters in some contexts.

34. Item Response Theory has also been used to investigate equivalence in measures translated into different languages. Oishi (2006) examined responses from United States and Chinese college students in relation to the *Satisfaction with Life Scale*. Four out of the five items that make up the scale were shown to have different properties for the different samples (*i.e.*, United States and Chinese respondents with the same latent score on life satisfaction would differ in the probability with which they would endorse specific items). However, when responses were re-weighted to such that the most comparable items had the greatest influence on scores, the mean average difference between the two groups decreased (from 1.18 to 0.71 on a 5-35 point scale), but it was not eliminated, suggesting that these mean differences are not solely due to differential item functioning. Vittersø, Biswas-Diener and Diener (1995) found that one item on the *Satisfaction with Life Scale* was particularly responsible for more extreme responding among Greenlanders relative to Norwegians, implying that this particular item had perhaps not translated well, either linguistically or culturally.

35. In the measurement of affect and experienced well-being, some specific items have also been identified as functioning differently in different languages or cultures. Several authors have reported that "pride" appears to be seen in a less positive light among East Asian (e.g. Chinese and Chinese Taipei) respondents, when compared to more individualistic (e.g. North American and Australian) respondents

(Eid and Diener, 2001; Oishi 2006). Although this could be an issue of translation, it is usually interpreted as a difference in the cultural acceptability and desirability of pride as an emotion. Thompson (2007) used a combination of bilingual focus groups and factor analysis to develop a short version of the Positive and Negative Affect Schedule. On the basis of evidence gathered from 12 different nationalities, the words *enthusiastic, strong, interested, excited, proud, scared, guilty, jittery, irritable* and *distressed* were rejected from the final measure, either because they had ambiguous meaning for some respondents (e.g. both positive and negative connotations) and/or because they performed poorly in terms of factor structure. Ultimately, the words *alert, inspired, determined, attentive* and *active* were selected to measure positive affect, and the words *upset, hostile, ashamed, nervous* and *afraid* were selected to measure negative affect. Although not widely tested, these findings imply that some subjective well-being questions have better cross-cultural comparability than others, and should thus be preferred in international comparisons of experienced well-being.

Response styles and differences in scale use

36. A wide range of different response biases and styles have been investigated and catalogued in relation to self-report measures (OECD, 2013a). If randomly distributed, such biases would weaken the 'signal' and increase the 'noise' in subjective well-being measures without necessarily posing a fundamental threat to the comparability of measures between groups (provided that the margins for error remained small). However, if cultural groups systematically differ in the likelihood of exhibiting these response styles, this can be more problematic. Two characteristic response styles – acquiescence and extreme responding – have been investigated in particular in cross-cultural studies. Acquiescence is the tendency to repeatedly use the same response category on yes/no scales, regardless of the item content (sometimes called yay-saying or nay-saying). Extreme responding refers to the repeated preference for the use of scale extremes (e.g. 0 or 10 on an 11-point numerical scale) and contrasts with moderate responding (which is a tendency to use response categories clustered around the scale midpoint). It is not particularly clear *why* different cultures might have different susceptibility to these response biases, but they could feasibly be related to norms around self-presentation, such as moderate responding to display humility, or yay-saying to show conformity (a trait thought to be more highly prized in "tight" rather than "loose" cultures – Gelfand et al., 2011).

37. Cross-cultural studies have previously suggested that Mexican respondents may be more likely to exhibit acquiescence than United States respondents (Ross and Mirowsky, 1984); East Asian origin Canadians may be more likely than European Canadians to show more moderate responding (Hamamura, Heine and Paulhus, 2008); Japanese and Chinese respondents are more likely than United States respondents to use the scale midpoint when reporting on positive emotions (Lee, Jones, Mineyama and Zhang, 2002); stronger and more polarised responses may be more likely in Middle Eastern Arab societies (e.g. Kuwait, Palestinian Authority, Egypt and Jordan) and less likely among East and Southeast Asian cultures (e.g. Indonesia, Japan, China and Korea) (Minkov, 2009b); and United States respondents may be more likely to use the most extreme response category (7 on a 1-7 scale) relative to Chinese Taipei and Japanese respondents, while Japanese respondents may be more likely than United States respondents to use the scale midpoint (Chen, Lee and Stevenson, 1995). However, in many of these studies it has proved very difficult to separate valid differences in experience from spurious differences associated with response styles (see OECD, 2013a).

38. The *vignette method* attempts to more precisely pinpoint both individual and cultural differences in scale use. In this technique, respondents are asked to rate the subjective well-being (or financial satisfaction, or health *etc.*) of one or more fictional characters, whose life circumstances are described in a short vignette. Differences in how respondents rate the vignettes are assumed to reflect characteristic differences in scale use (since each vignette should in theory have the same underlying meaning for all

respondents) – thus discrepancies in how vignettes are scored can be used to adjust respondents' self-reports of aspects of their own lives.

39. Vignette-based adjustments can change the rank ordering of countries on several different types of satisfaction measures. For example, Kristensen and Johansson (2008) used the vignette method to adjust job satisfaction scores among seven different European countries. The most dramatic changes were for Finland (which moved from 1st place to 4th) and the Netherlands (from 4th place to 1st), while other countries moved by only 1 or 2 places. Angelini, Cavapozzi, Corazzini and Paccagnella (2014) examined life satisfaction in ten European countries and found that vignette-based adjustment led to a change of rank ordering for the Netherlands (up two places); France (up four places); Spain and Italy (up one place); the Czech Republic, Poland and Belgium (down two places); and Denmark (down four places). Kapteyn, Smith and Van Soest (2013) examined satisfaction with income among Dutch and United States respondents, and found that the apparent difference in income satisfaction in the raw scores disappeared after performing vignette-based adjustments. On the other hand, Dutch life satisfaction ratings that were re-scaled using United States thresholds (obtained through vignettes) produced little difference in the mean average score (4.07 instead of 4.06 on a 1-5 scale) despite producing small shifts in the number of respondents classified as very satisfied or very dissatisfied (Kapteyn, Smith and Van Soest, 2009).

40. The vignette method is an important and expanding area of research, but up until now subjective well-being vignettes have only been used with relatively limited samples, concentrating on comparisons among Europeans, or Europeans and North Americans. It is therefore unclear whether global rankings of subjective well-being outcomes would be markedly re-ordered as a result of applying vignette-based adjustments. The vignette method also suffers from several limitations (OECD 2013a), including the fact that real differences in life circumstances and quality of life in a country could affect the way that vignettes are appraised by respondents.[14] If country-level differences in public policies and services – or in people's expectations and aspirations - matter to how people feel about life, there is a risk that vignette-based adjustments of subjective well-being scores risk eliminating meaningful differences between groups, in addition to eliminating systematic response scale biases. It is therefore important to better understand *what causes* the differences in response scale-use observed through these methods before systematically applying this type of adjustment.

2.4. Implications

41. The literature reviewed above highlights the wide variety of roles that culture can play in subjective well-being – as well as the great difficulty associated with separating cultural "impact" from cultural "bias". One important conclusion is the need to control for as many objective life circumstances as possible before attributing a result to the effects of "culture". A second conclusion is the importance of approaching the issue of culture – and cultural bias - from different empirical angles to see if they each tell a consistent story. A third, conclusion is the need to go beyond convenience samples of undergraduates, and beyond simple binary comparisons of countries, to advance understanding of how culture affects the comparability of subjective well-being scores in general (rather than just among specific populations, or specific pairs of countries). In particular, the reference group of countries matters – and the ideal reference group for understanding cultural effects is arguably a global sample. Finally, if the goal is to interpret

[14] For example, the vignettes used in Angelini et al. (2014) describe the overall health and circumstances of two characters aged 63 and 72. Something as simple as differences in life expectancy, retirement age, and out-of-pocket medical expenses could influence how these vignettes are appraised in different countries. Similarly, the method used by Kapteyn, Smith and Van Soest (2013) requires making the assumption that being on the median income level should mean the same thing in the Netherlands as it does in the United States.

average country differences in subjective well-being, it is important to get a handle on the overall *size* of the likely cultural effect, in absolute terms, as well as the extent to which cultural effects might lead to a re-ordering of country rankings.

42. Disregarding, for now, the source of variations and whether they are truly "cultural" in origin, a few predictions about the worldwide distribution of subjective well-being emerge: more economically developed Latin American countries might be expected to have reasonably high levels of subjective well-being; East Asian countries might be expected to show greater tolerance for negative affect, greater balance between positive and negative emotions, and lower life evaluations; Eastern Europe, the Caucasus and Central Asian (EECCA) countries might be expected to have lower subjective well-being; the United States (and perhaps other English-speaking countries) might be expected to report elevated levels of positive affect and life evaluation; while France might be expected to have lower life evaluations, at least relative to other wealthy and happy European nations.

43. How much of the cross-country variance in subjective well-being scores around the world might be "cultural"? Given the variety of different methods, measures and samples used in the literature to date, getting a sense of the overall size of cultural impacts is difficult. Table 1 below provides examples from the literature involving large, multi-national community-based or nationally representative samples, to give some sense of the magnitudes involved, and what might be expected in the analyses that follow.

Table 1: How much did culture matter for cross-country comparisons of subjective well-being?

Summary of select results from the literature

Source	SWB outcome	Sample	Empirical approach	Summary of findings
Senik (2014)	Life evaluation (ESS overall happiness, 0-10 scale)	7 wealthy European countries, each with >15% migrants in the sample	Comparison of migrant and native experiences, controlling for a range of life circumstances.	National mentality might produce differences of a maximum 0.53 scale points on a 0-10 scale
Rice and Steele (2004)	Life evaluation (WVS 1-4 happiness scale; GSS 1-3 scale)	Migrants living in the United States from 20 (mainly European) different nations	Predicting current life evaluation (GSS) from average life evaluation in migrants' country of origin (WVS)	A one-unit change in life evaluations in migrants' country of origin (measured on the WVS 1-4 happiness scale) was associated with a 0.08 unit change in their GSS scores (1-3 scale).
Minkov (2009a)	Life evaluation (WVS, 1-4 happiness scale; WVS 1-10 life satisfaction scale)	90 countries (happiness); 82 countries (life satisfaction), drawn from the WVS.	Cross-sectional stepwise regression, controlling for a range of life circumstances	None of the cultural values variables tested contributed significantly to the prediction of life satisfaction. Cultural values explained 11% of the variance in evaluative subjective well-being (measured with an "overall happiness" scale), with 4% attributed to the importance of leisure; 3% to the importance of thrift as a value for children; 2% to the importance of family; and a further 2% to the importance of friends.
Helliwell, Barrington-Leigh, Harris and Huang (2010)	Life evaluation (Gallup World Poll 0-10 Cantril Ladder)	Global sample, up to 125 countries (Gallup World Poll)	Regional and country fixed effects estimated in a regression model (**NB**: not capturing "culture" but possibly indicating upper bounds)	After controlling for a range of differences in life circumstances, regional fixed effects accounted for between 0.3 and 1.1% of the variance explained in life evaluations, with a significant and positive coefficient for the South and Central America region. Individual dummies for every country added between 2.5 and 4% to the variance explained.
Angelini *et al.* (2014)	Life evaluation (How satisfied are you with your life in general?" 5-point scale with verbal labels)	Older populations in ten European countries (Study of Health, Ageing and Retirement in Europe – SHARE)	Anchoring vignettes used to adjust for individual differences in response scale use	Country fixed effects (over and above controls for objective life circumstances) were reported before and after data were adjusted for differential response scale use. The largest differences were for Denmark (0.581 unadjusted, dropping to 0.056 when adjusted); France (from -0.079 unadjusted to 0.293 adjusted); Italy (from -0.360 to -0.087 adjusted); and the Netherlands (from 0.205 to 0.500 adjusted).

3. The Descriptive Picture

3.1. Levels of subjective well-being around the world

44. Several recent studies have documented patterns of subjective well-being levels among countries, including the *World Happiness Report* (Helliwell, Layard and Sachs, 2012; 2013) and *How's Life?* (OECD 2011; 2013b), both of which draw on the Gallup World Poll (Box 3). The World Values Survey data set has also been used extensively to explore international patterns of life satisfaction.

Box 3. The Gallup World Poll

The Gallup World Poll is a large scale repeated cross-sectional survey which has sampled more than 150 countries and territories (representing 98% of the world's adult population) since 2006. As of 2014, eight waves of data have been collected (2005/06, 2007, 2008, 2009, 2010, 2011, 2012, 2013), although not all countries and territories have participated in all waves. The frequency of the survey is usually annual, but sometimes several waves are collected within a year (*e.g*. four waves in the United Kingdom, Egypt, Germany and India in 2012). Sample sizes are generally limited to around 1,000 respondents in each country or territory, with some exceptions (*e.g.* 2000 for some large countries such as the Russian Federation and China). This small sample size limits comparisons across population sub-groups within countries.

The Gallup Organization generally employs face-to-face interviews in Central and Eastern Europe, Latin America, EECCA countries, and nearly all of Asia, the Middle East and Africa, and telephone surveys in developed countries where telephone coverage is at least 80% of the population. China and Lebanon are the only countries where a mixed-mode (both face to face and telephone) interview method is used. The sample is ex-ante designed to be nationally representative of the entire population aged 15 and over (including rural areas), but non-random response patterns are a likely source of ex-post bias. This issue is addressed by the post-stratification weights provided by Gallup. The weighting procedure has multiple stages: first, geographic disproportionalities (*e.g.* due to oversampling in major cities) are adjusted; second, an adjustment is applied for sample selection probabilities (number of adults in the household; landline and mobile dual users); and third, the weights adjust the data to make them more representative of the general population, correcting any sampling biases in relation to age, gender and educational attainment.

The survey is based on a common questionnaire designed with the help of several academic experts[15]. One distinctive feature of the survey is that it combines information on both subjective well-being, and on people's self-assessments of the most important objective determinants of subjective well-being. The core questionnaire asks respondents a broad set of questions on socio-economic background, law and order, migration, civic engagement, personal health, and material living conditions. One key subjective well-being measure included is the Cantril ladder (or Ladder of Life). This asks respondents to imagine a ladder with rungs from 0 to 10, where 10 is the best possible life for them and 0 is the worst possible life. Respondents are asked to indicate where on the ladder they would place their own life. While this question is only one way to measure life evaluation, it is referred to as *life evaluation* from here on. The core questionnaire also includes a series of questions about affect and experienced well-being "yesterday". These include whether respondents experienced a lot of anger, sadness, worry, enjoyment, feeling well-rested, and laughing or smiling. Unfortunately, several questions (*e.g.* concerning life satisfaction and eudaimonia) were not asked in all waves, but only in some waves and/or in some locations.

Overall, the Gallup World Poll dataset used in this report included 1,220,429 observations, covering 161 countries and territories over 8 years, totaling 1,002 country-years or 1,131 country-surveys. In several of the later analyses, the sample size has been roughly halved due to missing observations. One major loss of sample size is due to the absence of employment variables before 2009, which leads to the exclusion of Cuba, Puerto Rico, Guyana, Belize, and Namibia. Further details of the sample and some basic descriptive statistics are provided in Annexes 1 and 2.

Note: For most countries and territories the Gallup World Poll aims to be representative of all residents, but for a small number of countries (e.g., Qatar and Bahrain) only Arab residents are included. In some countries (e.g. the United States) the sample is adults aged 18 and older.

[15] Among others, Nobel Prize laureate Daniel Kahneman (Eugene Higgins Professor of Psychology at the Woodrow Wilson School at Princeton University), Jeffrey D. Sachs (Director of The Earth Institute, Quetelet Professor of Sustainable Development and Professor of Health Policy and Management at Columbia University) and Angus Deaton (Dwight D. Eisenhower Professor of International Affairs, and Professor of Economics and International Affairs at the Woodrow Wilson School and Department of Economics, Princeton University).

3.1.1. The OECD picture

45. In recent years life evaluations among OECD members have tended to be highest (around 7.5 on a 0-10 scale) among Nordic countries, Switzerland, Canada, the Netherlands and Austria (OECD 2011; OECD 2013b; OECD 2014). Mexico was also among the top ten scoring countries in 2012 and 2013. The lowest life evaluations in the OECD (6 and below on a 0-10 scale) are observed among Southern and Eastern European countries, including Greece, Portugal, Hungary, Estonia, Poland, the Slovak Republic, Slovenia and Italy. Turkey, Japan, and Korea also report scores below the OECD average. Among emerging economies often included in OECD analyses, life evaluations tend to be above the OECD average in Brazil, but below it in the Russian Federation – hereafter Russia, China, South Africa, India and Indonesia. The gap between the highest and lowest life evaluations in the OECD is generally around three scale points on a 0-10 scale.

46. OECD analyses have also used Gallup World Poll data to examine the extent to which countries exhibit a positive affect balance, measured by the proportion of people in a country who report experiencing more positive than negative feelings. This is measured through survey items in which people indicate, through a simple yes/no response format, whether they experienced the following feelings "a lot" yesterday: enjoyment, well-restedness, smiling and laughing (summed to estimate positive affect), and sadness, anger and worry (summed to estimate negative affect). On this measure, Nordic countries, the Netherlands, Austria and Mexico exhibit scores towards the top end of the distribution, and Southern and Eastern European countries often cluster towards the bottom end (OECD 2011). Nonetheless, there are some countries in which affect scores and life evaluations produce very different rankings. For example, Japan, Korea and Poland move from scoring below OECD-average on life evaluations to above OECD-average on affect balance. In contrast, Canada, Switzerland, Israel, and Finland move from relatively high scores on life evaluations to markedly lower rankings on affect balance (see also Exton and Smith, forthcoming).

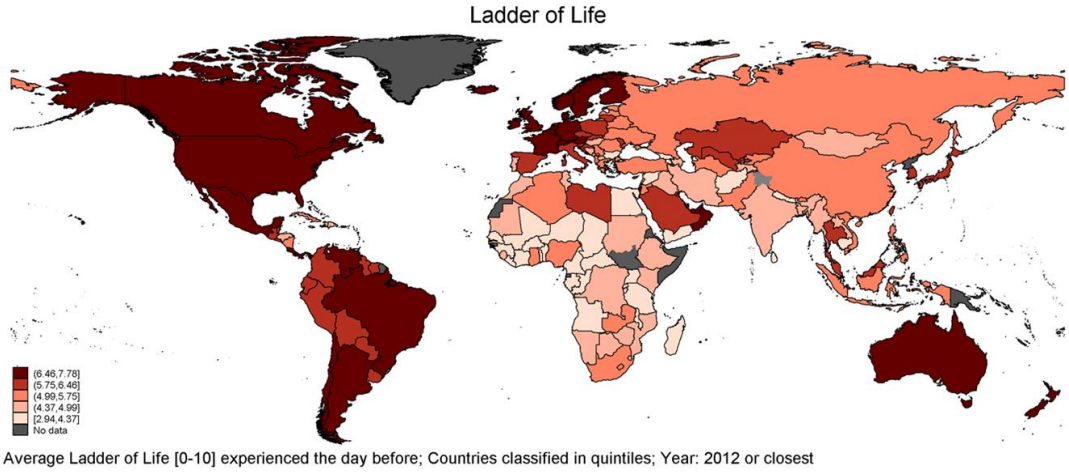
3.1.2. Worldwide patterns of subjective well-being

47. Figure 1 shows the distribution of life evaluations worldwide in 2012 (or the closest available year), with data drawn from the Gallup World Poll.[16] Detailed findings for all of the maps that follow can be found in Annex 3. The gap between the lowest and highest average levels of life evaluation around the world is around five scale points on a 0-10 scale. While in the OECD, it is relatively rare to see life evaluation scores below the scale midpoint (5), the global picture indicates scores below the midpoint to be relatively common among the most political unstable and least economically developed countries and territories. The highest life evaluations are generally found in the Americas, Australia and New Zealand, and Northern Europe. The lowest life evaluations are typically found in central and sub-Saharan Africa, South Asia (including Afghanistan, India, and Bangladesh), and parts of the Middle East (Iraq, the Syrian Arab Republic – hereafter Syria, the Islamic Republic of Iran – hereafter Iran, and Yemen).

16 All maps were drawn with Stata's user-written program "spmap", and using Creative Commons geographical data provided by Bjorn Sandvik from thematicmapping.org.

Figure 1: Life evaluations: a global picture

(2012 or closest year)

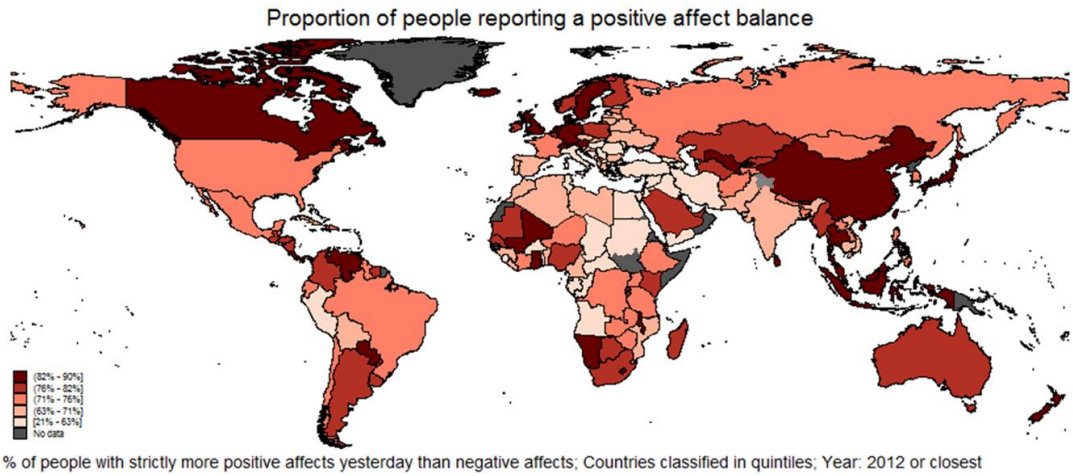


Source: Gallup World Poll

48. A clear global pattern is much less evident for affect balance (Figure 2). The proportion of people reporting a positive affect balance (*i.e.* more positive than negative feelings) yesterday generally ranges from 70% to nearly 90% within the OECD. In 2012, the place with the lowest proportion of positive affect balance was Syria (21%), followed by Iraq (41%), Armenia (45%), Iran (46%) and Sierra Leone (48%). The highest were Kuwait, Trinidad and Tobago, and Paraguay (90%), followed by Uzbekistan (88%) and the Bolivarian Republic of Venezuela (hereafter, Venezuela) (87%).

Figure 2: Affect balance yesterday

(2012 or closest year)



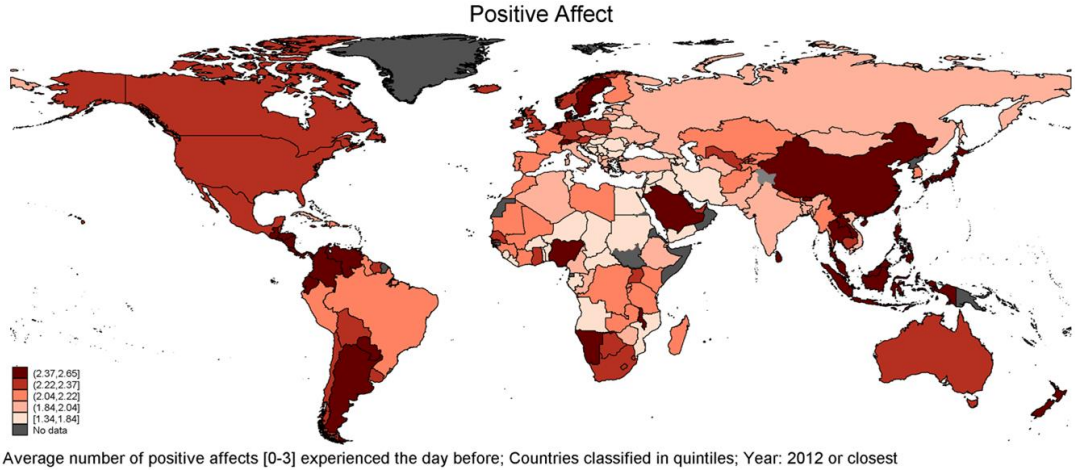
Source: Gallup World Poll, authors' calculations

49. When distinguishing positive and negative experiences (Figures 3 and 4 below), countries in the Americas, New Zealand and Australia, and parts of Northern Europe report some of the highest levels of positive emotion in the world. In contrast with life evaluations, several Asian countries also report high

positive affect, including China, Japan, Indonesia and Philippines. The likelihood of reporting strong positive affect varies substantially within Africa: several central African countries report some of the lowest levels of positive affect in the world, but there are pockets of more positive experience. Other regions with relatively low levels of positive affect include EECCA, as well as parts of the Middle East and central Asia (e.g. Syria, Iraq, Iran, Yemen, and Afghanistan).

Figure 3: Enjoyment, feeling well-rested, and laughing/smiling around the world

(2012 or closest year)

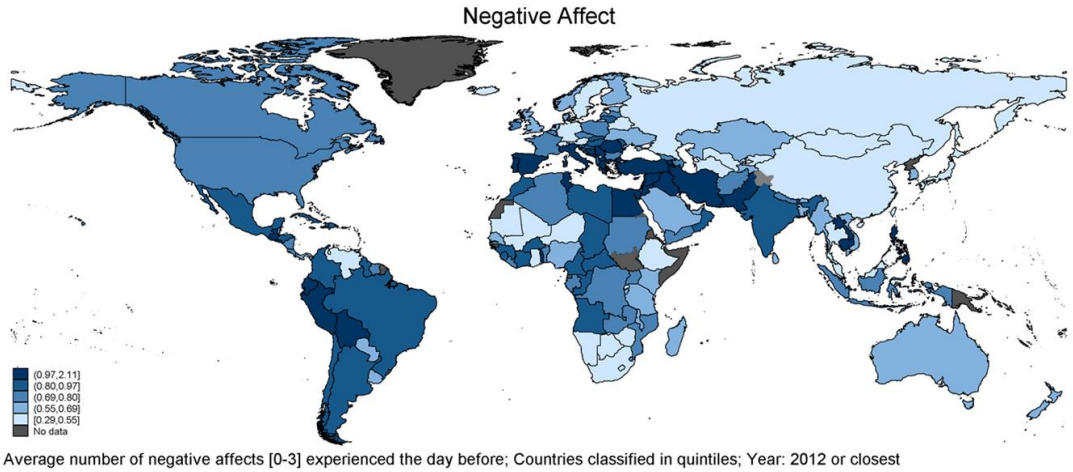


Source: Gallup World Poll

50. Negative affect mirrors positive affect to some extent, but with some exceptions (Figure 3). The likelihood of reporting strong negative emotions is highest in parts of the Middle East (particularly Syria, Iraq, Egypt, and Iran) as well as parts of Southern and Eastern Europe, Latin America (especially Peru and the Plurinational State of Bolivia – hereafter Bolivia) and parts of South Asia (Pakistan, Bangladesh, Cambodia). Some regions and countries (*e.g.* the Americas; Philippines and Lao People's Democratic Republic – hereafter Lao DR) report relatively high levels of both positive and negative affect, while other regions and countries (*e.g.* EECCA; Mongolia) report relatively low levels of both.

Figure 4: Sadness, anger and worry around the world

(2012 or closest year)



Source: Gallup World Poll

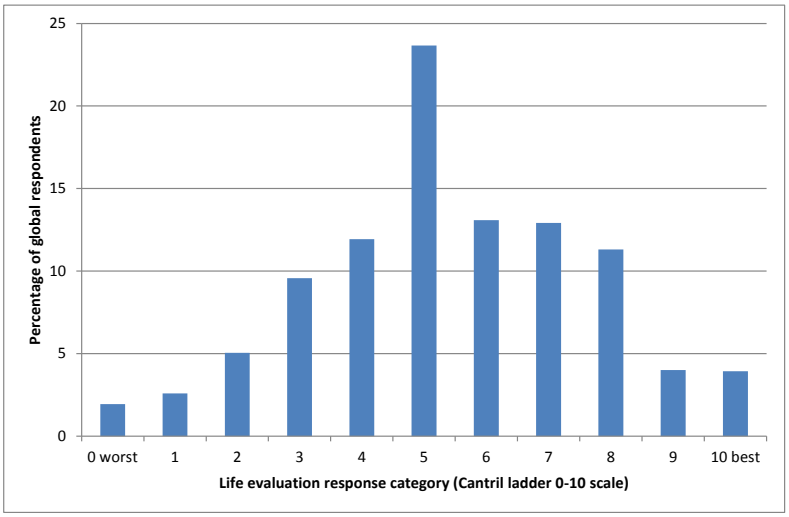
3.2. The distribution of life evaluations, worldwide

51. Focusing only on country average levels of subjective well-being masks substantial differences in terms of how subjective well-being is distributed within countries. The narrow range of subjective well-being scores that have typically been observed among wealthy countries (e.g. Senik, 2014; Clark and Senik, 2012), and the strong skewness visible in the distribution of subjective well-being in these countries has led some authors to propose a "set-point" theory for subjective well-being (e.g. Cummins, 2003). Under this view, subjective well-being tends towards a relatively fixed and relatively high score in the long-run, regardless of life circumstances and events. This view is, however, challenged by the fact that, even in the happiest and wealthiest countries of the world, between 5% and 30% of the population have low levels of life evaluations (Annex 4) – although it remains possible that these are temporary rather than permanent states for the individuals involved. A more fundamental challenge to set-point theory lies in the global distribution of life evaluations (Figures 1, and 5) which highlights a very wide range of country experiences.

52. Figure 5 shows the distribution of life evaluations in the Gallup worldwide sample, pooled across 2006-2013.[17] Worldwide, life evaluations are approximately normally distributed, with 5 (the scale midpoint) as the modal response category. There is, however, a slight negative skew: people are more likely to report above than below the midpoint, and the global mean value is 5.423. When scores are broadly grouped into "low", "medium" and "high" categories, 31% of the worldwide sample have low levels of life evaluations (scoring in the 0-4 range), 37% have medium levels (scores of 5 or 6), and 32% have high levels (scoring in the 7-10 range). This pattern remains broadly consistent[18] when individual years are examined (see Annex 4).

Figure 5: The distribution of life evaluations across the Gallup World Poll sample

(Cantril Ladder 0-10 scale, 2006-2013 pooled results)



Source: Gallup World Poll.

17 Note that these Figures are drawn from the sample only, and have not been population-weighted, thus inferences to the global population cannot be made.

18 It is, however, important to note that the World Poll is a tattered panel, with data for different countries and territories missing in different years, and with an increasing number of countries and territories sampled as the years go by.

53. Life evaluations within countries, however, do not generally follow a normal distribution: there are large differences in the distribution both within and between different world regions. In the most economically developed countries, life evaluations tend to have a long tail on the left hand side. In the least developed countries, the pattern is the mirror opposite. There are also differences between countries in whether life evaluations are distributed in a unimodal or a bimodal pattern.

54. Annex 5 shows life evaluation responses from countries and territories included in the Gallup World Poll, grouped into three broad categories. Western Europe, Northern America and Australasia are the regions with the largest proportion of respondents with high life evaluations (over 80% in Switzerland, the Netherlands, Iceland, Sweden, Norway and Denmark). Sub-Saharan Africa is the region with the lowest proportion of high life evaluations overall, ranging from 26% in Nigeria to just 2 or 3% in Benin, Niger and Rwanda. Countries with 10% or fewer people reporting high life evaluations include Tajikistan, Afghanistan, Cambodia and Sri Lanka (Asia), Democratic Republic of the Congo, Sudan, Mauritania, Uganda, Gabon, Chad, Burkina Faso, Comoros, Guinea, Senegal and Madagascar (sub-Saharan Africa).

55. Three-quarters of all Syrian respondents report low life evaluations, as do between 37-50% of people in Palestinian Authority, Lebanon, Iran, Iraq, Egypt and Yemen. In sub-Saharan Africa, the majority of countries have more than 50% of respondents reporting low levels of life evaluations – rising to 70% or more in Senegal, Niger, Madagascar, Rwanda and Benin. More than 50% of the population in Cambodia, Afghanistan, Nepal, and Sri Lanka also report low life evaluations. The majority of countries in Western Europe, Northern America and Australasia have 10% or fewer respondents reporting low life evaluations, as do Costa Rica, Mexico and Venezuela (Latin America), Thailand and Singapore (South East Asia), United Arab Emirates, Israel, Kuwait and Qatar (in the MENA region).

3.3. International differences in emotional experience

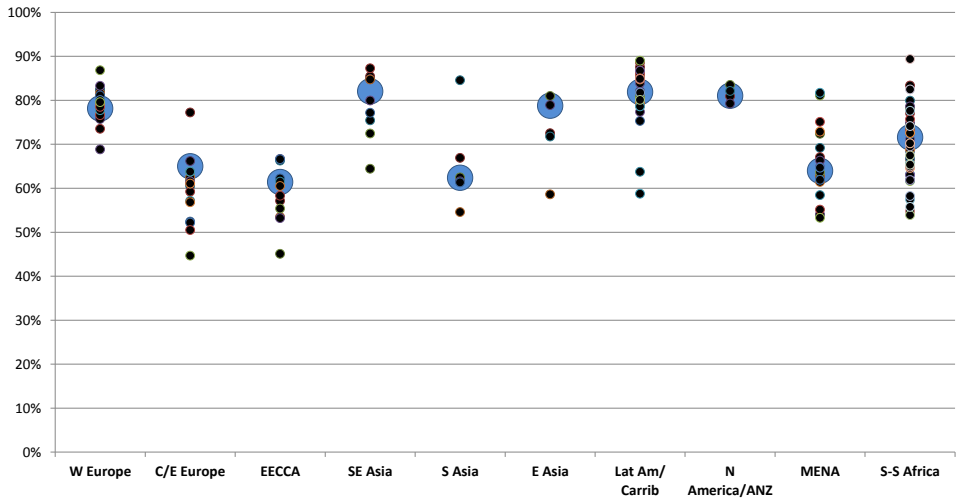
56. In the case of affect, positive experiences tend to be more frequently reported than negative ones, and in almost all countries and territories a majority of the population report a positive affect balance (*i.e.* more than 50% of respondents reporting that positive emotions outnumber negative ones on the previous day). In the Figures that follow, countries and territories are grouped into ten broad world regions, full details of which are provided in Annex 6.

Positive affect and experiences

57. Figure 6 summarises the percentage of respondents who reported having smiled or laughed a lot yesterday (responses are pooled across all available years, from 2006-2013). Positive responses range from around 45% in Serbia and Georgia, to around 89% in Namibia and Panama. With the exception of North America, Australia and New Zealand, there are generally large variations within regions. The population-weighted regional averages (large blue markers) suggest lower proportions of positive responses (60-65%) in Central and Eastern Europe, EECCA, South Asia, and in the Middle East and North Africa (MENA). Higher rates of positive responses (75-80%) are found in Western Europe, Southeast Asia, East Asia, Latin America and the Caribbean, and North America, Australia and New Zealand.

Figure 6: Percentage of respondents reporting having smiled or laughed a lot yesterday

(2006-2013 pooled results)



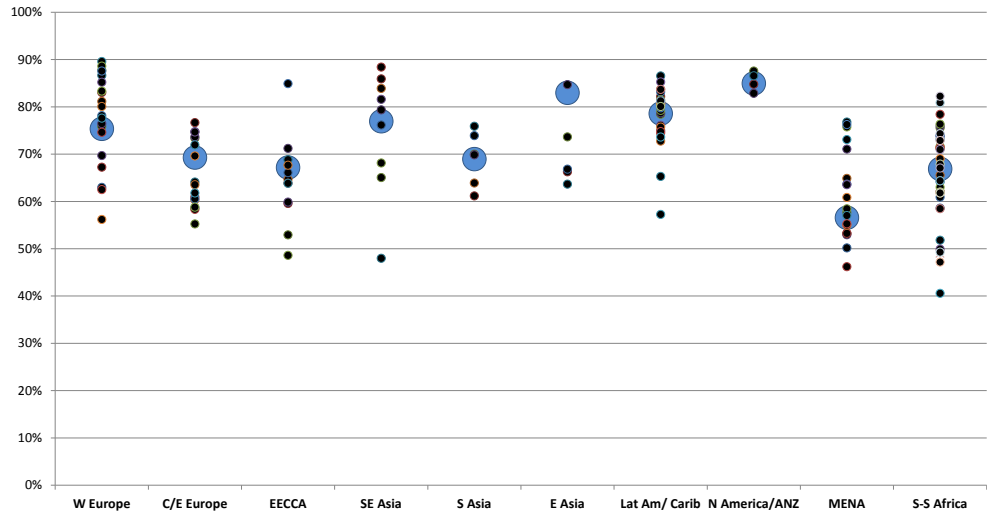
Note: Small black markers represent data for individual countries or territories within each region. Large blue markers represent population-weighted averages for each region.

Source: OECD calculations, based on Gallup World Poll.

58. Experiences of enjoyment follow a reasonably similar pattern to that of smiling and laughter, although the variation both within and among regions is wider for this measure. Responses range from a low of 41% in Sierra Leone to around 90% in Denmark and Iceland. The MENA region has the lowest population-weighted regional average, reflecting particularly low scores in Iraq and Syria. While Sub-Saharan Africa also includes several very low-scoring countries (Sierra Leone, Liberia, Gabon, Togo and Mozambique), the regional mean is more similar to those of South Asia, FSU, and Central and Eastern Europe – reflecting a wide diversity of experience in the Sub-Saharan region. Population-weighted regional averages for enjoyment are highest in North America, Australia and New Zealand, followed by East Asia, and then Latin America and the Caribbean.

Figure 7: Percentage of respondents who reported feeling enjoyment a lot yesterday

(2006-2013 pooled results)



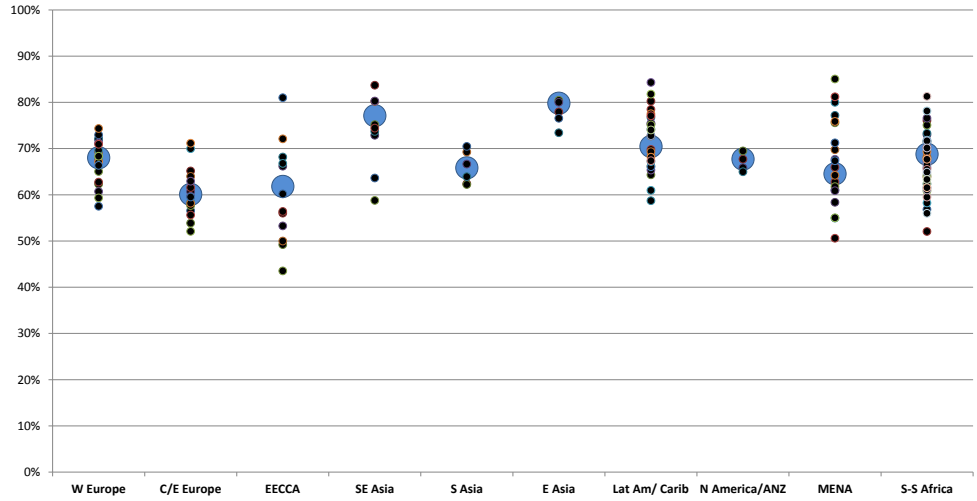
Note: Small black markers represent data for individual countries or territories within each region. Large blue markers represent population-weighted averages for each region.

Source: OECD calculations, based on Gallup World Poll.

59. A slightly different regional pattern emerges in the case of feeling well-rested yesterday. Figure 8 shows that East Asia and Southeast Asia have the highest regional averages, but Western Europe, North America, Australia and New Zealand and Latin America and the Caribbean score lower on this measure. Central and Eastern Europe, the Caucasus and Central Asia have the lowest regional averages. At the country level, scores range from 44% in Armenia, through to 85% in Kuwait.

Figure 8: Percentage of respondents who reported feeling well-rested a lot yesterday

(2006-2013 pooled results)



Note: Small black markers represent data for individual countries or territories within each region. Large blue markers represent population-weighted averages for each region.

Source: OECD calculations, based on Gallup World Poll.

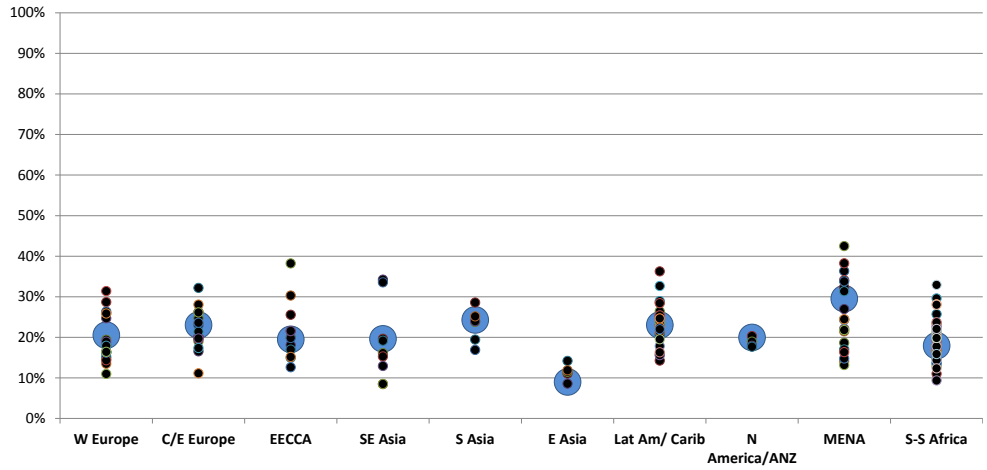
60. Previous research on cross-cultural differences in emotional experience might predict lower levels of positive emotions among Asian countries in particular. However, there seems to be little to support this in the results shown here. On the contrary, East and Southeast Asia have among the highest population-weighted regional averages across all three measures considered. This may be something to do with the specific emotions included in these analyses, or differences in the samples involved, as much of the previous work in this area has relied on small-scale convenience samples. There does, however, appear to be a trend for Central and Eastern Europe, and other EECCA countries to report lower levels of positive emotions. This is also generally true for South Asia and MENA countries. Western Europe, Northern America, Australia and New Zealand are generally characterised by higher levels of smiling/laughter and enjoyment, but more average scores in terms of feeling well-rested yesterday.

Negative affect and experiences

61. Figure 9 shows the percentage of respondents who reported feeling a lot of sadness yesterday. Scores range from a low of 9% in China, Thailand and Myanmar, through to 43% in Iran. The population-weighted regional average is generally hovers around 20%, but is markedly lower in East-Asia, and notably higher in the MENA region, with particularly high levels of sadness reported in Iran, Iraq and Syria.

Figure 9: Percentage of respondents who reported feeling sadness a lot yesterday

(2006-2013 pooled results)



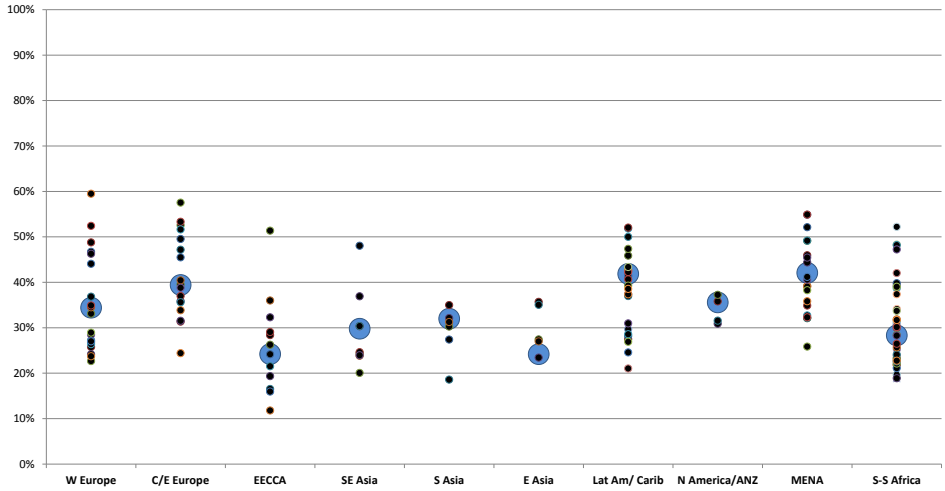
Note: Small black markers represent data for individual countries or territories within each region. Large blue markers represent population-weighted averages for each region.

Source: OECD calculations, based on Gallup World Poll.

62. In the case of worry (Figure 10), the MENA region also has the highest regional average, closely followed by Latin America and the Caribbean, and Central and Eastern Europe. East Asia and EECCA report the lowest levels of worry, on average. There is, however, a high degree of variation within regions on this measure. The lowest levels of worry are reported in Turkmenistan (12%) and the highest levels in Malta (60%).

Figure 10: Percentage of respondents who reported feeling worry a lot yesterday

(2006-2013 pooled results)



Note: Small black markers represent data for individual countries or territories within each region. Large blue markers represent population-weighted averages for each region.

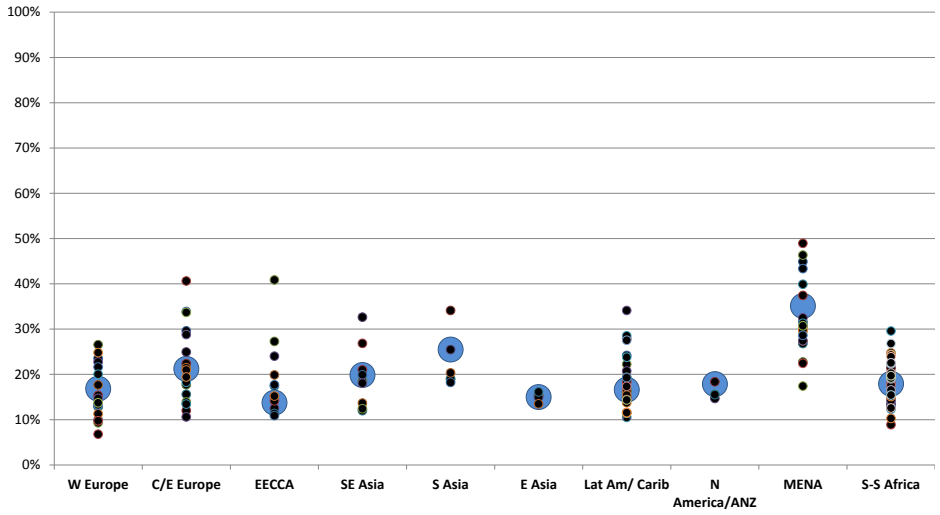
Source: OECD calculations, based on Gallup World Poll.

63. In the case of anger (Figure 11), the MENA region once again has the highest population-weighted regional average. While most regional averages lie between 15-20%, the MENA region has a population-weighted average of 35%, which is almost 10% higher than any other region. The lowest level

of anger is reported in Finland (7%), while the highest level is reported in Iraq (49%) followed by Iran (46%) and Syria (45%).

Figure 11: Percentage of respondents who reported feeling anger a lot yesterday

(2006-2013 pooled results)



Note: Small black markers represent data for individual countries or territories within each region. Large blue markers represent population-weighted averages for each region.

Source: OECD calculations, based on Gallup World Poll.

3.4. Taking positive and negative experiences together

64. The detailed analysis of positive and negative affect offers some insight when interpreting affect balance scores across the world (Figure 2 in the previous section). The low affect balance scores observed across EECCA and central and Eastern Europe are generally driven by *low levels of emotion overall*. In contrast, the MENA region has quite clearly the highest level of negative experience, and a relatively low level of positive experience – although the region itself is extremely diverse. Contrary to previous research, the strongly positive affect balance scores in East and Southeast Asia are driven by high levels of positive emotion coupled with very low levels of negative emotion. For Western Europe, Northern America and Australasia, and Latin America and the Caribbean, high levels positive experiences are offset to some extent by fewer feelings of well-restedness, and higher feelings of worry. Sub-Saharan Africa is one of the most diverse regions, characterised by a wide range of responses for both positive and negative experiences.

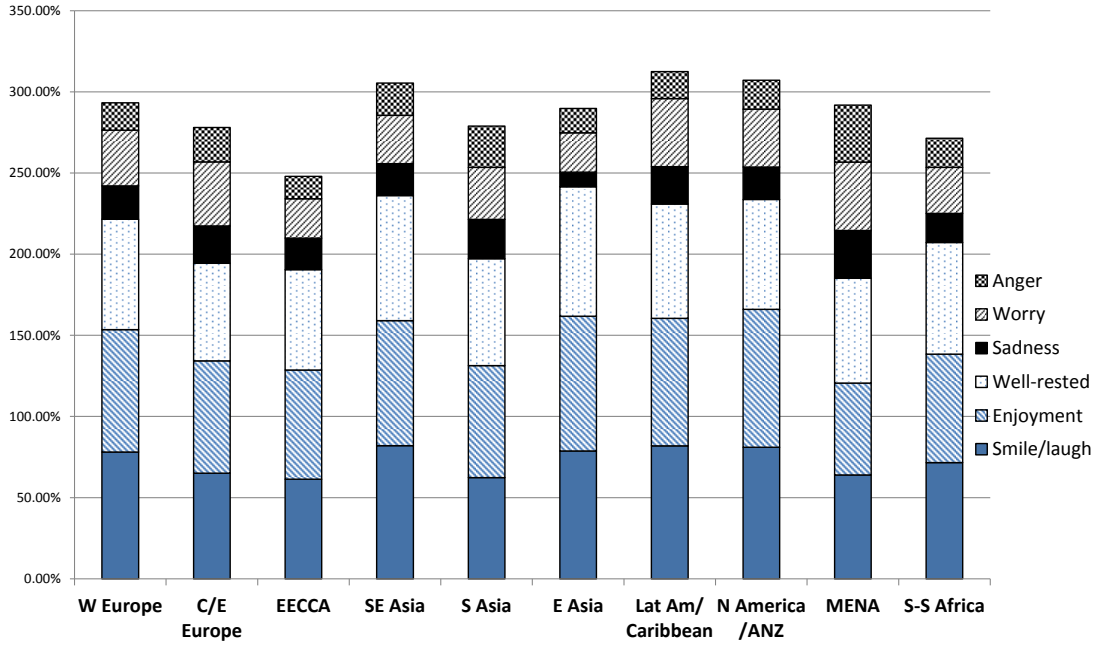
3.5. Are some cultures simply more emotionally expressive?

65. In 2012, a Gallup press release declared that "*Singapore Ranks as Least Emotional Country in the World*", on the basis that Singaporeans were the least likely to report a range of 10 different experiences collected in the Gallup World Poll in 2009-11. In contrast, another Southeast Asian country, the Philippines, was reported to be the *most emotional* society. As can be seen in Figure 12, in data that have been pooled across 2006 – 2012, the EECCA tended to be the least likely to report *either* positive or negative experiences yesterday across all world regions. In contrast, Latin America and the Caribbean, and Northern America and Australasia and Southeast Asia were the regions with high levels of positive experience, but also moderate levels of negative experience, leading to greater "emotionality" overall. In

the MENA region, people were least likely to report positive emotions, but most likely to report negative ones.

Figure 12: Population-weighted regional averages of positive and negative experiences yesterday

(2006-2013 pooled results, percentage of respondents reporting each type of emotion "a lot" yesterday)

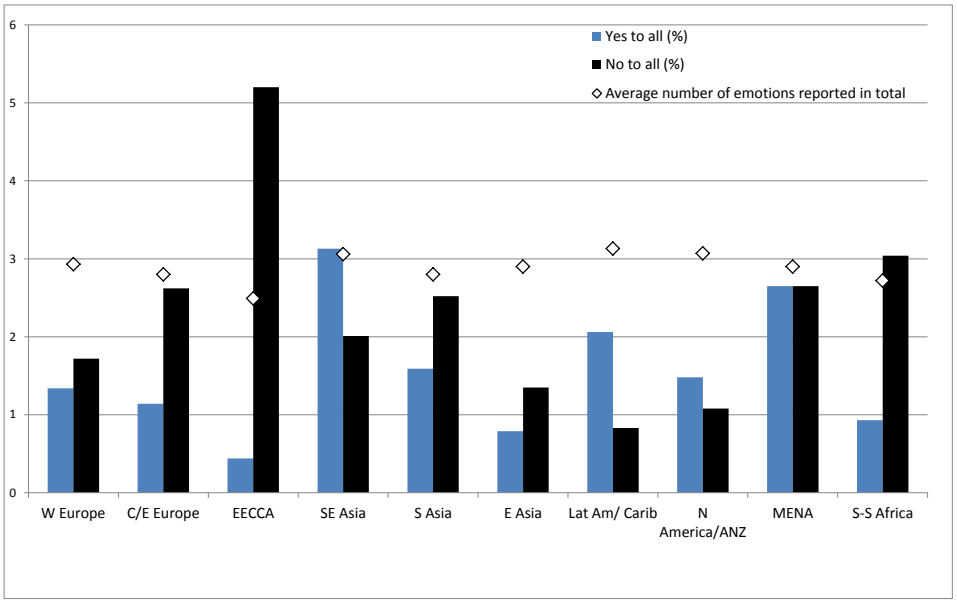


Source: OECD calculations based on Gallup World Poll.

66. Extreme highs and lows of emotional expression at the individual level could imply response acquiescence: a form of satisficing in which the same response is given to every question, regardless of its content. However, in the Gallup World Poll, responding "yes" to all six experience items is very unusual – only 1.3% of the sample in total did so. Responding "no" to all six experience items was more common, but still characterised only 2.2% of the total sample. Figure 13, below, shows that the tendency to respond yes or no to all six emotions does vary by region. For example, EECCA respondents report the lowest levels of emotion overall, and are far more likely to say no to all six experience items (5.2%), rather than yes (0.4%). Respondents in sub-Saharan Africa and central and Eastern Europe also exhibit this pattern, albeit to a lesser extent. In contrast, respondents in Latin America and the Caribbean are much more likely to endorse all six emotion items (2.1%) than they are to say no to all six items (0.9%); this broad pattern is also true, but less pronounced, in Southeast Asia.

Figure 13: Average number of emotions reported in each region, and the share of respondents saying "yes" or "no" to all 6 experience items

(2006-2013 pooled results)



Source: OECD calculations based on Gallup World Poll.

4. Relationships between subjective well-being and other aspects of well-being

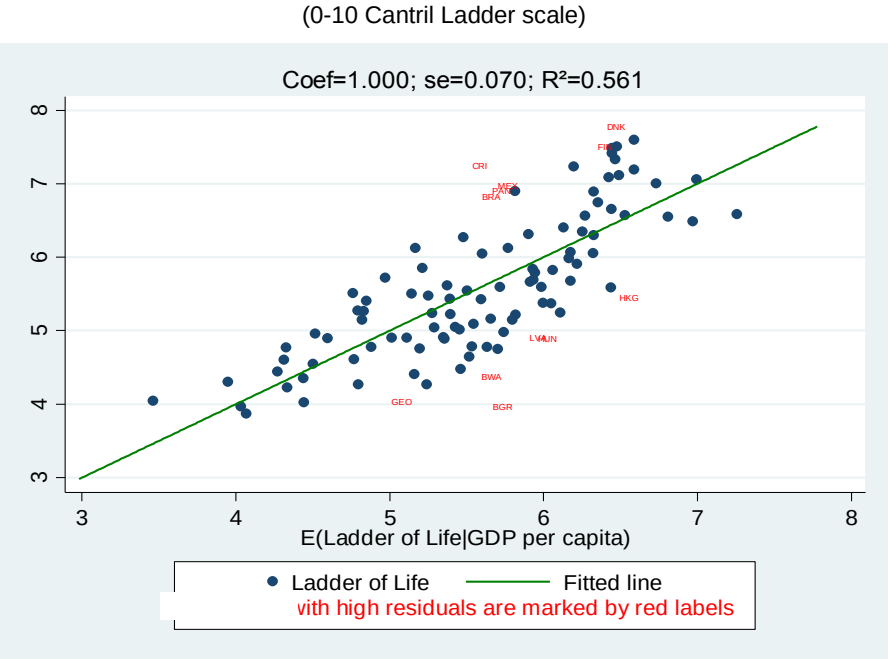
67. Much of the cross-country variance in average levels of subjective well-being is explained by the impact of drivers of well-being that vary at the country level. For example, Jorm and Ryan (2014) review the literature on cross-national differences in subjective well-being, highlighting factors such as income inequality, social welfare, individualism, democracy and freedom, social capital, and physical health. Using pooled Gallup World Poll data from 2005-2012 (N = 149), Helliwell and Wang (2013) explained around 74% of the variance life evaluations, 48% of the variance in positive affect, and 23% of the variance in negative affect with a set of six variables: log GDP per capita; social support; healthy life expectancy at birth; freedom to make life choices; generosity; perceptions of corruption; and a set of year dummies. Other examples in the literature include Hall (2013) and Delhey and Kroll (2012). Before considering the impact of culture on subjective well-being, it is useful to first examine the proportion of cross country variance in subjective well-being that can be explained by these types of factors. This is essential in order to distinguish between cross country variation due to variance in the drivers of subjective well-being, as opposed to cross-country variation due to the impact of culture. Only by eliminating the former is it possible to get a clear picture of the size of unexplained cross-country variance in subjective well-being that might be (partly) attributable to culture.

4.1. Economic development and levels of subjective well-being

68. More economically developed and politically stable countries tend to exhibit higher life evaluations, but there are some exceptions to this pattern – as well as some fairly marked differences in life evaluations, even *among* the most economically developed countries (OECD 2011; 2013b; 2014). Figure 14 illustrates the strong bivariate relationship between the mean average level of life evaluations and the

logarithm of GDP per capita.[19] The vertical axis of the chart shows the average life evaluation observed, while the horizontal axis shows the predicted level of life satisfaction, based on a regression model. The relationship is strong and highly significant (R^2= 0.561, p< 0.001). Countries and territories with the highest residuals[20] are marked at a variety of income levels: a group of Latin American countries (Costa Rica, Mexico, Panama, and Brazil) report higher life evaluations than might be expected, given their per capita income levels, as do Denmark and Finland. Conversely, some central and Eastern European countries (Hungary, Bulgaria, Latvia and Georgia) as well as Botswana and Hong Kong report lower life evaluations than might be expected based on income alone.

Figure 14: Log GDP per capita is associated with life evaluations worldwide



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013.

69. For affect, the relationship between country-level scores and economic development is less marked. Although there is a small positive relationship between positive affect (enjoyment, feeling well-rested and smiling or laughing) and what might be predicted from log-GDP per capita (R^2= 0.058, p<0.001), there is essentially no relationship in the case of negative affect (feeling a lot of worry, sadness and anger), (R^2 = 0.005, p<0.397). Affect balance similarly shows weak relationship with predicted values based on log-GDP per capita (R^2 = 0.038, p<0.01). This contrasts with results obtained within-countries, which indicate significant relationships between income and affect, at least up to a certain threshold income level (*e.g.* Deaton and Kahneman, 2010), but is consistent with analysis of the Gallup World Poll 2005-2012, conducted by Helliwell and Wang (2013).

19 The logarithm of GDP per capita is used in this context in recognition of the fact that there are decreasing marginal returns to increasing levels of income. The relationship between life evaluations and GDP per capita is broadly curvilinear, being steepest at lower levels of income, and more shallow at higher levels.

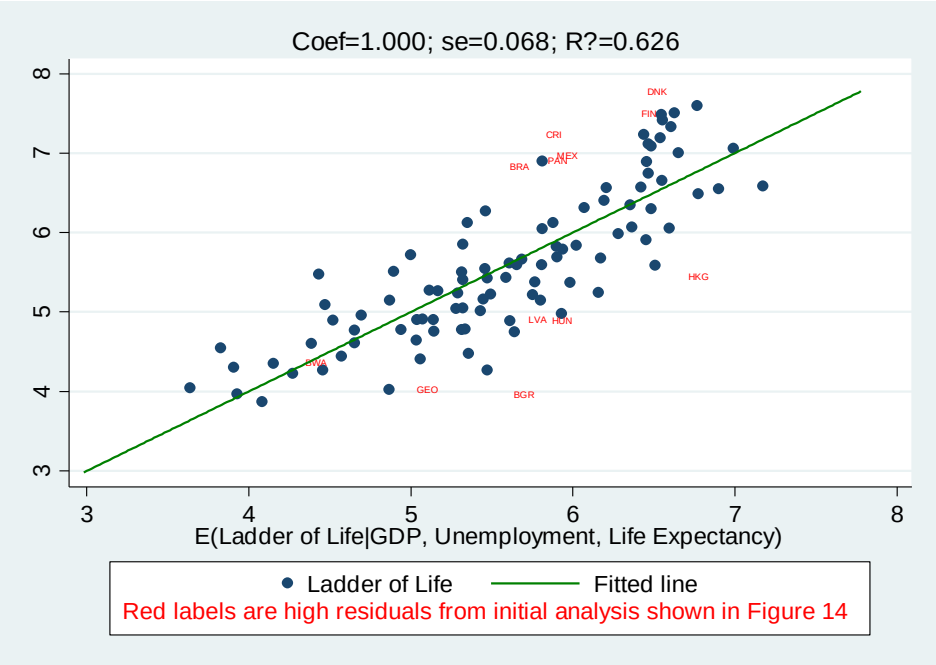
20 The countries and territories marked in red are the 5% with the most positive residuals, and the 5% with the most negative residuals. *N* = 107 countries and territories in total.

4.2. Going Beyond GDP

Predicting differences in subjective well-being from objective life circumstances

70. Of course, there is more to life than GDP per capita, and this is a key reason for measuring subjective well-being alongside more conventional economic indicators. Differences in other aspects of life circumstances account for a substantial proportion of the variation in subjective well-being at the country level, in particular for life evaluations. Figure 15 repeats the analysis in Figure 14 above, but adds in the impact of cross country variance in unemployment and life expectancy at birth. The R^2 increases from 0.561 in Figure 14 to 0.626 in Figure 15, thus reducing the unexplained variance by about 15%[21].

Figure 15: Prediction of life evaluations further improves when life expectancy and unemployment are considered alongside GDP



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013.

71. Similar analyses to Figure 15 were repeated for positive affect, negative affect, and affect balance (Annex 12). The inclusion of unemployment and life expectancy has a large impact on positive affect (R^2= 0.190, p< 0.001) and affect balance (R^2= 0.162, p< 0.001), but does little to explain cross country variance in negative affect (R^2= 0.079, p< 0.05).

[21] With the exception of Botswana, the countries and territories with high residuals in Figure 14 continue to exhibit the same pattern in this analysis also. For example, the average life evaluations in Bulgaria and Hong Kong,China, remain well below what would be expected based on log GDP, life expectancy and unemployment rate, while Costa Rica and Denmark continue to exhibit a higher than expected value.

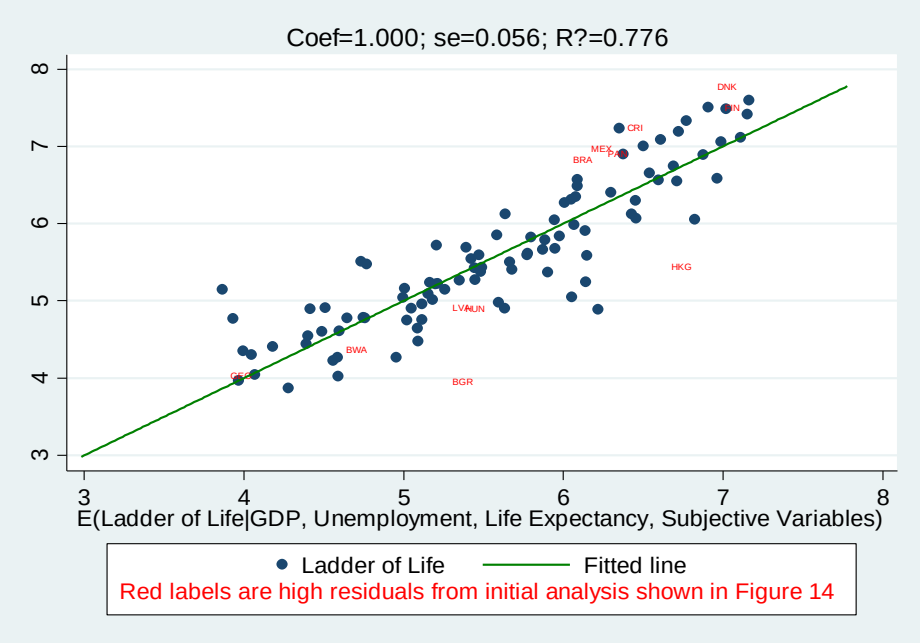
Predicting differences in subjective well-being from objective life circumstances and self-reported well-being

72. The literature on the determinants of life satisfaction identifies a wide range of personal factors that are important to subjective well-being and which might plausibly vary at the country level. Variables relating to a number of these factors are included in the Gallup World Poll, so it is possible to take the analysis a step further to look at how much unexplained variance is left after these variables are accounted for. In particular, the Gallup World Poll contains information on health problems that respondents have experienced, whether the respondent has someone to turn to for support, perceptions of safety, perceived freedom in how the respondent lives their life, and generalised trust in others.[22] Shared method variance will tend to inflate the association between these variables and life evaluation as both life evaluation and the other variables are subjective assessments by the respondent (see OECD 2013a for an explanation). However, the analysis sheds light on the upper limit of the variance that could be accounted for by these factors.

73. In Figure 16 below the regression from Figure 15 is expanded to include country averages for the proportion of the population with health problems, social support, feeling safe, with a high level of perceived freedom, and trusting in others. Compared to Figure 15, the R^2 now rises to 0.776, leaving only 22% of cross-country variance unexplained. With the exception of Georgia, the countries and territories with high residuals in the original model (log GDP per capita only) remain among those with the largest residuals in Figure 16. This argues against a generalised response bias interpretation for these results: if a response bias common to all self-report items were responsible for producing the initial residuals, the inclusion of self-report variables in the model should greatly improve the model fit. As the model fit only improves by a small amount (from 0.626 in Figure 15 to 0.776 in Figure 16), it cannot be the case that a cultural response bias common to responses to subjective questions accounts for much of the unexplained variance in subjective well-being.

[22] Gallup World Poll items wp23 (health problems), wp27 (friends or relatives you can count on), wp113 (feel safe walking alone at night), wp134 (freedom to choose what you want to do with your life) and wp9030 (most people can be trusted/ you have to be careful) respectively.

Figure 16: Life evaluations vs. values predicted from objective and self-reported well-being variables



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013. 0-10 Cantril Ladder life evaluation measure used.

74. The impact of adding variables to the model was also tested for affect measures (Annex 12). The effect here was large, with the inclusion of subjective variables having a large impact on positive affect (R^2= 0.632, p< 0.001), negative affect (R^2= 0.394, p< 0.05) and affect balance (R^2= 0.579, p< 0.001).

75. Overall, a large amount of the variance in country-level subjective well-being outcomes is accounted for by objective and self-report variables. The R^2s obtained in the models shown above are far higher than those typically observed at the individual level, and this is consistent with other analyses at the country level. The final set of analyses, while problematic because of the difficulty of regressing self-reported variables on other self-reported variables, suggest that going beyond GDP is important to understand country-level patterns of subjective well-being, particularly in the case of affect which has very weak relationships with economic development, but strong relationships with health.

5. Country fixed effects: how where you live affects subjective well-being

76. As highlighted in Section 4, measureable differences in just three aspects of objective life circumstances can explain more than 60% of the country-level variation in life evaluations, and between 8 and 19% of the variance in affect outcomes. When self-reported well-being variables (health problems, perceived safety, social connections, freedom, and trust) are added, the model explains between 39% and 78% of the variance in subjective well-being outcomes at the country level. Yet there are a wide variety of life circumstances that are very hard to measure in comparable ways. A person's country of residence can have many impacts on their lives, affecting, for example, public services, infrastructure and amenities available, economic and social opportunities, and the kind of social and political institutions in place. Country of residence also provides a person's cultural milieu – ranging from the dominant language spoken, to social structures and norms, common activities, and religious practices. A closer look at the

impact of country of residence on subjective well-being is provided below by exploring country fixed effects in a global data set.[23]

77. Using OLS regression, this section estimates the "fixed effect" of different countries and territories on subjective well-being, while controlling for as many measurable objective life circumstances (*e.g*. income, education, unemployment, marital status, children *etc*.) as possible. We deliberately *exclude* any subjective variables from these controls, to avoid the risk of contaminating the results through shared method variance. The country fixed effect therefore captures the impact of both omitted variables that vary at the country level, as well as any cultural impact and cultural bias that might be present in the data.

78. The section that follows describes the results of analyses conducted with individual-level data from the Gallup World Poll in 2009-2013, and capturing the impact of country/territory of residence on life evaluations, positive affect, negative affect, and affect balance. Full details of the model specifications are provided in Annex 7, along with all the relevant results. Sample sizes vary across the different outcomes as a result of missing data, but range from 618,142 in the case of affect balance, through to 677,302 in the case of life evaluations.

5.1. The baseline model

79. The "baseline model" (Annexes 7 and 8), common to all analyses in Sections 5 to 8, consists of a series of demographic variables and objective life circumstances: respondents' age, gender, relationship status, the number of children under 15 in the household (0,1,2,3+), whether respondents were born abroad (and if so whether they have spent less than 5 years in their country of residence), local area (rural, village, suburb or large city), highest level of education attained, the logarithm of gross equivalised household income, in 2011 USD (including transfers)[24], and unemployment. A set of dummy variables are also included to control for the year in which the survey took place.

80. Together, the control variables included in the baseline model explain 17.8 % of the global variance in individual-level life evaluations (Cantril Ladder); 3.1% of variance in positive affect (enjoyment, well-restedness and smiling/laughing a lot yesterday); 2.2% of the variance in negative affect (sadness, anger, worry yesterday); and 3.5% of the variance in affect balance. With only a handful of exceptions[25], all coefficients in the baseline model are highly significant ($p < .001$, or $p < 0.01$) for all four subjective well-being outcomes. The R^2s are much lower here than in the previous section as the regression models individual subjective well-being rather than country-level averages, and hence there is a large degree of unexplained variance due to differences between individuals. It is also interesting to note that the R^2s for measures of affect are much lower than those for life evaluation. This reflects the fact that the sorts of socio-economic and demographic variables examined here are less important as determinants of affect (Boarini *et al*, 2013).

81. The full results, reported in Annex 8, are generally consistent with those observed in the literature. For example, all other things being equal, being unemployed is associated with lower life evaluations, less positive affect, more negative affect, and a less positive affect balance. Log income is

23 Although the analysis presented here refers to both countries and territories, the statistical term "country-specific fixed effects" is used for consistency with other literature investigating these effects.

24 Due to high levels of missing data in the case of income (around 15% of the sample in total), a simple imputation procedure was used. This is described in more detail in Annex 7.

25 The exceptions are the non-significant impacts of: being born abroad on life evaluations; living in current country of residence for more than 5 years on life evaluations and negative affect; and living in a suburb on positive affect.

associated with higher life evaluations, more positive affect, less negative affect, and a more positive affect balance at the individual level – in contrast to the lack of relationship between income and affect at the country level. Education follows a similar pattern to income (with tertiary education having a stronger impact than secondary education alone), and living in a couple (as opposed to being divorced, widowed or single) is also associated with better subjective well-being outcomes for the person concerned. When differences in observed life circumstances are controlled for, women report higher life satisfaction and more positive affect than men – although women also report more negative affect, and thus have lower levels of positive affect balance. Relative to rural areas, living in a village, suburb or city is associated with higher life evaluations, but also with more negative affect, and with lower affect balance – a pattern that is particularly marked in the case of cities. Coefficients on the year dummies indicate that, relative to 2009, life evaluations, positive affect and affect balance have tended to be lower and negative affect higher, in subsequent years.

5.2. Impact of country of residence

82. Adding country fixed effects[26] into the baseline model (described at Annex 9; full results provided in Annex 10) adds substantially (between 6 and 9%) to the proportion of variance explained in each of the outcomes (total model $R^2 = 0.267$ in the case of life evaluations, 0.095 for positive affect, 0.080 for negative affect, and 0.10 in the case of affect balance). With few exceptions, the coefficients associated with the baseline model variables maintain their direction and significance, the most marked being that several year dummies become weaker or non-significant.[27] The negative effect of being born abroad on life evaluations also becomes significant ($p < .001$) when country fixed effects are introduced. Coefficients associated with country fixed effects are generally highly significant: 141 country fixed effects are significant at the $p < 0.01$ level when taking Viet Nam as the reference country[28]). This suggests that, as might be expected, a person's country of residence has a considerable impact on their subjective well-being, over and above measured individual differences in demographic and socio-economic variables, such as education, employment, income, *etc.*

83. Figure 17 illustrates the country fixed effects estimated for life evaluation, with countries and territories grouped by quintiles of the country fixed effect (detailed results for each country are also provided in Annex 10). The mean average coefficient (using Viet Nam as the reference country) was -0.171, with a standard deviation of 0.795. The largest positive coefficients are found in Costa Rica, Switzerland, Denmark, Mexico and Iceland. All other things being equal, residing in these countries raises life evaluations, on average, by between 1.3 and 1.5 scale points (on a 0-10 scale), relative to Viet Nam which has around average levels of life evaluation. Strongly positive coefficients tend to be clustered in Northern Europe (as well as Austria and Switzerland), the Americas (with the exceptions of Honduras, Nicaragua, Ecuador, Peru, Bolivia, Paraguay and Uruguay), and Australasia, as well as Thailand, Oman and United Arab Emirates.

84. In contrast, the largest negative coefficients are observed in Togo, Syria, Bulgaria, Comoros and Benin. After controlling for differences in measurable life circumstances at the individual level, residing in

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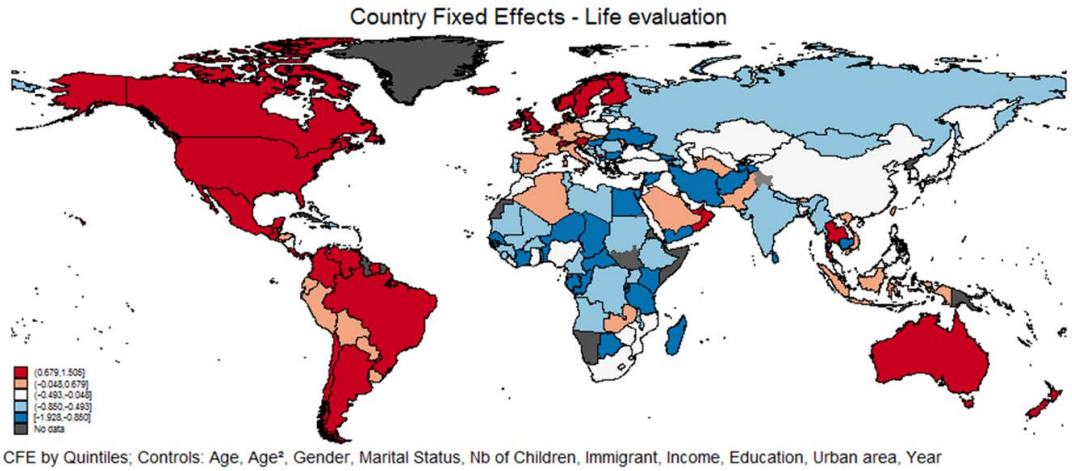
26 *i.e.* a set of dummy variables, each one representing a different country or territory in the analysis, with Viet Nam used as the reference country.

27 The relationship between gender and positive affect also becomes non-significant, as does the effect of living in a village (relative to a rural area) on positive affect, negative affect, and affect balance overall.

28 Viet Nam was selected as the reference country in all analyses as the average response in Viet Nam was reasonably close to the median average country response across all four subjective well-being outcomes examined here.

these countries reduces average life evaluations by between 1.4 and 1.9 scale points. Strongly negative coefficients are found in a large number of African countries (Senegal, Côte d'Ivoire, Togo, Benin, Niger, Chad, Central African Republic, Republic of the Congo, Gabon, Kenya, the United Republic of Tanzania – hereafter Tanzania, Botswana, and Madagascar), several parts of the Middle East and North Africa (Egypt, Yemen, Syria, Iran, Lebanon), central and South Asia (Afghanistan, Tajikistan, Sri Lanka, Cambodia) and Eastern Europe and EECCA countries (Armenia, Georgia, Ukraine, Bulgaria, Former Yugoslav Republic of Macedonia (hereafter FYROM), and Hungary).

Figure 17: Life evaluation coefficients (2009-2013)

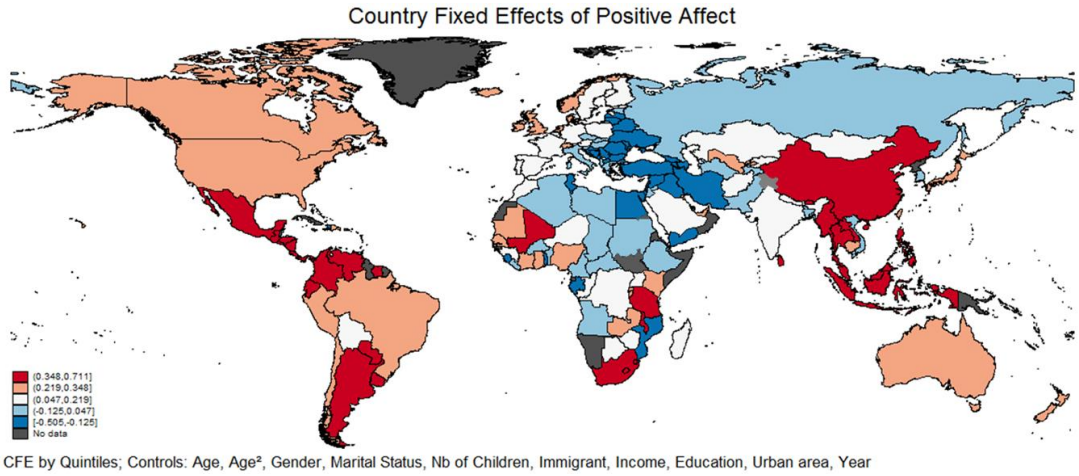


Notes: CFEs by shown by quintiles; Controls: Survey year, age, age^2, gender, marital Status, number of children, income, education, area of residence (urban, rural etc.) employment status, immigrant status, migrated to country <5 years ago.

85. Figure 18 shows the country-specific coefficients in the case of positive affect. Countries with the largest positive coefficients are: Indonesia, Lao PDR, Paraguay, Trinidad and Tobago, and Thailand. Living in these countries raises the level of positive affect experienced, on average, by between 0.6 and 0.7 points on a 0-3 scale (again, relative to Viet Nam). Generally, the strongest positive coefficients in East and Southeast Asia (with the exception of Cambodia), Latin America (with the exceptions of Peru, Chile, Bolivia and Brazil), and a handful of African countries (Mali, Tanzania, Malawi, South Africa, Lesotho and Swaziland). The positive country fixed effect for affect in Sri Lanka, Tanzania and Malawi is in stark contrast with the strongly negative coefficient on life evaluations in these countries.

86. The countries with the largest negative country coefficients on positive affect are: Armenia, Serbia, Georgia, Iraq and Lebanon. Residing in these countries is associated with an average reduction in positive affect of between 0.4 and 0.5 scale points. Generally, negative coefficients tend to cluster around Central and Eastern Europe and EECCA countries, the Middle East and North Africa (with the exception of Saudi Arabia, United Arab Emirates, Kuwait, and Morocco), and several African nations (Mozambique, Gabon, Togo, and Sierra-Leone).

Figure 18: Positive affect coefficients (2009-2013)

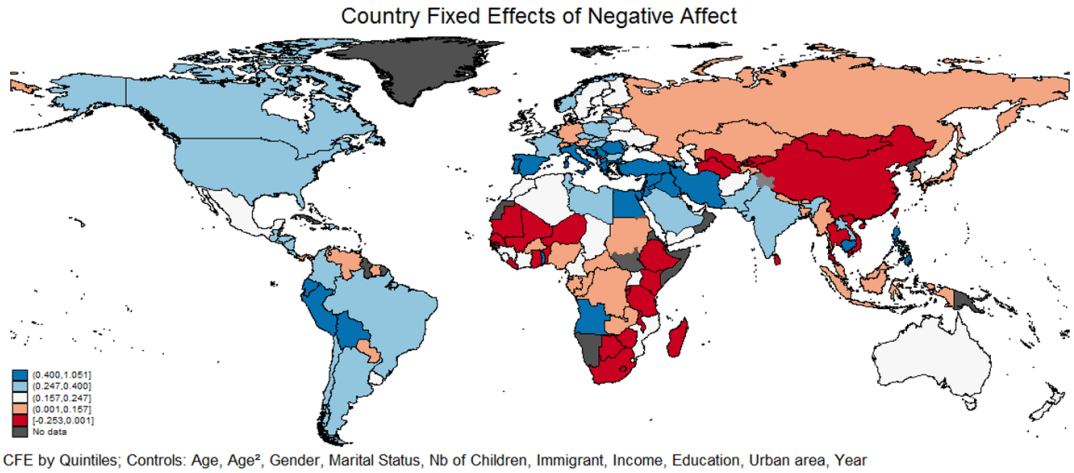


Notes: CFEs by shown by quintiles; Controls: Survey year, age, age^2, gender, marital Status, number of children, income, education, area of residence (urban, rural etc.) employment status, immigrant status, migrated to country <5 years ago.

87. The country-specific coefficients associated with negative affect are illustrated in Figure 19. Very large positive coefficients, and therefore the highest levels of negative affect (all else being equal) are found in Syria, Iran, Iraq, Armenia and Israel. Residing in these countries is associated with an increase in negative affect ranging from 0.7 to 1.1 scale points on a 0-3 scale. The strongest positive coefficients tend to be concentrated around Southern Europe (Portugal, Spain, Italy, Greece), Central and Eastern European countries (Bosnia and Herzegovina, Serbia, FYROM, and Romania, the Slovak Republic and Slovenia), Middle East and North Africa (Egypt, Lebanon, Jordan, Syria, Turkey, and Iran), and a handful of countries in Southeast Asia (Philippines and Cambodia), Africa (Angola and Togo), and Latin America (Ecuador, Peru and Bolivia). It is notable that the Americas tend to be characterised by reasonably high levels of both positive and negative affect.

88. The lowest country fixed effects for negative affect – when socio-economic and demographic variables are controlled for – are Rwanda, Mali, Niger, Ethiopia and Burundi. The average reduction in negative affect (relative to Viet Nam) in these countries was between 0.15 and 0.25 scale points. Other countries with negative coefficients include parts of South and Southeast Asia (Mongolia, China, Thailand, Sri Lanka) several EECCA countries (Kyrgyzstan, Uzbekistan, Turkmenistan), and a wide range of Southern, Eastern and Western African countries. Again, the very low levels of negative affect in Tanzania, Benin, Senegal, Niger and Madagascar are in sharp contrast with the very low life evaluations in these countries.

Figure 19: Negative affect coefficients (2009-2013)

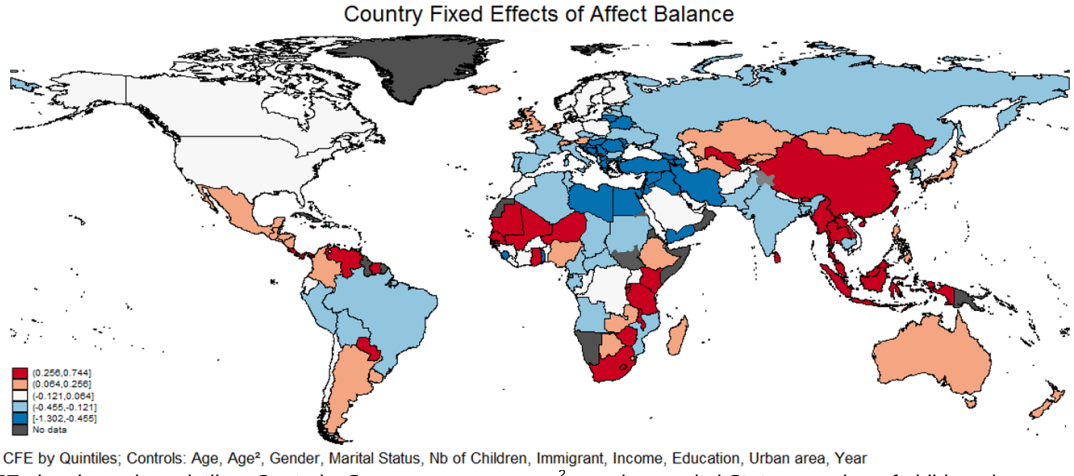


Notes: CFEs by shown by quintiles; Controls: Survey year, age, age^2, gender, marital Status, number of children, income, education, area of residence (urban, rural etc.) employment status, immigrant status, migrated to country <5 years ago.

89. Finally, results for affect balance (positive emotions minus negative emotions) are shown in Figure 20. Coefficients were highest in Trinidad and Tobago, Thailand, Indonesia, Paraguay and China, where positive affect balance was between 0.59 and 0.74 scale points higher (on a -3 to +3 scale) than in the reference country, Viet Nam. Generally, the most positive coefficients are clustered in parts of Asia (China, Nepal, Myanmar, Thailand, Lao PDR, Indonesia Malaysia, and Sri Lanka), pockets of Latin America (Costa Rica, Panama, Venezuela, Suriname, Paraguay) and parts of West and South/East Africa (Senegal, Mauritania, Mali, Niger, Kenya, Tanzania, Malawi, Zimbabwe, South Africa, and Lesotho).

90. Country specific effects for affect balance were most negative in: Armenia, Syria, Iraq, Serbia and Iran – where positive affect balance was reduced, on average, by between 1.13 and 1.3 scale points. Generally, the most negative affect balance scores cluster in the Middle East and North Africa (Yemen, Libya, Egypt, Lebanon, Jordan, Syria, Iraq, Iran, Turkey), EECCA countries (Belarus, Georgia, Azerbaijan, Armenia, Republic of Moldova) and some Central and Eastern European countries (Hungary, Slovak Republic, Slovenia, Romania, Lithuania, Croatia, FYROM, Serbia, Bosnia and Herzegovina).

Figure 20: Affect balance coefficients (2009-2013)



Notes: CFEs by shown by quintiles; Controls: Survey year, age, age^2, gender, marital Status, number of children, income, education, area of residence (urban, rural etc.) employment status, immigrant status, migrated to country <5 years ago.

91. Country fixed effects thus play an important role in explaining variance in subjective well-being outcomes at the individual level. For life evaluations, country fixed effects range from a high of +1.505 in Costa Rica to a low of -1.928 in Togo, which is a 3.43 scale point difference in total on a 0-10 scale. For positive affect, they range from +0.711 in Indonesia to -0.505 in Armenia, a total of 1.216 scale points on a 0-3 scale. For negative affect, the range is +1.051 in Syria to -0.253 in Rwanda, which is 1.304 scale points, again on a 0-3 scale. Finally, for affect balance, country fixed effects range from +0.744 in Trinidad and Tobago to -1.302 in Armenia, a difference of 2.046 scale points on a -3 to +3 scale.

92. There are many possible explanations for these results. One of the most obvious is political stability: several places experiencing conflict do worse on subjective well-being measures than their current economic circumstances alone might indicate. Similarly, living in more developed countries often means having greater access to high-quality public services and amenities, even in the absence of a high income at the individual level. Higher levels of trust, freedom and the quality of governance could also be factors that operate at the society – rather than the individual – level to raise overall subjective well-being. In addition to differences in countries' life circumstances, country fixed effects could also reflect a degree of cultural impact (*i.e.* a real effect of culture on people's subjective well-being) or cultural bias (*i.e.* different cultures respond to questions in subjective well-being using the response scale in different ways).

93. In Sections 6 to 8, the country fixed effects (or CFEs) presented here will become the **dependent variables** of interest. Three different techniques are used to explore the CFEs in greater depth, to better understand their likely origins – including to what extent CFEs might reflect cultural impacts, cultural biases, or other omitted variables. For each of these analyses the maximum proportion of the country fixed effect that can be accounted for by the combined impact of cultural impact, cultural bias, and omitted variables at the country level is described. This estimate also serves as an upper limit to the size of cultural bias: if there are no omitted variables and no genuine cultural impact on subjective well-being then the full impact would be bias. In fact, this is unlikely to be the case, so the estimates produced are expected to be greater than actual cultural bias.

6. Do cultural factors help to explain the impact of country of residence on subjective well-being?

94. A first simple method for exploring the country fixed effects (CFEs) is to examine whether they are associated with variables that proxy different elements of culture. There are a number of candidate variables that could capture cultural factors. For example, the predominant language used in a country captures elements of shared culture. However, with some notable exceptions, language tends to proxy for distinct geographical regions (*e.g.* Arabic spoken in the Arab world) and as such, examining language adds little to the regional fixed effects reported in Annex 11.

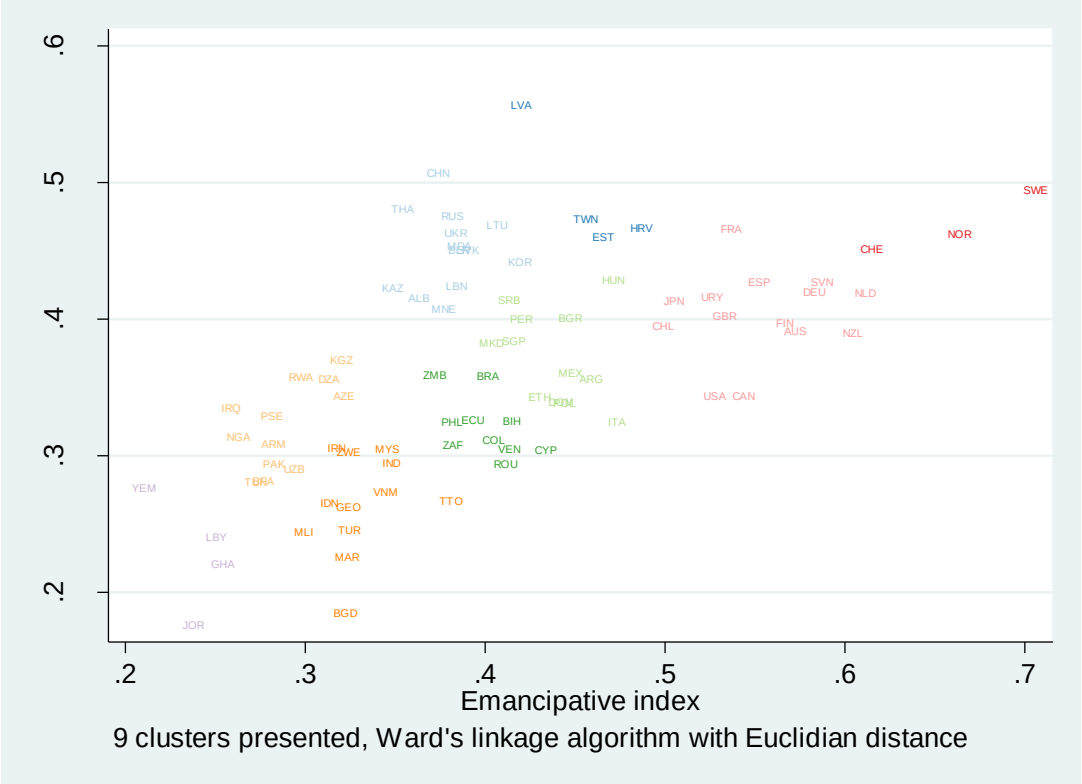
95. Welzel and Inglehart (2010) and Welzel (2013) offer a parsimonious method for condensing information about a wide range of different cultural values into two distinct dimensions. To summarise the review provided earlier (see Section 2): survival values prevail in places characterised by low material wealth and limited physical security; emancipative values are meanwhile found among those who can afford to take survival for granted, and include tolerance for diversity, higher levels of trust, demand for participation in decision-making, and an emphasis on freedom of choice, freedom from constraints and equality of opportunities. The dimension of traditional versus secular-rational values is meanwhile concerned with the extent to which religion, parent-child ties, traditional family values, and deference to authority are emphasised.

96. Figure 21 provides an indication of how Welzel's cultural values are distributed globally. The survey items used to calculate these scales, in line with Welzel (2013), are detailed in Annex 13. Averages have been estimated on the basis of the latest available wave (median year: 2011; range 1996-2014) of the

World Values Survey (80% of all countries and territories included), and of the European Values Survey (20%). Results have been clustered into nine different groups, represented by different colours on the scatterplot.[29] The correlation between the two different dimensions is .586 (N = 84), indicating that more secular places also tend to be more emancipative, with some exceptions (*e.g.* several EECCA countries tend to be relatively high on secular values but lower on emancipative values, while the United States and Canada are more traditional, but higher on emancipative values). Both value dimensions are also positively correlated with log GDP per capita: r = .43 in the case of secular values, and r = .68 in the case of emancipative values.

Figure 21: The relationship between emancipative values and secular values

(Latest wave available from World Values Survey and European Values Survey; 0-1 scale)



97. In Table 2, country fixed effects taken from the analyses in the preceding section are regressed on the average observations for emancipative and secular values (N = 84). Results for all four subjective well-being outcomes are shown. When secular values are held constant, more emancipative societies are more likely to have positive country fixed effects for both life evaluation and positive affect. This means that more emancipative societies are more likely to have higher life evaluation than might be expected, after controlling for objective life circumstances at the individual level. Conversely, secular values have a negative relationship with country fixed effects, suggesting that more traditional societies report higher life evaluation and positive affect than might be predicted from the baseline model. Controlling for log GDP per capita at the country level[30] (not shown) does not change the sign or the significance of these

29 Data have been clustered (using Ward's algorithm with Euclidian distance) into nine blocks of countries sharing similar coordinates of secularity and emancipative values.

30 Note that income at the individual level is already controlled in these analyses, because it forms part of the baseline model from which the country fixed effects are drawn.

relationships, but it does increase the strength of positive association between emancipative values and affect balance.

Table 2: Welzel's cultural values as predictors of country fixed effects for different aspects of subjective well-being

Model	CFE(Life evaluation		Baseline)	CFE(Positive affect		Baseline)	CFE(Negative affect		Baseline)	CFE(Affect balance		Baseline)
Statistic	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE
Mean secular value	-2.533	***	0.945	-1.166	**	0.460	-0.0763		0.404	-1.084		0.773
Mean emancipative value	5.595	***	0.713	1.175	***	0.347	0.129		0.304	1.030	*	0.583
Constant	-1.413	***	0.299	0.0250		0.145	0.223	*	0.127	-0.191		0.244
r2	0.453			0.129			0.00229			0.0394		
r2 adjusted	0.440			0.107			-0.0223			0.0157		
N	84			84			84			84		
* p<0.1 ** p<0.05 *** p<0.01												
(Heteroskedasticity-robust SE)												

98. Relating these findings back to the scatterplot in Figure 27 and the country fixed effects observed in the previous section, it appears that more emancipative but still traditional cultures such as the United States, Canada, Mexico, and Argentina have high levels of life evaluation, relative to the global average. Meanwhile, countries with more secular but less emancipative values, such as EECCA nations (e.g. Latvia, Lithuania, the Russian Federation, and Ukraine) tend towards lower levels of life evaluation than predicted from objective life circumstances at the individual level.

99. Overall, Welzel's cultural values explain around 44% of the variation in country fixed effects on life evaluations, and around 11% of the variation in country fixed effects for positive affect. The total range for country fixed effects on life evaluations was 3.4 scale points (on a 0-10 scale), this implies that Welzel's cultural values could in theory explain variations of *up to* 1.5 scale points between countries on this measure. In the case of positive affect, the total range of country fixed effects was 1.216 scale points (on a 0-3 scale), and thus Welzel's cultural values could in theory explain differences between countries of *up to* 0.12 scale points. For negative affect and affect balance, there is little evidence to suggest that Welzel's cultural values are able to account for variations in country fixed effects.

Religiosity and variations in country fixed effects

100. Religiosity has been found to play a role in explaining subjective well-being in a number of previous studies. However, because some of the world's most religious people live in countries with some of the worst life circumstances, unpacking this relationship at the country level can be challenging. Consistent with Deaton and Stone (2013), Table 3 shows a significant *negative* relationship between country fixed effects for life evaluations and average levels of religiosity[31], when no income controls are included at the country level (coefficient = -1.343, SE = 0.237, $p < 0.01$; total model adjusted $R^2 = 0.168$, N = 155). With log GDP per capita controlled in the analysis, the coefficient on religiosity fails to reach significance. The interaction between religiosity and log GDP per capita is, however, a very significant predictor of country fixed effects for life evaluations (Table 3, below).

[31] Religiosity is defined by the yes/no answer to a question about whether religion is "an important part of your daily life", and is taken here as the % of people in a given country who respond "yes".

Table 3: Religiosity as a predictor of SWB country fixed effects

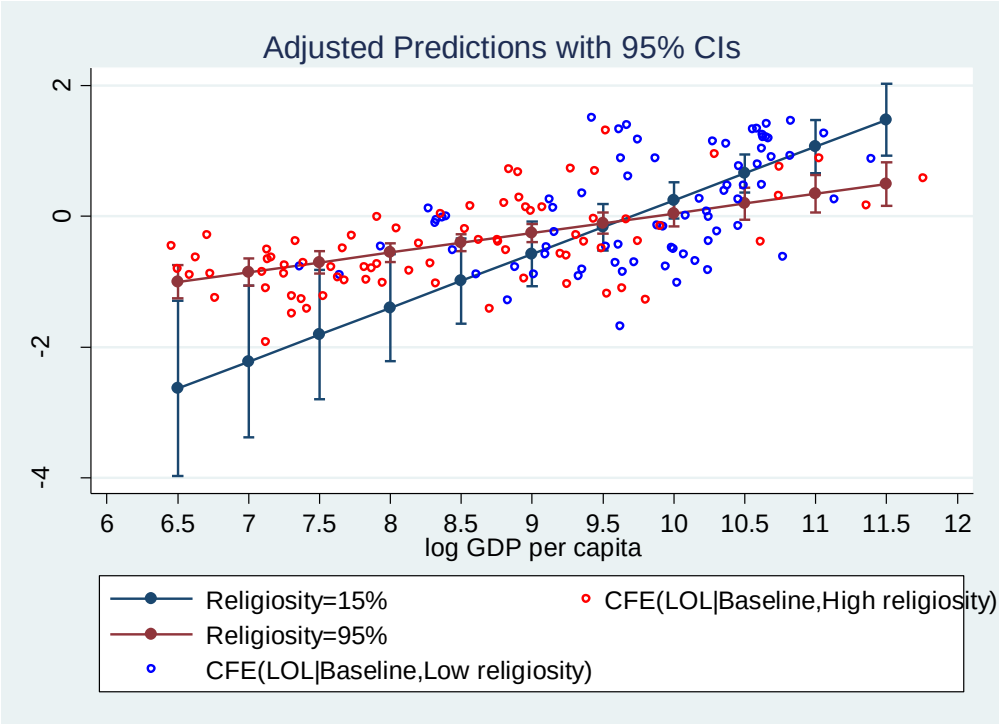
(2009-2013 results, pooled)

Model	CFEs - life evaluation			CFEs - positive affect			CFEs - negative affect			CFEs - affect balance		
Statistic	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE
(log) GDP per capita	0.920	***	0.216	0.175	*	0.0930	-0.0317		0.0736	0.200		0.144
Religiosity	6.284	**	2.424	1.934	*	1.045	-1.210		0.826	3.089	*	1.622
(log) GDP per capita*Religiosity	-0.653	***	0.241	-0.177	*	0.104	0.139	*	0.0820	-0.310	*	0.162
Constant	-8.918	***	2.201	-1.747	*	0.946	0.490		0.750	-2.171		1.469
r2	0.400			0.0342			0.181			0.0637		
r2_adjusted	0.388			0.0144			0.164			0.0445		
N	151			150			151			150		
* p<0.1 ** p<0.05 *** p<0.01												

101. With this interaction controlled, the main effect for religiosity on CFEs for life evaluations becomes positive and significant at the 5% level. Furthermore, the form of the interaction (Figure 22) suggests that religiosity moderates the relationship between income and CFEs for life evaluation, such that GDP per capita is a less important determinant of life evaluation CFEs among the most religious countries. This is consistent with the within-country relationship observed by Lelkes (2006) in Hungary. Figure 22 also shows that more religious places (identified with red circles on the scatterplot) tend to have much lower incomes than less religious ones (identified with blue circles).

Figure 22: Religiosity moderates the relationship between log GDP per capita and life evaluations

(2009-2013 results, pooled)



Note: Red circles (high religiosity) indicate the country fixed effect for countries with a religiosity above or equal to the median international religiosity level (0.865 on a 0-1 scale; country scores range from 0.142 to 0.998). The blue cirles indicate the country fixed effect for countries with a religiosity level below the median. The marginal predictions (the red and blue lines with solid dots) are directly obtained from the estimation in Table 3. Predictions are made at hypothetical values of logGDP ranging from 6.5 to 11.5, in 0.5 increments, and for religiosity levels of 0.15 (close to the actual minimum) and 0.95 (close to the actual maximum).

102. No significant relationships were observed between religiosity and the country fixed effects for the affect variables, although a small positive relationship was observed between religiosity and negative

affect after controlling for log GDP per capita (coefficient = 0.183, SE = 0.0866, p< 0.01). As shown in Table 3, when the interaction between log GDP per capita and religiosity is included in the model for positive affect, a small (p< 0.1) positive effect of religiosity on positive affect and affect balance is observed, and the interaction term is significant at the p<0.1 level in the case of positive affect. Again, the form of the interaction suggests that log GDP per capita is a less important determinant of positive affect at the country level among countries and territories with greater religiosity.

Self-reported well-being and variations in country fixed effects

103. As noted in Section 4.2, a number of well-being domains included in the Gallup World Poll were excluded from the country fixed effects model, to avoid contamination between subjective variables on both sides of the regression equation. Yet differences in well-being could be responsible for some of variation in subjective well-being that could not be explained in the baseline model. The analysis in Table 4 relaxes the constraint on the use of self-report variables, and uses a variety of well-being indicators to predict country fixed effects associated with each of the subjective well-being outcomes (*N* = 129 or 130).

Table 4: Well-being variables as predictors of SWB country fixed effects

(2009-2013 results, pooled)

Model	CFEs - life evaluation			CFEs - positive affect			CFEs - negative affect			CFEs - affect balance		
Statistic	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE	Coef.	Sig.Star	SE
Life Expectancy (years)	0.0284	***	0.00642	-0.00403		0.00258	0.0170	***	0.00235	-0.0212	***	0.00416
% people with health problems	-3.770	***	0.905	-1.545	***	0.368	0.180		0.331	-1.856	***	0.595
% people with helpful friends/relatives	1.019	*	0.571	-0.275		0.229	-0.345		0.209	0.0470		0.370
% people safe walking alone	-1.378	***	0.369	-0.624	***	0.149	-0.118		0.135	-0.491	**	0.241
% people satisfied by freedom in life	1.791	***	0.394	1.199	***	0.158	-0.344	**	0.144	1.543	***	0.255
% people trusting most of others	1.180	***	0.407	0.244		0.163	-0.589	***	0.149	0.809	***	0.264
Constant	-2.744	***	0.572	0.481	**	0.230	-0.271		0.209	0.815	**	0.371
r2	0.602			0.463			0.447			0.459		
r2 adjusted	0.583			0.437			0.420			0.432		
N	130			129			130			129		
* p<0.1 ** p<0.05 *** p<0.01												

104. The additional well-being variables included in Table 4 explain around 58% of the variance in the country fixed effects (CFEs) associated with life evaluations, and between 42% and 44% of the variance for the affect outcomes. Significant relationships are generally in the expected direction, although feelings of safety are negatively associated with CFEs for life evaluations and positive affect, while higher life expectancy is associated with higher CFEs on negative affect, after controlling for the proportion of the population reporting health problems. Social connections are not significant predictors of country fixed effects, despite usually having a substantial impact on subjective well-being outcomes at the individual level.

105. Overall, recalling that the total range of country fixed effects on life evaluations was 3.4 points on a 0-10 scale, table 4 suggests that around 2 scale points of variation in life evaluations at the country level might be attributable to well-being differences at the country level (over and above those elements of objective well-being already controlled in the individual-level baseline model). For positive affect, up to 0.5 scale points (on a 0-3 scale) variation might be attributable to country-level variations in well-being, while for negative affect and affect balance the equivalent results are 0.6 scale points and 0.9 scale points respectively on a -3 to +3 scale.

106. Interpreting these findings is challenging due to the use of self-report measures – but again, it could be seen as placing an upper limit on the amount of variance explained by the underlying variables of interest. If, conversely, we take the extreme view that *all* of the shared variance between self-reported well-being and the country fixed effects was due to response bias, this would still leave over 40% of the variance in country fixed effects unexplained, and attributable to other sources.

7. Do some cultures have consistent appraisal styles that relate to subjective well-being?

107. Even when objective life circumstances in two countries are very similar, people living in those countries might *appraise* those circumstances differently, as a result of cultural or historical factors. Dispositional tendencies to "look on the bright side" or focus on the positives in life could also lead to more benign appraisals of objective circumstances. This section investigates whether there is evidence for consistent *appraisal styles* across a range of different variables, and whether the tendency towards making more positive or negative appraisals of objective life circumstances is related to the country fixed effects associated with subjective well-being outcomes.

108. To assess appraisal styles, this section measures country-level "perception gaps" between objective life circumstances and the feelings that people report about those life circumstances. To do so, we use the country-level averages taken from three questions from the Gallup World Poll, each with a 1-4 response range[32]:

- "Which one of these phrases comes closest to your own feelings about your household income these days?" (income feelings)
- "How would you rate economic conditions in this country today -- as excellent, good, only fair, or poor?" (economic conditions)
- "In your opinion, how many people in this country, if any, are afraid to openly express their political views?" (free political views)

109. Averages for each of these perception measures are then compared to log GDP per capita, GDP growth rates, and the World Bank World Governance Indicator for the sub-dimension "voice and accountability" respectively. Although the last of these measures is not strictly an objective indicator, but a mix of expert opinion and survey data drawn from a wide variety of sources it is not based on self-assessments and thus should be unaffected by appraisal styles. A positive appraisal style would lead to a more positive assessment of income than log GDP per capita might suggest, a more positive view of the economy than GDP growth levels might suggest, and a more positive view of political freedom than the World Governance Indicator suggests. The analysis then assesses whether such positive [negative] appraisal styles also lead to a more positive [negative] evaluations of life (or more positive and less negative affects) than might be predicted from objective life circumstances alone.

7.1. Feelings about income

110. There is generally a very strong and highly significant relationship between people's feelings about their income (at the country average level) and log GDP per capita (Figure 23). As GDP increases people report being able to live more comfortably on their incomes. Nonetheless, there are some high residuals. Respondents in Norway, Sweden, Belize, Guyana and several EECCA countries (Turkmenistan, Uzbekistan, Kyrgyzstan, and Tajikistan) report feeling able to live more comfortably than might be expected based on GDP per capita information. Conversely, respondents in Greece, Hungary, Bulgaria,

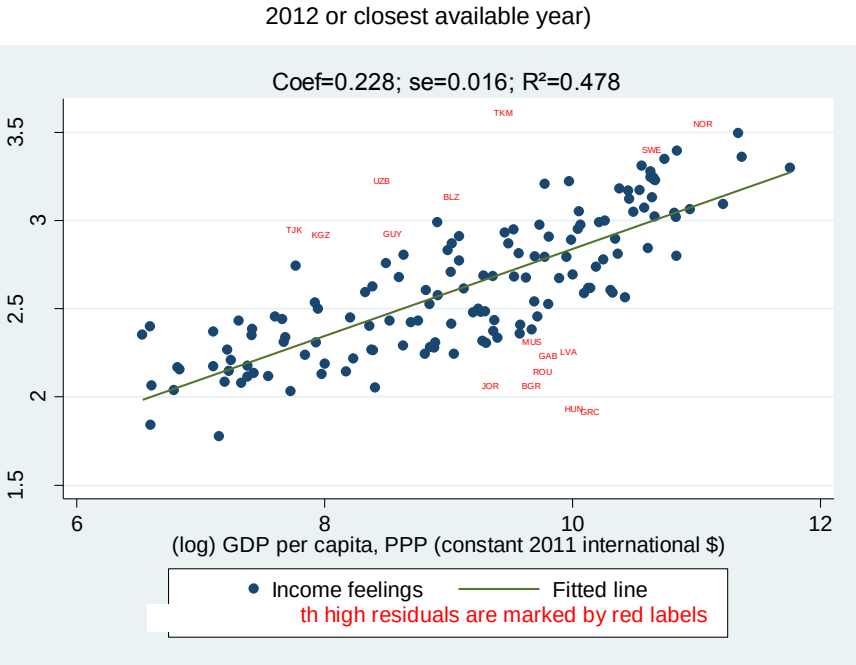
[32] For income feelings, these were: 1 = finding it very difficult on present income; 2 = finding it difficult on present in come; 3 = getting by on present income; 4 = living comfortably on present income.

For economic conditions, they were: 1 = poor; 2 = only fair; 3 = good; 4 = excellent.

For free political views: 1 = most are afraid; 2 = many are afraid; 3 = some are afraid; 4 = no-one is afraid.

Romania, Latvia, Jordan, Gabon and Mauritius find it more difficult to live on their present income than their levels of log GDP per capita alone might suggest.

Figure 23: Feelings about income are positively related to log GDP per capita

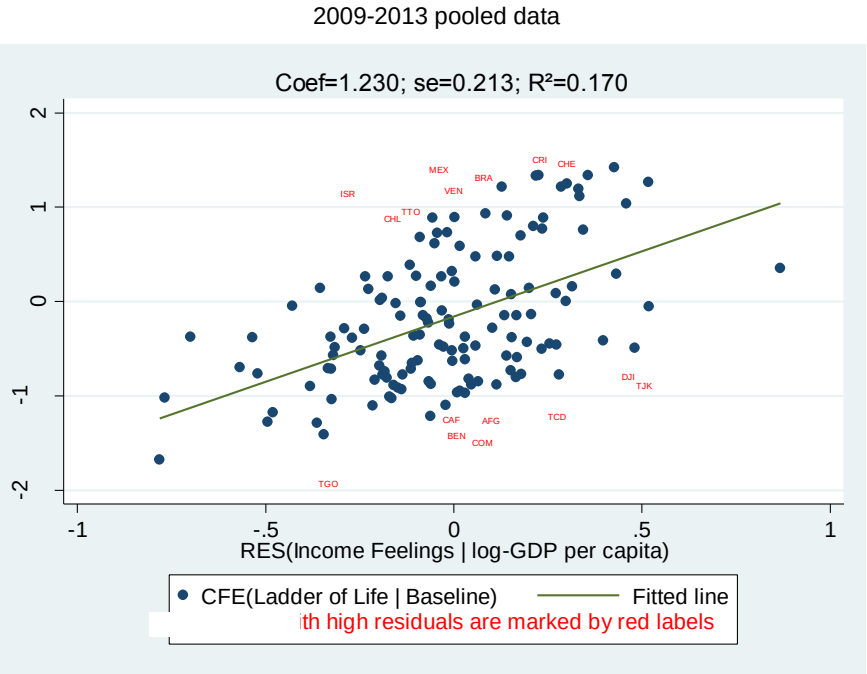


Note: For each point on the chart, both data sources are drawn from the same year. Where 2012 data are not available, but data for both 2011 and 2013 exist, only data from 2011 are shown.

Sources: Gallup World Poll and World Bank World Development Index data.

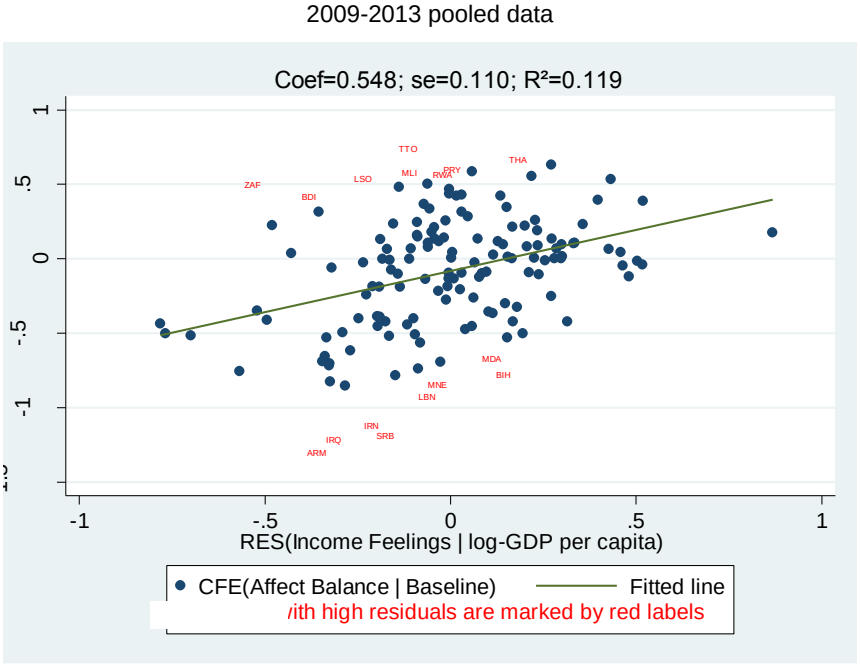
111. Is the perception gap for feelings about income correlated with the perception gap for life evaluation? In Figure 24, the residual of the relationship between feelings about income and log GDP (*i.e.* the "perception gap" in relation to income) is plotted against the country fixed effects for life evaluations. There is a significant positive relationship, suggesting that where people appraise their income more positively, they also report higher life evaluations (after a number of objective life circumstances are controlled). However, this relationship does not hold for a number of countries with high country fixed effects: respondents in several Latin American countries (Costa Rica, Brazil, Venezuela, Mexico, and Chile) have high life evaluations without having particularly positive views about their incomes, as do respondents in Switzerland, Israel, and Trinidad and Tobago. Conversely, in some places respondents appraise their incomes with greater positivity than they appraise life as a whole: this includes Tajikistan, Afghanistan, Djibouti, Chad, Comoros, Benin, Central African Republic, and Togo.

Figure 24: Life evaluation CFEs are related to more positive appraisals of income



112. Figure 25 shows the relationship between country fixed effects for affect balance, and the perception gap in relation to income. Again, there is a significant relationship, suggesting that the more positive the affect balance that people experience (after controlling for various life circumstances), the more likely they are to feel able to live comfortably on a given level of income. Similarly significant relationships exist between income feeling residuals and the country fixed effects for positive affect (coefficient = 0.264, se = 0.075, R^2 = 0.069) and for negative affect (coefficient = -0.283, se = 0.064, R^2 = 0.106).

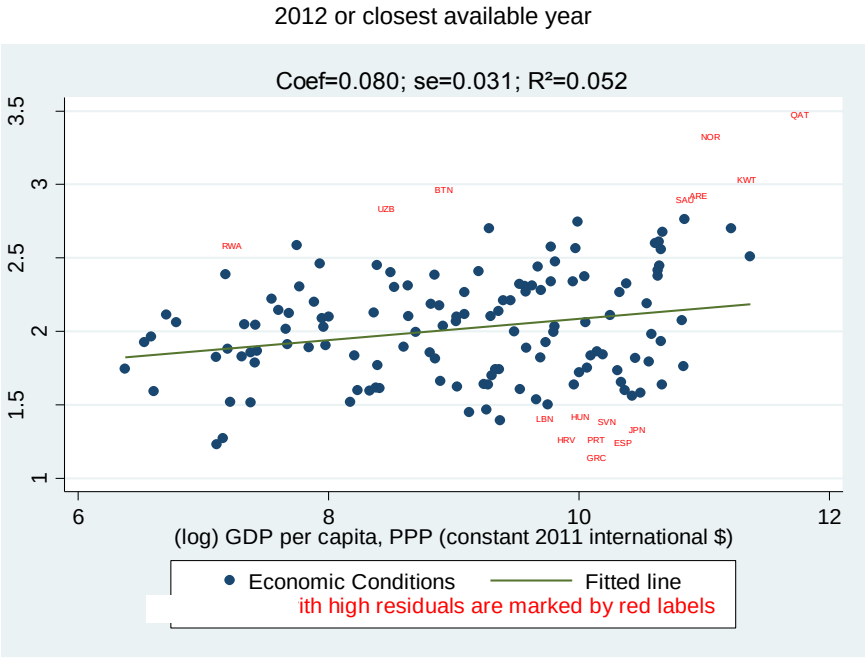
Figure 25: Affect balance CFEs are associated with more positive appraisals of income



7.2. Feelings about economic conditions more broadly

113. A second question in the Gallup World Poll asks people to rate the economic conditions in their country more broadly. This shows a significant relationship to both GDP (Figure 26, below) and GDP growth (Figure 27). Nonetheless, people in Arabian Peninsula and Gulf (Kuwait, Qatar, Saudi Arabia, United Arab Emirates) and Norway make particularly positive appraisals of their economies, while those in Japan, Hungary, and three of the Eurozone countries worst-hit by the financial crisis (Portugal, Spain, and Greece) have particularly negative views. Other high residuals are also shown in Figures 26 and 27.

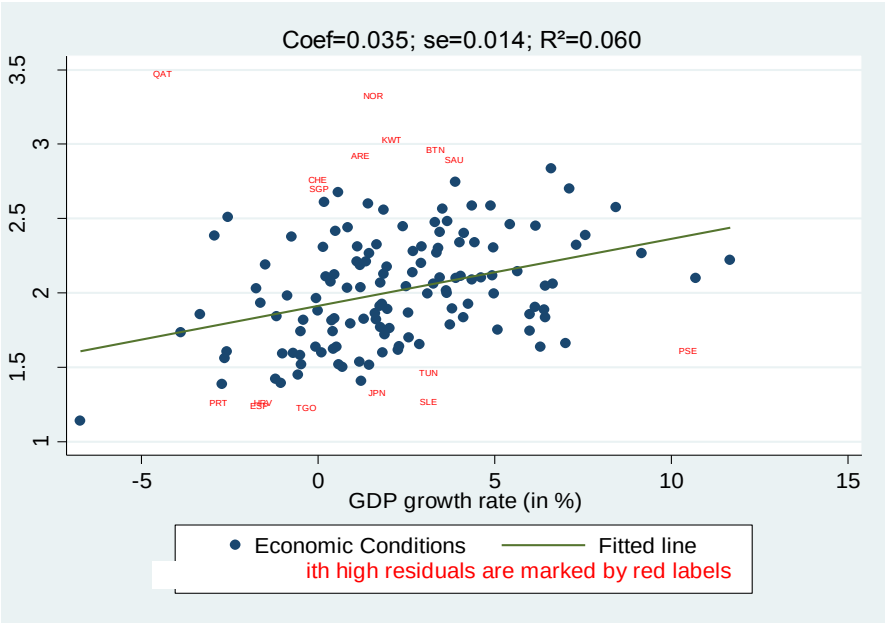
Figure 26: Feelings about the economy are positively related to log GDP per capita



Note: For each point on the chart, both data sources are drawn from the same year. Where 2012 data are not available, but data for both 2011 and 2013 exist, only data from 2011 are shown.

Sources: Gallup World Poll and World Bank World Development Index data.

Figure 27: Feelings about the economy are positively related to GDP growth

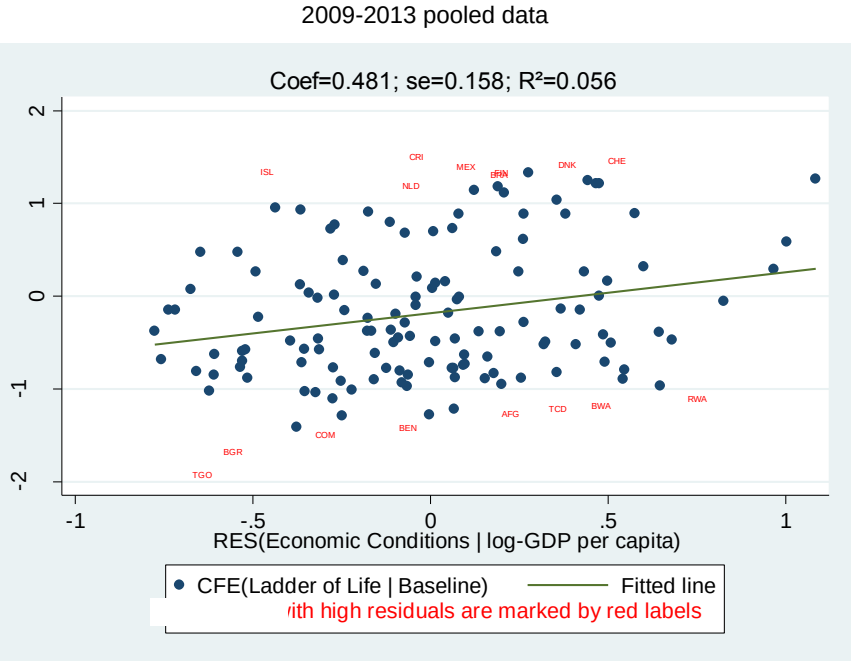


Note: For each point on the chart, both data sources are drawn from the same year. Where 2012 data are not available, but data for both 2011 and 2013 exist, only data from 2011 are shown. The GDP growth rate is shown in per capita terms.

Sources: Gallup World Poll and World Bank World Development Index data.

114. Do feelings about the economy relate to people's feelings about life as a whole? Figure 28 shows a significant relationship: the more positively a person feels about the prevailing economic conditions (relative to GDP per capita), the more positive their evaluations about life as a whole (after controlling for a variety of life circumstances). Nonetheless, the very positive life evaluations found among several European (Switzerland, Denmark, Finland, Iceland and the Netherlands) and Latin American (Brazil, Mexico, Costa Rica) countries are not strongly related to positive feelings about the economy. Conversely, respondents in several African countries, Bulgaria and Afghanistan have very low life evaluations which do not seem to relate to perceptions of the economy (beyond what might be predicted by GDP levels).

Figure 28: Life evaluation CFEs are weakly associated with more positive appraisals of the economy



115. People living in places with high levels of positive affect, low levels of negative affect and higher levels of affect balance (after controlling for life circumstances) also tend to view the economy more positively (over and above log-GDP per capita). The relationship is strongest in the case of affect balance, shown in Figure 29 (coefficient = 0.475, se = 0.076, R^2 = 0.188), followed by positive affect (coefficient = 0.256, se = 0.049, R^2 = 0.136, Figure 30), then negative affect (coefficient = - 0.197, se = 0.046, R^2 = 0.112, not shown). Countries with high residuals across these analyses include Iraq, Iran, Serbia and Armenia.

Figure 29: Affect balance CFEs are associated with more positive appraisals of the economy

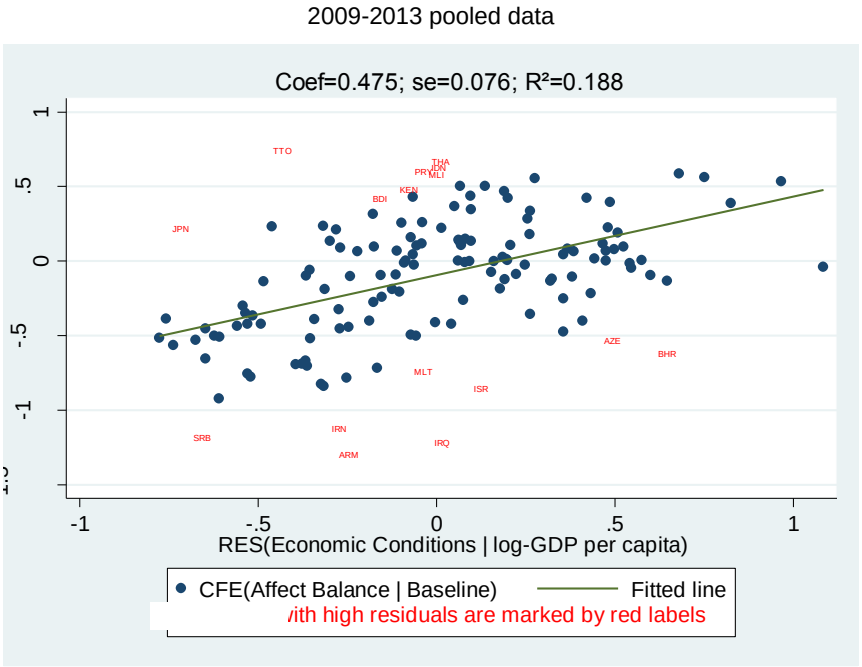
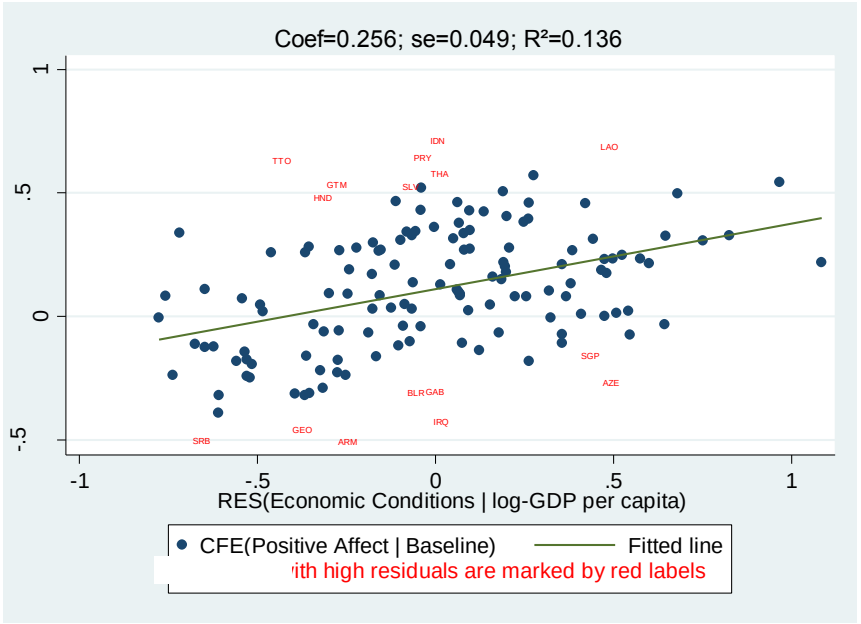


Figure 30: Positive affect CFEs are associated with more positive appraisals of the economy

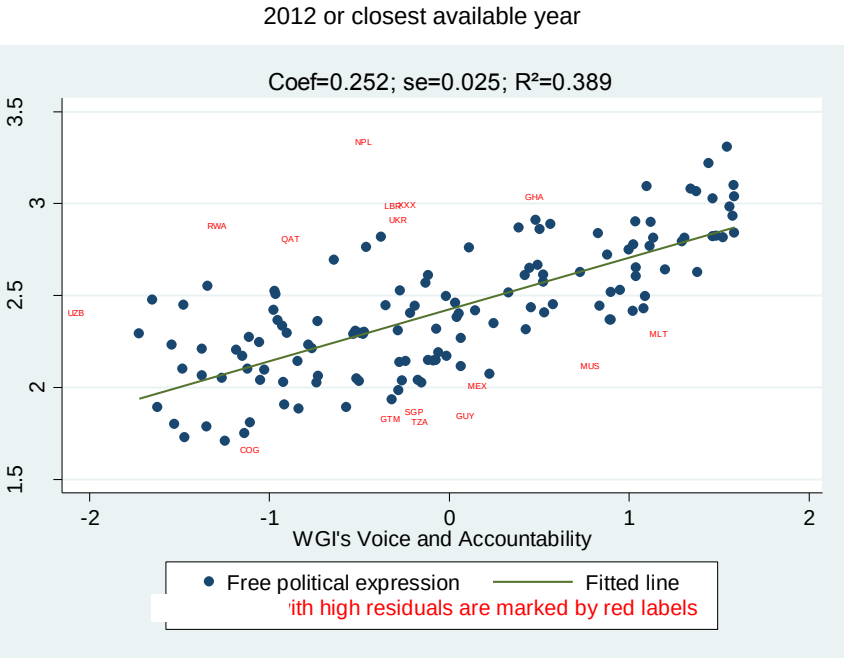


7.3. Feelings about freedom of expression

116. There is a strong relationship between the people's perceived freedom of political expression ("In your opinion, how many people in this country, if any, are afraid to openly express their political views?") and the voice and accountability sub-dimension of the World Bank's World Governance Indicators (WGI).

As illustrated in Figure 31, higher scores on voice and accountability are associated with a greater likelihood of people feeling that political views can be expressed freely.

Figure 31: Freedom of expression is positively associated with voice and accountability

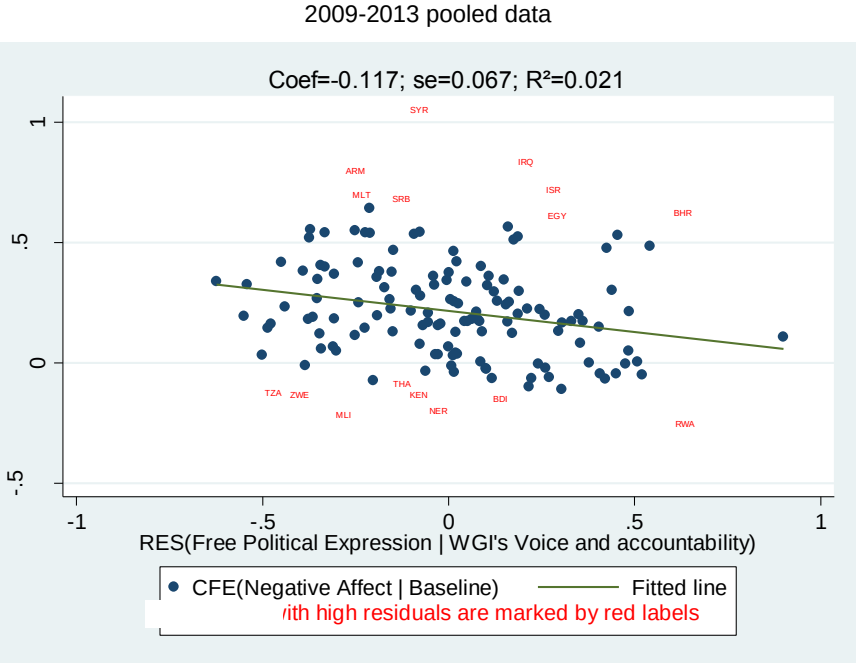


Note: For each point on the chart, both data sources are drawn from the same year. Where 2012 data are not available, but data for both 2011 and 2013 exist, only data from 2011 are shown.

Sources: Gallup World Poll and World Bank World Governance Indicators (WGIs).

117. Differences between perceived freedom of political expression and political voice (measured by the WGI voice and accountability indicators) are not significantly related to the gap between actual and expected subjective well-being (for life evaluations, affect balance, and positive affect). There is, on the contrary, a small negative relationship for negative affect (Figure 32, below): the higher the average level of negative affect (controlled for baseline life circumstances), the more negatively people feel about their ability to express themselves politically (over and above the predictions of the WGI voice and accountability measure). Even this relationship, however, only accounts for a very small proportion of the gap between actual and expected negative affect.

Figure 32: Negative affect CFEs are associated with more negative appraisals of political expression



Summary

118. In general, the analyses in this section show consistent relationships between people's perceptions about country circumstances (income, the economy, political freedom), and more objective measures of those circumstances. In fact, they suggest a surprising degree of accuracy among respondents, given that most could not be expected to have an in-depth knowledge about how their country or territory compares globally on many of these measures.

119. Nonetheless, unexplained variance remains: people in some countries and territories give a more positive appraisal of their prevailing living conditions than the objective datamight predict, while others give a more negative assessment overall. The tendency to view life circumstances relatively more positively (or negatively) than objective conditions suggest is also correlated with the tendency to view life – and experience emotions – more positively (or negatively) than objective conditions suggest. The relationship between "perception gaps" in the measures examined here and the perception gaps between actual and predicted subjective well-being as measured by the country fixed effect were by far the strongest regarding perceptions about income, and weakest with regard to perceptions about political freedom of expression. There are at least three different ways these results could be interpreted:

1. People's *expectations* play a role: if people have low expectactions, they may be more easily satisfied with their living conditions (e.g., their income, or with the economy), and therefore also more easily satisfied in life as a whole, and experience more positive and less negative emotion. This could be an appraisal style that relates to cultural or historical differences in life experiences, and could make a meaningful difference to someone's private feelings (*i.e.* a form of *cultural impact*).

2. Conversely, some cultures might have social norms that make expressing unhappiness or dissatisfaction with life circumstances (or life as a whole) undesirable, regardless of a person's true feelings. A "*mustn't grumble*", "*stiff upper lip"* or "*can-do attitude*" social norm might require

people to express positive appraisals in public, regardless of someone's private feelings. This would arguably be a source of *cultural bias*.

3. These analyses could *miss important factors*: there may be other variables (such as health, personal safety, social connections, levels of trust, or inequalities in income and wealth) which could affect both how easy, enjoyable and satisfying people find their lives, as well as how positively they appraise their income, economy and freedom of expression.

120. The analysis conducted here does not identify which of the three possibilities is correct. However, if it is assumed that *all* of the correlation between perception gaps and the difference between perceived and actual subjective well-being is cultural bias (option 2) then this establishes an upper limit for the impact of cultural bias on subjective well-being. Taking the results from feelings about the economy and feelings about income, between 5.6% and 19% of unexplained variance in country level subjective well-being could be attributed to cultural bias. Based on the highest model R^2s, this means that cultural bias could be responsible for country differences of *up to* 0.568 scale points in life evaluations (0-10 scale), up to 0.165 scale points in positive affect (0-3 scale), up to 0.146 scale points in negative affect (0-3 scale) and up to 0.385 scale points in affect balance (-3 to +3 scale) To the extent that either of the other two explanations for the correlation outlined above are true, cultural bias would have a smaller impact.

121. Interestingly, positive appraisal styles do *not* seem to explain the very positive life evaluations in several Latin American countries (Costa Rica, Brazil, Venezuela, Mexico, and Chile). In these countries, people rate their life overall very positively, but do not "overestimate" (*i.e.*, have an overly positive view of) their income levels or the performance of the economy. Consistent with Diener *et al.* (2000) this argues against a blanket bias in these countries causing people to regard every aspect of life more positively. It also points away from the idea that an extreme response style (*i.e.* a tendency to endorse high scores on a response scale) is the sole factor at work.

122. Furthermore, the very high levels of negative affect (low positive affect and low affect balance) seen in several Middle Eastern countries (Iraq, Iran, Syria, Israel) as well as Armenia and Serbia do not seem to be associated with a systematic tendency towards negative appraisals of income, the economy, or political freedom. It is highly likely that these negative experiences relate to unmeasured life circumstances, including experiences of conflict, rather than simply to a more negative outlook on life.

8. Cultural transmission among migrants: Separating culture from country circumstance

123. One of the major challenges in estimating the effects of culture on cross-country comparisons of subjective well-being stems from the difficulty of separating the influence of objective country circumstances (*e.g.* the economic, social, political and environmental conditions in a country) from the influence of cultural circumstances (language, history, customs, values, norms, and attitudes or 'mind-set'). The two may even co-evolve to some extent (Welzel, 2013; Gelfand *et al.*, 2011). The determinants of subjective well-being are so wide-ranging that simply controlling for current country circumstances will not be sufficient to isolate the impact of culture – first because there is always a risk that critical variables are excluded from the analysis, and second because culture and country circumstances may be inextricably intertwined. Migration potentially offers a unique "natural experiment" that can help to isolate psychological and cultural influences from current country circumstances (Senik, 2014). This is because first-generation migrants are likely to share some of the cultural background (and perhaps childhood influences) of their country of origin, and yet their immediate country circumstances will be determined by their country of residence.

124. This section examines the extent to which subjective well-being is influenced by a person's place of birth, where this differs from their country or territory of residence. The conceptual approach (explained

in detail at Annex 14) is perhaps easiest to illustrate with a specific example: Denmark is consistently ranked as one of the happiest countries in the world on the basis of life evaluation data. The goal is to understand if this effect is most strongly associated with *living in Denmark* (country circumstances) or whether it is more associated with *being Danish* (cultural transmission). Looking at the experiences migrants living in Denmark, and Danish people living outside Denmark, can help to unpack this. If migrants living in Denmark show a *Denmark Effect*, this suggests that country circumstances are contributing to the high levels of subjective well-being typically observed. But if Danes living outside Denmark still show a *Denmark Effect* this could suggest something particular to Danish culture that drives subjective well-being. Of course, a range of individual-level determinants will also need to be controlled in such analyses – to account for the fact that Danish migrants (or migrants to Denmark) might differ from other migrants (or natives) in terms of their education, income, employment status, *etc*. There is also an in-built assumption that being born in a particular country would make you more likely to share that country's culture.

125. An association between a person's subjective well-being and the fixed effect for that person's country of birth does not necessarily imply cultural bias. The association may be due to cultural factors associated with the country of birth, but it is also possible that events early in the person's life course might influence their current well-being, or that the well-being of friends and family still living in the country of birth might influence the respondent's current subjective well-being. However, there are a number of reasons to believe that looking at country of birth effects provides useful information on culture. First, evidence on the impact of life course events on current well-being shows that, although significant, the magnitude is small. Clark et al (2013) find that early life course events (up to age 16) are associated with 7.1% of current variance in life satisfaction. Second, the size of the impact of country of birth on the subjective well-being of migrants provides an upper limit on the magnitude of cultural bias, and can tell us whether the cultural effect is big enough to matter or not.

126. Fernández (2010) sets out a general empirical strategy for migrant studies on culture, described as the "epidemiological approach" (drawing analogy with epidemiological studies of genetic versus environmental determinants of health). This approach tends to use the average level of the target variable in the migrant's country of ancestry as a predictor of migrant outcomes. For example, Luttmer and Singhal (2011), used the mean average score on a survey measure of redistribution preferences in migrants' countries of birth to predict their current redistribution preferences; Fernández and Fogli (2010) use the labour force participation and total fertility rates among married women in their country of ancestry to predict the work and fertility behaviour of second-generation North American women. In contrast to these approaches, Senik (2011; 2014) uses migrant status as identification strategy among full population samples, exploiting differences in subjective well-being between migrants and natives to estimate the size of the cultural effect *among natives*.[33] The analyses that follow are in the spirit of Fernández' epidemiological approach, but use estimates of the country fixed effects on subjective well-being as an alternative to using country average levels, because the primary interest is not in the parts of the birth country effect that can be explained by life circumstances, but specifically the part of the birth country effect that cannot. To that extent, it offers a more stringent test of cultural transmission: we are not interested in the overall impact of the *level* of subjective well-being in the country of birth, but rather, whether the *unexplained* part of subjective well-being in the country of birth has predictive power.

127. The analytical approach makes use of the country fixed effects observed in the previous section. Again, using Gallup World Poll data from 2009-2013, four different subjective well-being outcomes are

[33] That said, Senik also adopts this "epidemiological approach" as part of her robustness checks, finding a partial correlation coefficient of 0.248 ($p < 0.001$) between the evaluative happiness of second generation migrants, and the evaluative happiness observed in their country of origin.

explored. The sample is the same as that used in previous regressions, and includes over 600,000 observations. 4.2% of the total sample (just under 29,000 respondents in total) were born abroad, and of those around 24% had been living in their current country (or territory) of residence for fewer than 5 years. Annex 14 provides a full breakdown of immigrant and emigrant respondentsincluded in the sample.

128. For each subjective well-being outcome, two new values have been imputed for every individual in the data set: the country fixed effect associated with their place of birth ("origin effect"), and the country fixed effect associated with their current place of residence ("residence effect").[34] For example, an individual born in Denmark but living in Japan will take on values reflecting the country fixed effect of Denmark for the "origin effect" variable, and values from the country fixed effect of the Japan for the "residence effect" variable. In the statistical model, we make this "origin effect" compete with the "residence effect", to see which explains more of the individual subjective well-being outcomes (again controlling for the standard set of life circumstances included in baseline model used in earlier analyses). This essentially means evaluating the impact of *being Danish* versus the impact that *living in Japan* has on a person's subjective well-being. The former encapsulates what people inherit from their country of origin, whereas the latter indicates how current country circumstances influence subjective well-being.

8.1. Cultural transmission and life evaluations

129. It is useful to begin by re-specifying the model from Section 5 to put the country fixed effects for country of residence into the individual level model. As can be seen in the Model 1 column of Table 5 (below), the coefficient on the country fixed effects for country of residence is 1.0, reflecting that this model essentially just re-works the same information as the baseline model. Re-framing the model in this way adds no information, but makes the expansion to include country of birth in the next stage easier to follow.

130. Model 2 in Table 5 (below) includes *both* residence country and origin country effects. For the majority of the sample, the value for the residence country and the origin country will be identical. The empirical strategy therefore relies on the presence of migrants in the sample to identify the country of origin effect (as opposed to the *country circumstance* effect – which is indicated by the residence variable in this analysis). In this analysis, the coefficient on country of residence (now identified as country circumstances) drops to 0.817, while the origin country attracts a coefficient of 0.191. Both coefficients are highly significant. This indicates that around 81% of country-specific variance in subjective well-being is associated with residence in a country, and around 19% is associated with country of birth. In principle, this suggests that an average of 19% of the country fixed effect on life evaluation could be due to culture.[35]

[34] The present analyses include both countries and territories, but the terms "country of residence" and "country of birth" are used for convenience throughout this section.

[35] Note that these values do not sum precisely to 100% due to the non-null effect of the baseline variables on country of birth, conditional on country of residence.

Table 5: Cultural transmission and life evaluation

Model DV: Life evaluation	Model 1. Country of residence only			Model 2. Country of residence + country of birth			Model 3. Adding interaction affects		
Statistic	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE
Age	-0.0450	***	0.000900	-0.0449	***	0.000900	-0.0449	***	0.000900
Age²	0.000367	***	0.00000972	0.000366	***	0.00000972	0.000366	***	0.00000972
Female	0.0927	***	0.00543	0.0916	***	0.00543	0.0916	***	0.00543
Coupled	0.200	***	0.00669	0.202	***	0.00669	0.202	***	0.00669
Nb Children (0 to 3+)	-0.0238	***	0.00322	-0.0232	***	0.00322	-0.0232	***	0.00322
Immigrant (yes/no)	-0.162	***	0.0157	-0.0892	***	0.0164	-0.0945	***	0.0168
Immigrant > 5 years	0.0228		0.0385	-0.0140		0.0382	-0.0246		0.0392
Eq.Income (log-real PPP$)	0.282	***	0.00351	0.282	***	0.00351	0.282	***	0.00351
Unemployed	-0.501	***	0.0128	-0.501	***	0.0128	-0.501	***	0.0128
Primary [base]	0		.	0		.	0		.
Secondary	0.392	***	0.00786	0.391	***	0.00786	0.391	***	0.00786
Tertiary	0.792	***	0.0105	0.792	***	0.0105	0.793	***	0.0105
Rural [base]	0		.	0		.	0		.
Village	0.0701	***	0.0116	0.0693	***	0.0116	0.0693	***	0.0116
Suburb	0.127	***	0.0166	0.128	***	0.0166	0.128	***	0.0166
Large City	0.183	***	0.0114	0.184	***	0.0114	0.184	***	0.0114
2009 [base]	0		.	0		.	0		.
2010	0.0422	***	0.0154	0.0447	***	0.0154	0.0447	***	0.0154
2011	0.0291	**	0.0148	0.0308	**	0.0148	0.0308	**	0.0148
2012	-0.00694		0.0143	-0.00542		0.0143	-0.00538		0.0143
2013	-0.0134		0.0153	-0.0129		0.0153	-0.0130		0.0153
Country of residence (COR)	1.000	***	0.00594	0.817	***	0.0172	0.729	***	0.0391
Country of birth (COB)				0.191	***	0.0169	0.177	***	0.0467
COR*(Immigrant > 5 years)							0.101	**	0.0419
COB*(Immigrant > 5 years)							0.000350		0.0490
Constant	3.868	***	0.0524	3.906	***	0.0523	3.917	***	0.0532
r2	0.267			0.267			0.267		
N	676117			676117			676117		
N_psu	180045			180045			180045		
N_strata	8848			8848			8848		
* p <0.1 ** p <0.05 *** p<0.01									

Source: Gallup World Poll, 2009-2013 pooled data

131. Thus, if we make the assumption that the strength of cultural transmission is the same across all countries[36], migrants from Denmark (with a country fixed effect of 1.42) might see their life evaluations boosted 0.26 scale points higher, on average, as a result of *being Danish*. This compares to an average effect of *living in Denmark* of around 1.16 scale points. These results suggest that while the country in which migrants are born does seem to have an impact on life evaluations, current country circumstances matter a good deal more. In practice, the impact of cultural bias is likely to be significantly less than the estimate above as the country of birth also captures early life course events and any residual associations between the migrant and their country of origin. That said, this average effect could also mask considerable heterogeneity among countries and territories, with some having higher levels of cultural transmission, and others having lower levels.

132. Model 3 in Table 5 considers acculturation effects among immigrants. In the Gallup World Poll survey, respondents born abroad are asked to indicate whether they have been living in their current country of residence for less than five years. One might anticipate that relatively new migrants would show

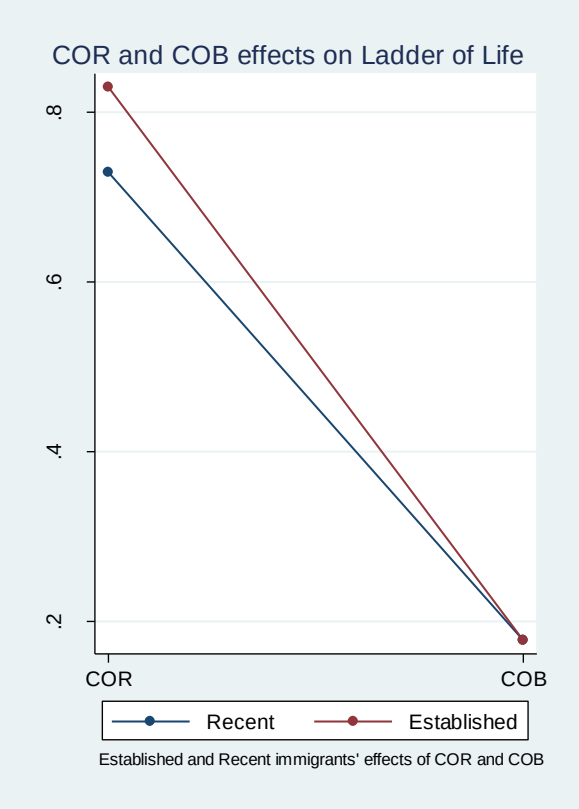
[36] An assumption that is likely to be too strong in practice, but is made here for illustrative purposes only.

a weaker effect of country of residence on their current well-being, as they have had less time to acculturate in their new country. This can be explored through looking at the interactions between duration of stay (new migrant vs. 5 years or more) and the size of cultural transmission vs. country circumstance effects.

133. Life evaluation results indicate a significant interaction between country of residence and the duration of stay: established migrants show a stronger country of residence effect than recent migrants (plotted in Figure 33, below). Thus, the ambient subjective well-being in the country of residence matters more for migrants' own levels of subjective well-being as time goes on. On the other hand, there is no significant interaction between duration of stay and the origin country effect, suggesting that the cultural transmission effect is reasonably persistent over time.

Figure 33: Established migrants show a stronger country of residence effect

The interaction between migrants' duration of stay and the country of residence/ country of birth effect on life evaluations



Note: This figure plots the coefficients shown in Table 5, Model 3.

Source: Gallup World Poll, years 2009-2013 pooled

8.2. Cultural transmission and positive affect

134. The same 'cultural transmission' analyses were performed for positive affect. Table 6 goes through each step in the analysis. Adding country of birth fixed effects into Model 2 finds the coefficient on country of residence (now identified as country circumstances) drops to 0.80, while the origin country attracts a coefficient of 0.20. Both coefficients are highly significant. This indicates that, on average, 80% of country-specific variance in subjective well-being is associated with residence in a country, and 20% is

associated with country of birth. In principle, this would suggest that an average of 20% of the country fixed effect on positive affect could be due to some form of cultural effect. In practice, as the maximum range of country fixed effects on positive affect is 1.216 scale points, this result implies an expected maximum cultural effect of 0.24 scale points.

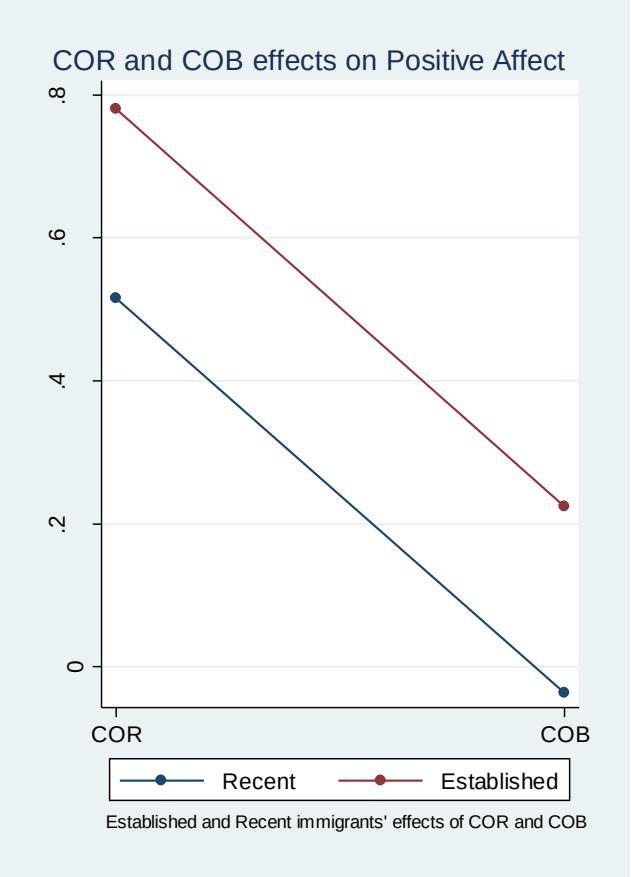
Table 6: Cultural transmission and positive affect

Model DV: Positive affect	Model 1. Country of residence only			Model 2. Country of residence + country of birth			Model 3. Adding interaction affects		
Statistic	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE
Age	-0.0269	***	0.000452	-0.0268	***	0.000452	-0.0268	***	0.000452
Age²	0.000215	***	0.00000487	0.000215	***	0.00000487	0.000215	***	0.00000487
Female	0.00166		0.00284	0.00152		0.00284	0.00151		0.00284
Coupled	0.0781	***	0.00343	0.0783	***	0.00343	0.0782	***	0.00343
Nb Children (0 to 3+)	-0.0140	***	0.00160	-0.0139	***	0.00160	-0.0139	***	0.00160
Immigrant	-0.0736	***	0.00862	-0.0707	***	0.00856	-0.0702	***	0.00856
Immigrant > 5 years	-0.0472	***	0.0181	-0.0632	***	0.0182	-0.112	***	0.0206
Eq.Income (log-real PPP$)	0.0698	***	0.00137	0.0699	***	0.00137	0.0700	***	0.00137
Unemployed	-0.0918	***	0.00645	-0.0918	***	0.00645	-0.0917	***	0.00645
Primary [base]	0		.	0		.	0		.
Secondary	0.104	***	0.00381	0.104	***	0.00382	0.104	***	0.00382
Tertiary	0.171	***	0.00515	0.171	***	0.00515	0.171	***	0.00515
Rural [base]	0		.	0		.	0		.
Village	-0.00528		0.00538	-0.00532		0.00538	-0.00529		0.00538
Suburb	-0.0129	*	0.00729	-0.0129	*	0.00729	-0.0128	*	0.00728
Large City	-0.0179	***	0.00540	-0.0177	***	0.00540	-0.0178	***	0.00540
2009 [base]	0		.	0		.	0		.
2010	0.00895		0.00718	0.00956		0.00717	0.00955		0.00717
2011	-0.0130	*	0.00678	-0.0125	*	0.00678	-0.0126	*	0.00677
2012	-0.0154	**	0.00658	-0.0150	**	0.00658	-0.0150	**	0.00657
2013	-0.0104		0.00693	-0.0101		0.00693	-0.0101		0.00693
Country of residence (COR)	1.000	***	0.00802	0.801	***	0.0311	0.515	***	0.0830
Country of birth (COB)				0.202	***	0.0306	-0.0371		0.0647
COR*(Immigrant > 5 years)							0.265	***	0.0868
COB*(Immigrant > 5 years)							0.262	***	0.0693
Constant	2.037	***	0.0235	2.051	***	0.0236	2.099	***	0.0254
r2	0.0950			0.0951			0.0952		
N	624837			624837			624837		
N_psu	172503			172503			172503		
N_strata	8606			8606			8606		
* p <0.1 ** p <0.05 *** p<0.01									

Source: Gallup World Poll, 2009-2013 pooled data

135. There is again a significant interaction in Model 3: this time, more established migrants show a stronger country of birth *and* a stronger country of residence effect (Figure 34, below). When these interactions are included in the model, the direct effect of country of birth becomes non-significant – which perhaps implies that the country of birth effect observed in Model 2 is driven by the more established migrants in the sample. This result is difficult to interpret, but could relate to the emotional turmoil that recent migrants might go through (*e.g.* following separation from family, friends, starting a new job in a new country, *etc.*). If recent migration is an emotionally disruptive period, the ambient effects of country of residence, and the cultural effects of country of birth may only be apparent among more established migrants.

Figure 34: Positive affect is more likely to be influenced by both culture *and* country of residence among more established migrants



Source: Gallup World Poll, 2009-2013 pooled data

8.3. Cultural transmission and negative affect

136. Negative affect also shows evidence of significant cultural transmission (Table 7), but the coefficient on country of birth is smaller in this instance (0.0955) – suggesting that culture has less impact, and country of residence more impact, on CFEs for negative affect, relative to the other components of subjective well-being. This indicates that, on average, cultural effects might be responsible for country differences of *up to* 0.13 scale points (on a 0-3 scale) in the case of negative affect. There is a very small interaction effect suggesting that more recent migrants show a stronger country of residence effect, but this is only significant at the 0.1 level. With the interactions included in the final model, the country of birth effect fails to reach significance.

Table 7: Cultural transmission and negative affect

Model DV: Negative affect	Model 1. Country of residence only			Model 2. Country of residence + country of birth			Model 3. Adding interaction affects		
Statistic	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE
Age	0.0190	***	0.000423	0.0190	***	0.000423	0.0190	***	0.000423
Age²	-0.000171	***	0.00000451	-0.000171	***	0.00000451	-0.000171	***	0.00000451
Female	0.0775	***	0.00264	0.0775	***	0.00264	0.0775	***	0.00264
Coupled	-0.0736	***	0.00321	-0.0737	***	0.00321	-0.0737	***	0.00321
Nb Children (0 to 3+)	0.0189	***	0.00151	0.0188	***	0.00150	0.0189	***	0.00150
Immigrant	0.0602	***	0.00783	0.0606	***	0.00788	0.0607	***	0.00788
Immigrant > 5 years	-0.0161		0.0186	-0.00734		0.0183	0.0162		0.0248
Eq.Income (log-real PPP$)	-0.0614	***	0.00129	-0.0615	***	0.00129	-0.0615	***	0.00129
Unemployed	0.233	***	0.00633	0.233	***	0.00633	0.233	***	0.00633
Primary [base]	0		.	0		.	0		.
Secondary	-0.0871	***	0.00358	-0.0871	***	0.00358	-0.0870	***	0.00358
Tertiary	-0.138	***	0.00482	-0.138	***	0.00482	-0.137	***	0.00482
Rural [base]	0		.	0		.	0		.
Village	0.00619		0.00488	0.00610		0.00488	0.00610		0.00488
Suburb	0.0387	***	0.00717	0.0384	***	0.00717	0.0385	***	0.00717
Large City	0.0286	***	0.00500	0.0284	***	0.00500	0.0284	***	0.00500
2009 [base]	0		.	0		.	0		.
2010	-0.0223	***	0.00669	-0.0225	***	0.00669	-0.0224	***	0.00668
2011	0.00353		0.00637	0.00333		0.00637	0.00336		0.00637
2012	0.0452	***	0.00624	0.0450	***	0.00624	0.0450	***	0.00624
2013	0.0677	***	0.00660	0.0677	***	0.00660	0.0677	***	0.00660
Country of residence (COR)	1.000	***	0.00870	0.903	***	0.0330	1.033	***	0.0801
Country of birth (COB)				0.0995	***	0.0326	0.0723		0.0696
COR*(Immigrant > 5 years)							-0.150	*	0.0821
COB*(Immigrant > 5 years)							0.0464		0.0711
Constant	0.600	***	0.0230	0.591	***	0.0228	0.568	***	0.0283
r2	0.0800			0.0800			0.0800		
N	639586			639586			639586		
N_psu	176816			176816			176816		
N_strata	8620			8620			8620		
* p <0.1 ** p <0.05 *** p<0.01									

Source: Gallup World Poll, 2009-2013 pooled data

8.4. Cultural transmission and affect balance

137. Finally, in the case of affect balance, country of residence accounts for around 83% of the total country fixed effect observed, while country of birth accounts for around 17% (Table 8). This implies that, on average, cultural effects might be responsible for country differences of *up to* 0.348 scale points (on a -3 to +3 scale) in the case of affect balance. There is again a significant interaction term, this time implying that more established migrants show a stronger country of birth effect. Like the interaction for positive affect, this is difficult to interpret, and suggests the emotional experiences of recent migrants bear less relation to ambient levels of emotion in either country of residence or country of birth.

Table 8: Cultural transmission and affect balance

Model DV: Affect balance	Model 1. Country of residence only			Model 2. Country of residence + country of birth			Model 3. Adding interaction affects		
Statistic	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE
Age	-0.0461	***	0.000734	-0.0461	***	0.000734	-0.0461	***	0.000734
Age²	0.000389	***	0.00000787	0.000389	***	0.00000786	0.000389	***	0.00000786
Female	-0.0743	***	0.00459	-0.0746	***	0.00459	-0.0745	***	0.00459
Coupled	0.152	***	0.00554	0.152	***	0.00554	0.152	***	0.00554
Nb Children (0 to 3+)	-0.0337	***	0.00255	-0.0335	***	0.00255	-0.0335	***	0.00255
Immigrant	-0.133	***	0.0138	-0.132	***	0.0138	-0.131	***	0.0138
Immigrant > 5 years	-0.0314		0.0309	-0.0603	*	0.0308	-0.00459		0.0311
Eq.Income (log-real PPP$)	0.132	***	0.00226	0.132	***	0.00226	0.132	***	0.00226
Unemployed	-0.326	***	0.0108	-0.327	***	0.0108	-0.326	***	0.0108
Primary [base]	0		.	0		.	0		.
Secondary	0.190	***	0.00620	0.191	***	0.00620	0.191	***	0.00620
Tertiary	0.307	***	0.00830	0.308	***	0.00830	0.308	***	0.00830
Rural [base]	0		.	0		.	0		.
Village	-0.0109		0.00844	-0.0108		0.00844	-0.0107		0.00844
Suburb	-0.0507	***	0.0119	-0.0502	***	0.0119	-0.0502	***	0.0119
Large City	-0.0461	***	0.00868	-0.0455	***	0.00868	-0.0456	***	0.00868
2009 [base]	0		.	0		.	0		.
2010	0.0300	***	0.0115	0.0310	***	0.0115	0.0309	***	0.0115
2011	-0.0177	*	0.0107	-0.0169		0.0107	-0.0170		0.0107
2012	-0.0600	***	0.0105	-0.0592	***	0.0105	-0.0592	***	0.0105
2013	-0.0761	***	0.0111	-0.0758	***	0.0111	-0.0758	***	0.0111
Country of residence (COR)	1.000	***	0.00837	0.831	***	0.0325	0.715	***	0.0832
Country of birth (COB)				0.172	***	0.0320	0.0137		0.0670
COR*(Immigrant > 5 years)							0.0918		0.0854
COB*(Immigrant > 5 years)							0.184	***	0.0685
Constant	1.436	***	0.0390	1.463	***	0.0389	1.407	***	0.0394
r2	0.0998			0.0999			0.1000		
N	617177			617177			617177		
N_psu	171937			171937			171937		
N_strata	8604			8604			8604		
* p <0.1 ** p <0.05 *** p<0.01									

Source: Gallup World Poll, 2009-2013 pooled data

8.5. Limitations

138. A key limitation of this approach is that it makes the assumption that the average residence and origin effects will be the same across all countries and territories. In practice, however, some may have stronger cultural effects on subjective well-being than others – *e.g.* if they have stronger social norms around the expression of emotion or the need to show a "stiff upper lip" in the face of adversity. This should, to some extent, be captured in the size of the country fixed effects observed overall - but the constitution of those fixed effects may be different in different places (*i.e.* some may reflect prevailing life circumstances, while others may be more attributable to culture). Unfortunately, the small sample sizes of migrants currently available in the Gallup World Poll make it difficult to examine heterogeneity in these effects[37].

37 In principle, with a large enough sample, one could address this heterogeneity: Instead of adding country of residence and country of birth country fixed effect coefficients as continuous variables in the analysis, two sets of dummy variables could be added to the baseline model: a set of dummy variables to indicate individuals' country of birth, and separate set of dummy variables to indicate individuals' country of residence. This would provide an estimate of origin and residence effects *specific to each country*, and will

139. A further limitation involves the use of migrants to estimate cultural impacts. While migrants offer a unique method for separating country circumstances from culture, there are several reasons to be cautious in generalising these results to the population at large. First, migrants are not a random sample of their country of origin's population, meaning that there are strong risks in attributing traits observed among migrants back to their country of birth's population more broadly. For example, income has been found to have a larger impact on the life satisfaction of migrants than it does on the general population, at least in some countries (Bartram, 2011; Ogliati, Calvo and Berkman, 2013), perhaps reflecting that migration tends to self-select people to whom economic improvement is particularly important. Estimates of the size of cultural impacts in the present analyses are also likely to be biased downwards for two reasons:

1. Migrants' culture is likely to be a mix of their country of origin and their country of residence. Restricting the analysis to migrants who have very recently arrived in their country of residence would be a way to explore this further, but since migrating to another country often involves a degree of stress and upheaval, a person's subjective well-being in the immediate aftermath of such a move may not be very characteristic of their experiences of life in general.

2. Migrants are not randomly allocated to countries. Thus, they may be more likely to migrate to a culture that is either closer to their own, or closer to the set of values that they would prefer to live by.

140. On the other hand, studying the experiences of migrants is unlikely to help identify biases associated with language or translation effects, since immigrants will usually respond to surveys in the language of their country of residence, rather than that of their country of origin (if there is indeed there is a difference between the two). This is arguably a positive feature if the goal is to identify genuine cultural transmission, but makes the technique less useful for picking up artefactual cultural effects or response biases.

141. As the main goal of this paper is to better understand cross-country comparisons of subjective well-being, the focus on country level effects seems justified. Nonetheless, many facets of culture are likely to operate either within or across country borders. Thus, a further limitation of the present approach is that it identifies a person's culture based only on their country (or territory), rather than through more direct measures at the individual level (such as cultural values, traits, *etc*).

9. Conclusions

142. The comparison of subjective well-being levels across countries has traditionally faced two major criticisms: first, concerns that there are no meaningful differences between countries, and second, that the differences observed between countries might simply result from different culturally specific response styles. If the former is true, then differences in the subjective well-being of countries would simply be random noise, while in the latter case, rather than capturing anything meaningful about the well-being of residents in the countries concerned, differences in subjective well-being would just reflect how people in different cultures express themselves. The first of these criticisms is now largely a historical artefact. Extensive work on the international distribution of subjective well-being (*e.g.* Ouweneel and Veenhoven, 1991; Helliwell *et al*., 2013) has consistently demonstrated that country differences are large, and that these differences are meaningful. Cross country differences in subjective well-being have the expected relationship with other variables such as GDP per capita (Deaton, 2011) and other well-being outcomes

be an important extension of the approach in future as larger sample sizes become available in future waves.

(Helliwell *et al*). This is particularly the case in relation to life evaluations but also holds for measures of affect. These findings form the starting point for this report, and are confirmed in Section 4.

143. Whether there is a significant cultural element to cross-country differences in subjective well-being has proved more difficult to resolve. This issue has been the main focus for this paper. An analysis of country fixed effects (*i.e.* the unexplained variance in average levels of subjective well-being at the country level) highlights that a non-trivial proportion of the country-specific variation in subjective well-being remains unexplained after accounting for income and other well-being related outcomes that vary at an individual level[38]. The country fixed effects from the models in this paper range from –1.9 to +1.5, a 3.4 scale point gap in the case of life evaluations. , English speaking, Nordic and some Latin American countries are associated with relatively large positive fixed effects, typically of +1 or greater. In contrast, EECCA, Middle Eastern and Sub-Saharan African countries are associated with large negative fixed effects.

144. In a sense these country fixed effects present a picture consistent with culture being a significant driver of cross-country differences in subjective well-being. Senik (2014) discussed the potential role of culture in explaining the gap in subjective well-being scores between France and other European countries, while there has been extensive discussion of the relatively high subjective well-being scores often found in parts of Latin America (Graham and Lora, 2009; Inglehart *et al*. 2013). In other ways, however, the country fixed effects may be better accounted for by factors other than culture. Conflict and political instability, for example, are clearly correlated with many of the large negative country fixed effects in the Middle East and Africa, while other wealthy Middle-Eastern countries not affected by conflict, such as Qatar, have positive country fixed effects.

145. Resolving whether there is a large cultural component to cross-country variation in subjective well-being is important. In particular, if cultural bias is a large component of cross-country variation then there is little purpose in comparing average levels of subjective well-being across countries. On the other hand, if cultural bias has a small impact on subjective well-being relative to policy-amenable variables such as health, education, income, and labour market outcomes, then subjective well-being measures may offer considerable insight into the relative performance of different countries.

9.1. The impact of culture

146. The challenges of empirically identifying whether cross country differences in subjective well-being are due to culture or to other unobserved factors that vary at the country level were discussed in Sections 2 and 3 of this paper. To address these issues, three distinct methodologies were applied to data from the Gallup World Poll. While none of these approaches is able to provide a definitive estimate of the impact of culture on subjective well-being, they do provide some information about the likely maximum size of any plausible cultural impact. This is because, in all three cases, the main methodological issue is that the instrument used to detect culture will also capture the impact of some other unobserved variables. Thus, the actual size of any cultural impact is almost certain to be lower than the estimates derived here.

147. Table 9 below summarizes the results from this paper and converts these results into a maximum effect size for life satisfaction on a 0-10 scale. This can be compared to Table 1 in the introduction, which summarises other findings from the literature. Column1 of the table identifies the methodology involved, while column 2 presents the results in terms of the proportion of unexplained cross-country variance in

[38] Variation in GDP per capita alone leaves 44% of cross country variance in average life evaluation unexplained. Including other objective and subjective drivers of subjective well-being that vary at the country level reduces this to 22%.

average levels of life satisfaction accounted for by culture. This is essentially the marginal addition to R^2 accounted for by the instrument used for culture in each case. Column 3 converts the results from column 2 into a score on the 0-10 scale used to measure life satisfaction. This is calculated as the maximum range of country fixed effects (3.4 scale points) multiplied by the estimate of cultural impact from column 2. Because the difference in country fixed effects on life satisfaction between any two countries will usually be much less than the maximum 3.4 scale points (for example, the difference between France and the United States is 0.473 scale points), the score in column 3 gives the largest value for cultural impact that can be obtained from the data rather than the average impact of culture.[39]

Table 9: Estimates of potential cultural bias

Method	% of variance in CFEs accounted for	Implied size of effect
Life evaluation		***(scale points on a 0-10 measure)***
Welzel secular and emancipative cultural values (Section 6)	44%	1.50
Positive and negative appraisal styles (Section 7)	5.6% to 17%	0.19 to 0.58
Cultural transmission among migrants (Section 8)	18%	0.61
Affect balance		***(scale points on a -3 to +3 measure)***
Welzel secular and emancipative cultural values (Section 6)	1.5%	0.037
Positive and negative appraisal styles (Section 7)	11.9% to 18.8%	0.30 to 0.46
Cultural transmission among migrants (Section 8)	17.2%	0.42

148. It is evident from Table 9 that even the largest estimates of the effect of culture on measures of life evaluation are well below the maximum of 3.4 scale points. The largest estimate, by far, is that associated with using Welzel's secular and emancipative cultural values measures from the World Values Survey. These scales account for 44 percent of variance in the country fixed effects from the baseline model in Section 5. This translates into a maximum of 1.5 scale points of variation in life satisfaction. However, given that the range between the highest scoring and lowest scoring country in the Gallup World Poll is only 5 points, this is still a relatively large effect.

149. By way of contrast, the estimates from the analysis of positive and negative appraisal styles (Section 7) and cultural transmission among migrants (Section 8) are much smaller. The appraisal styles analysis suggests a cultural impact of no more than 0.19 to 0.58 scale points, while the analysis of migrants suggests a maximum cultural impact on life evaluation of 0.61 points. These effects are broadly in line with each other and are much smaller than that implied by analysis of the Welzel scale. Evidence from previous studies on the magnitude of cultural impact outlined in Section 2 (e.g. Senik, 2014; Angelini *et al.*, 2014; Rice and Steele, 2004) generally finds effect sizes consistent with the estimates from looking at positive and negative appraisal styles and cultural transmission rather than the larger effect associated with using the Welzel scales as a measure of culture.

[39] Column 2 gives the average impact for culture across countries. If some cultures have a bigger impact on subjective well-being than others, then columns 2 and 3 may be biased downwards. This, however, needs to be offset against the fact that use of the maximum unexplained variance gap in column 3 (3.4 points) creates a strong upwards bias.

150. The lower part of Table 9, summarising the results for affect balance, provides a useful supplement to the analysis of life evaluation. The percentage of variance accounted for by appraisal styles ranges from 11.9% to 18.8%, a very similar range to that found for life evaluation. The estimate of variance in fixed effects for cultural transmission derived from looking at migrants is also very close to that for life evaluations at 17.2%. Given that life evaluation and affect measures have different objective drivers (Kahneman and Deaton, 2010; Helliwell, Layard and Sachs, 2013, Boarini et al, 2013), but might be expected to be affected in a similar way by culture, the similarity in the estimates is quite striking. In particular, if the results from the examination of appraisal styles and migrants were capturing some omitted variable other than culture, we might expect to see a different impact between measures of life evaluation and measures of affect. The fact that this is not the case here is consistent with the view that effects capture the impact of culture.

151. Interestingly, the results for the Welzel scale differ significantly between life evaluation and affect balance. For life evaluation the Welzel scale counts for 44% of unexplained variance across countries, while for affect balance it accounts for only 1.5%. This is consistent with the point raised in Section 6 that the Welzel scales correlate strongly with overall development for countries. While life evaluation is strongly correlated with both economic development and also with the Welzel scale, these relationships are much weaker in the case of affect balance. For this reason, the estimates of the size of cultural impact on subjective well-being derived from the Welzel scale should probably be discounted relative to the other two methodologies considered here as they may capture the impact of other omitted variables rather than culture[40].

152. Taken together, the Figures in Table 9 and the results from other authors reported in Table 1 present a consistent picture of the impact of culture on measures of subjective well-being. Table 9 suggests a credible range of effect sizes from 0.19 to 0.61 points on a 0 to 10 scale, representing between 5.6% and 18% of unexplained variance at the country level. Similar values from Table 1 (assuming a simple conversion to their impact on a 0-10 scale) are 0.29 (Rice and Steel, 2004), 0.38 (Minkov, 2009a), and 0.53 (Senik, 2014). .

9.2. What does this report say about the "puzzles" highlighted in previous research?

153. Several of the studies highlighted in Section 2 have identified paradoxes or "puzzles" in the ranking of countries based on subjective well-being. Most of these have been alluded to earlier: why France and wealthy East Asian countries such as Korea and Japan have lower subjective well-being scores than English-speaking countries, why Latin American countries have high levels of subjective well-being compared to other countries, and why countries of the EECCA report such low levels of subjective well-being.

154. Based on the values for cultural impact set out above it is possible to look at the potential contribution of culture to some of the well-being "puzzles" highlighted in prior research. The "French unhappiness puzzle", for example, seems rather less puzzling in a global context: while the average life evaluation in France is slightly lower than in some of its "happiest" northern European neighbours, France is still within the top quintile for life evaluations on a worldwide basis. The country fixed effect for France (0.473 when Viet Nam is the reference country) is positive, and of modest size in comparative terms, being smaller than that for the United Kingdom (country fixed effect of 0.767) and the United States (country fixed effect of 0.927). Taking the highest estimate for the role of culture from Table 9 would imply that 0.2

[40] This is not to suggest that the Welzel scales perform badly at measuring cultural values as intended by the developer, but rather that they perform poorly as an indicator of how culture affects measures of subjective well-being.

points of the difference between France and the United States is due to their different cultures[41]. If the lower estimates are taken, this drops to 0.077 points on the standard 0 to 10 scale. In fact, life evaluations in France are broadly in line with what might be expected, based on both France's GDP per capita, and its middle-of-the-OECD performance across many of the well-being domains reported in *How's Life?* (OECD 2011; 2013b).

155. The rankings of Asian OECD economies on life evaluations also look less stark when placed in the context of the global picture. The country fixed effects for Japan and Korea (relative to Viet Nam) are -0.151 and -0.228 respectively. This would imply a slightly bigger contribution from culture to the gap between these countries and the English-speaking world than is the case for France, but the contribution is still small. In the case of Japan, culture might account for between 0.194 and 0.474 points of the difference with the United States depending on whether one uses the perception gap/migrant estimates or the estimates from the Welzel measures. In the case of Korea, the relevant estimates are 0.208 and 0.508. Interestingly, most of this gap comes from the English-speaking countries having higher levels of life satisfaction than can be accounted for in the baseline model rather than a strictly "East Asian" effect. Across all forms of affect measures, Japan and Korea tend to outperform many OECD countries. When considering subjective well-being levels in these countries alongside both GDP and other indicators of well-being used by the OECD, they do not appear to be dramatic outliers. That said, the generally high levels of positive affect, and low levels of negative affect reported across East Asia (and to some extent Southeast Asia) is quite striking, and *could* reflect cultural factors. This conclusion does, however, contradict the predictions of previous smaller scale studies, and would be worthy of some further research.

156. In contrast, the analysis presented in this paper sheds relatively little light on the "Latin American Paradox". While several Latin American countries have relatively high country fixed effects (Argentina, 0.685; Chile, 0.884, Columbia, 0.730, Venezuela 1.178, Brazil, 1.309; Mexico, 1.399), these values are similar to the average for the English-speaking and Nordic countries. If the estimates from Table 9 are assumed to apply equally to all countries, then culture would account for only 0.035 to 0.086 of a point in the unexplained difference between the United States and Colombia (and the effect would be to lower Colombia's life satisfaction relative to the United States). However, this leaves open the question of what accounts for the high fixed effects associated with Latin American countries given that they are generally characterised by lower incomes, high inequality, and lower quality of public services than the English-speaking and Nordic countries. This paper does little to clarify the paradox. One notable feature, however, is that the Latin American effect is less visible among affect measures: moderate levels of positive affect in several Latin American countries are accompanied by moderate levels of negative affect in several cases, and the county fixed effects are not particularly strong in any of the three affect measures. This seems to run against the idea that Latin Americans lead particularly happy lives in emotional terms, translating into higher life evaluations. Furthermore, the perception gap analyses in Section 7 suggested that the high life evaluations reported in Latin America do not seem to result from a generalised positive appraisal style.

157. The "Russian Malaise" described by Inglehart and colleagues also proves difficult to evaluate. Life evaluations in the Russian Federation are approximately one scale point lower than the OECD average, which is not a large discrepancy. In relation to GDP and well-being domains, Russian life evaluations and positive affect also appear to be well within the expected range, although negative affect is marginally lower than predicted. Across EECCA countries more generally, there appears to be a tendency to report fewer emotions *in general* – and it's possible that cultural norms play a role in this. For example, with respect to Hofstede *et al.*'s (2010) indulgence versus restraint measure, it is notable that EECCA/

[41] The impact of culture on well-being differences between France and the United States is calculated as the value from column 2 of table 9, multiplied by the difference in country fixed effects. The same basic approach is adopted for all subsequent countries in this section.

central and Eastern European countries report among the world's lowest scores (out of 93 countries), implying a strong preference for restraint.

158. The estimates shown here suggest some marked dissociations between average levels of life evaluations and daily affect in a number of cases. The contrast is sharpest for several African countries which report some of world's lowest life evaluations, but some of the highest levels of positive affect, and some of the lowest levels of negative affect. These findings hold when a number of life circumstances are held constant. This implies that some African people can feel very dissatisfied with their lives overall, yet still experience high levels of positive emotion (and low levels of negative emotion) on a daily basis. Interestingly, this is mirrored to some extent at the opposite end of the life evaluation spectrum: countries where people report that their life is closest to the "best possible life" they can imagine are not always those with the most positive and least negative emotional experiences.

9.4. The future research agenda

159. Cultural 'bias' in subjective measures is extremely difficult to isolate with any certainty – and all existing methods for identifying such bias have their strengths and weaknesses. As such, a multi-method approach is the only way to improve our knowledge about whether there may be persistent cultural 'response styles' influencing subjective well-being data at the country level as opposed to other channels for cultural transmission. Piecemeal research conducted with only a restricted set of countries and adopting only a limited number of analytical strategies will not be sufficient to deliver the necessary step-change in our understanding of this issue. In particular, the question of whether average country scores can and should be 'adjusted' to account for the possible presence of cultural bias is difficult to answer with just one analytical approach.

160. Post-hoc analyses of existing data sets can only go so far in aiding our understanding of cultural bias, because these data sets do not include specific instruments to isolate bias from other factors that also vary across countries and across individuals. Climbing inside the response process requires custom-designed studies that address the issue of bias more directly. Some methods, such as the vignette approach (King et al., 2004; Kapteyn, Smith and van Soest, 2009; Angelini et al., 2011), attempt to do this, enabling differences in the use of numerical response scales to be quantified. Nonetheless, all of the existing methods for isolating cultural bias have some flaws, meaning that that relying on just one technique could be misleading (OECD, 2013). It remains unclear at present whether consistent results are likely to be obtained across different methods and different measures of subjective well-being – and this requires further investigation.

161. Other promising avenues for further research include relying on more experimental techniques to elicit response biases (*e.g.* obtaining subjective ratings of a wide variety of objective and measureable factors and triangulating among them), as well as work focused on biomarkers, including genetic biomarkers (e.g. Oswald and Proto, 2013; Kashima et al., 2014).

9.5. Advice for data producers and data users

162. Based on what is currently known about the role of culture in subjective well-being, it is possible to provide some advice for both data producers and users on the impact of culture and the implications of this for interpreting subjective well-being data:

- Culture encapsulates many different things. Culture can have a meaningful impact on the lives that people lead, and how they feel about life, as well as being a potential source of response bias. Cultural norms and values may be driven by economic conditions and country circumstances

(Welzel, 2013), so the distinction between "objective" factors and "cultural" factors is not so easily drawn in practice.

- Most cross-country variance in life evaluation (78%) and affect balance (63%) is explained by cross-country differences in the things that might be expected to drive well-being: income, health status, employment, social support, safety, and freedom and trust. Only a relatively small proportion of cross country variance in life evaluation (22%) and affect balance (37%) is left to attribute to unobserved variables, measurement error and the impact of culture (both substantive and via response styles).

- Although the overall pattern of cross-country variance in subjective well-being is well explained, a large gap is observed for some countries between average levels of subjective well-being and the level expected based on the circumstances in the country. For life evaluation these include some, but not all, Latin American countries (e.g. Costa Rica, Mexico, Panama, Brazil), some Nordic countries (Denmark, Finland), and some central and Eastern European countries (e.g. Hungary, Bulgaria, Latvia, Georgia). The picture is broadly similar for measures of affect, but the "outlier" countries are different and vary depending on whether the focus is on positive or negative affect.

- It is not possible to provide a clear and definitive estimate of how much of the cross-country variance in subjective well-being is due to culture. However, estimates from this paper and the broader literature show some consistency in relation to life evaluation results. Findings reported here tentatively suggest that culture could be responsible for differences of up to 0.6 scale points on a 0-10 scale – though it is not possible to separate this further into cultural "bias" versus cultural "impact". Our findings also suggest that, while it may play a significant role, culture explains a smaller proportion of the total variation in subjective well-being outcomes than objective life circumstances explain.

- The average effects for culture presented in this paper and in the broader literature cannot rule out that, in the case of specific countries, the cultural effect is greater. However, they do suggest that cultural bias should not be the default assumption for any unexplained cross-country gap in subjective well-being.

- Cross country comparisons of subjective well-being should be approached with caution, but they are not meaningless and they remain informative. Conclusions drawn from small gaps between countries should, however, be treated with caution.

- The risk of cultural bias does not mean that comparative studies of subjective well-being data should be abandoned. Several analytical methods help to manage problems of systematic bias in the data, and reveal the differences in societal conditions that can lead to differences in people's subjective well-being. Furthermore, the analyses presented in this paper suggest that most of the variation in subjective well-being outcomes at the country level can be related to life circumstances in those countries.

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ANNEX

Annex 1: Description of the dataset

Name	Abbreviation code	Most prevalent survey mode	Earliest year	Latest year	Number of years	Number of surveys	Average sample size per survey	% Missing (Life Evaluation, Baseline model*)	% Missing (Positive Affect, Baseline model*)	% Missing (Negative Affect, Baseline model*)	% Missing (Affect Balance, Baseline model*)
Afghanistan	AFG	Face-to-face	2006	2013	7	9	1023	46.17%	46.06%	46.06%	46.06%
Angola	AGO	Face-to-face	2006	2013	6	6	1000	53.31%	54.39%	54.43%	55.54%
Albania	ALB	Face-to-face	2006	2013	7	7	1010	46.19%	48.65%	47.29%	49.53%
United Arab Emirates	ARE	Face-to-face	2006	2013	6	10	1019	36.35%	56.61%	56.06%	57.36%
Argentina	ARG	Face-to-face	2006	2013	8	8	1000	38.75%	39.81%	38.95%	40.09%
Armenia	ARM	Face-to-face	2006	2013	8	8	1000	38.86%	42.14%	40.31%	43.39%
Australia	AUS	Telephone	2006	2013	7	7	1032	59.02%	59.32%	58.96%	59.39%
Austria	AUT	Telephone	2006	2013	7	7	1001	30.37%	32.84%	30.81%	33.44%
Azerbaijan	AZE	Face-to-face	2006	2013	8	8	1000	63.44%	66.98%	65.25%	68.40%
Burundi	BDI	Face-to-face	2008	2011	3	3	1000	33.50%	33.73%	33.87%	34.03%
Belgium	BEL	Telephone	2006	2013	7	7	1006	46.87%	47.31%	46.71%	47.61%
Benin	BEN	Face-to-face	2006	2013	5	5	1000	40.66%	41.12%	40.74%	41.50%
Burkina Faso	BFA	Face-to-face	2006	2013	7	7	1001	57.51%	57.69%	57.53%	57.78%
Bangladesh	BGD	Face-to-face	2006	2013	8	10	1025	42.77%	43.07%	43.14%	43.75%
Bulgaria	BGR	Face-to-face	2006	2013	6	6	1002	19.17%	22.78%	20.65%	23.98%
Bahrain	BHR	Face-to-face	2009	2013	5	8	1022	64.35%	66.41%	66.37%	67.99%
Bosnia and Herzegovina	BIH	Face-to-face	2006	2013	7	7	1148	50.59%	52.99%	51.77%	53.65%
Belarus	BLR	Face-to-face	2006	2013	8	8	1060	41.76%	50.54%	43.17%	52.17%
Belize	BLZ	Face-to-face	2007	2007	1	1	502	100.00%	100.00%	100.00%	100.00%
Bolivia	BOL	Face-to-face	2006	2013	8	8	1000	51.97%	51.44%	51.04%	51.98%
Brazil	BRA	Face-to-face	2006	2013	8	9	1025	34.79%	35.37%	34.48%	35.57%
Bhutan	BTN	Face-to-face	2013	2013	1	1	1000	1.40%	4.30%	1.20%	4.40%
Botswana	BWA	Face-to-face	2006	2013	6	6	1000	33.63%	33.87%	33.78%	34.03%
Central African Republic	CAF	Face-to-face	2007	2011	3	3	1000	33.87%	34.80%	34.27%	35.23%
Canada	CAN	Telephone	2006	2013	8	9	1047	49.41%	50.82%	50.49%	50.93%
Switzerland	CHE	Telephone	2006	2012	3	3	1001	34.80%	36.56%	34.93%	36.96%
Chile	CHL	Face-to-face	2006	2013	8	8	1021	40.33%	41.46%	40.84%	42.01%

China (People's Republic of)	CHN	Face-to-face and Telephone	2006	2013	8	10	3858	41.75%	43.34%	42.34%	44.09%
Côte d'Ivoire	CIV	Face-to-face	2009	2013	2	2	1004	50.10%	50.85%	50.50%	51.25%
Cameroon	CMR	Face-to-face	2006	2013	8	8	1025	49.46%	49.62%	49.49%	49.74%
Democratic Republic of the Congo	COD	Face-to-face	2009	2013	4	4	1000	1.55%	3.35%	3.08%	5.13%
Congo	COG	Face-to-face	2008	2013	4	4	1000	75.90%	76.43%	75.73%	76.68%
Colombia	COL	Face-to-face	2006	2012	7	7	1000	45.00%	45.36%	44.86%	45.49%
Comoros	COM	Face-to-face	2009	2012	4	7	1000	14.86%	43.44%	43.29%	43.66%
Costa Rica	CRI	Face-to-face	2006	2013	8	8	1001	50.77%	51.41%	51.34%	52.21%
Cuba	CUB	Face-to-face	2006	2006	1	1	1000	100.00%	100.00%	100.00%	100.00%
Cyprus†	CYP	Telephone	2006	2013	6	6	752	23.83%	24.67%	23.34%	24.93%
Czech Republic	CZE	Face-to-face	2006	2013	7	7	1023	31.91%	37.17%	33.86%	38.33%
Germany	DEU	Telephone	2006	2013	8	17	1905	63.30%	62.03%	61.25%	62.15%
Djibouti	DJI	Face-to-face	2008	2011	4	5	1000	40.72%	81.62%	80.60%	81.68%
Denmark	DNK	Telephone	2006	2013	8	8	972	39.68%	41.32%	39.70%	41.48%
Dominican Republic	DOM	Face-to-face	2006	2012	7	7	1000	44.61%	44.60%	44.39%	44.83%
Algeria	DZA	Face-to-face	2008	2012	5	9	1014	24.70%	46.66%	46.33%	46.93%
Ecuador	ECU	Face-to-face	2006	2013	8	8	1017	76.19%	76.68%	76.23%	76.74%
Egypt	EGY	Face-to-face	2006	2013	8	17	1054	35.34%	47.02%	46.60%	47.14%
Spain	ESP	Telephone	2006	2013	8	9	1003	34.19%	34.88%	34.34%	35.09%
Estonia	EST	Face-to-face	2006	2013	7	7	891	52.07%	55.87%	53.38%	56.66%
Ethiopia	ETH	Face-to-face	2012	2013	2	3	1000	16.97%	0.83%	0.33%	1.03%
Finland	FIN	Telephone	2006	2013	6	6	961	35.89%	37.78%	35.89%	37.90%
France	FRA	Telephone	2006	2013	8	9	999	38.28%	38.46%	37.78%	38.61%
Gabon	GAB	Face-to-face	2011	2013	3	3	1003	34.47%	35.64%	34.84%	36.00%
United Kingdom	GBR	Telephone	2006	2013	8	14	2118	82.46%	81.70%	81.48%	81.72%
Georgia	GEO	Face-to-face	2006	2013	8	8	1010	51.47%	54.90%	51.72%	55.31%
Ghana	GHA	Face-to-face	2006	2013	8	8	1001	54.36%	54.71%	54.35%	54.90%
Guinea	GIN	Face-to-face	2007	2013	4	4	1002	26.37%	26.15%	25.70%	26.52%
Greece	GRC	Face-to-face	2006	2013	7	7	1001	30.96%	31.06%	31.22%	31.59%
Guatemala	GTM	Face-to-face	2006	2013	8	8	1006	63.23%	63.71%	63.58%	64.43%
Guyana	GUY	Face-to-face	2007	2007	1	1	501	100.00%	100.00%	100.00%	100.00%
Hong Kong (China)	HKG	Telephone	2006	2012	6	6	849	38.97%	35.32%	34.58%	35.48%
Honduras	HND	Face-to-face	2006	2013	8	8	1001	38.83%	40.52%	40.42%	42.33%
Croatia	HRV	Face-to-face	2006	2013	7	7	1010	45.80%	49.93%	46.15%	50.82%
Haiti	HTI	Face-to-face	2006	2012	5	5	503	42.71%	48.43%	51.93%	54.99%
Hungary	HUN	Face-to-face	2006	2013	7	7	1013	43.98%	45.40%	44.62%	46.06%
Indonesia	IDN	Face-to-face	2006	2013	8	10	1039	41.57%	42.95%	41.75%	43.32%
India	IND	Face-to-	2006	2013	8	11	3221	23.35%	24.93%	23.85%	25.54%

		face									
Ireland	IRL	Telephone	2006	2013	7	7	929	34.44%	34.77%	34.19%	34.82%
Iran	IRN	Telephone	2006	2013	6	7	1265	68.10%	68.26%	67.73%	68.29%
Iraq	IRQ	Face-to-face	2008	2013	6	10	999	23.80%	57.30%	46.17%	59.59%
Iceland	ISL	Telephone	2008	2013	3	3	669	26.87%	29.11%	26.72%	29.46%
Israel	ISR	Face-to-face	2006	2013	8	8	1001	55.01%	53.86%	52.91%	54.74%
Italy	ITA	Telephone	2006	2013	8	9	1004	37.31%	39.00%	37.96%	39.23%
Jamaica	JAM	Face-to-face	2006	2011	2	2	525	56.24%	56.43%	56.24%	57.01%
Jordan	JOR	Face-to-face	2006	2013	8	12	1003	36.21%	52.99%	53.34%	54.14%
Japan	JPN	Telephone	2006	2013	8	12	929	55.84%	56.85%	56.04%	57.10%
Kazakhstan	KAZ	Face-to-face	2006	2013	8	8	1000	41.88%	50.74%	44.23%	52.34%
Kenya	KEN	Face-to-face	2006	2013	8	8	1150	67.79%	68.08%	67.83%	68.23%
Kyrgyzstan	KGZ	Face-to-face	2006	2013	8	8	1000	38.58%	42.76%	40.16%	43.84%
Cambodia	KHM	Face-to-face	2006	2013	8	8	1003	62.79%	62.82%	62.75%	62.84%
Korea	KOR	Telephone	2006	2013	8	9	1011	46.87%	48.77%	46.46%	49.21%
Kuwait	KWT	Face-to-face	2006	2013	6	9	1002	39.11%	58.39%	57.73%	58.70%
Lao People's Democratic Republic	LAO	Face-to-face	2006	2012	5	5	1000	61.21%	60.41%	60.51%	60.73%
Lebanon	LBN	Face-to-face	2006	2013	8	12	1004	34.40%	52.01%	51.41%	52.39%
Liberia	LBR	Face-to-face	2007	2011	4	4	1000	75.25%	50.58%	50.58%	50.63%
Libya	LBY	Face-to-face	2009	2012	3	4	1001	75.94%	78.79%	77.94%	80.13%
Sri Lanka	LKA	Face-to-face	2006	2013	8	9	1014	34.92%	36.06%	35.01%	36.65%
Lesotho	LSO	Face-to-face	2011	2011	1	1	1000	0.60%	0.40%	0.40%	0.40%
Lithuania	LTU	Face-to-face	2006	2013	8	8	879	37.87%	44.86%	39.18%	45.97%
Luxembourg	LUX	Telephone	2008	2013	5	5	801	16.34%	18.36%	16.29%	18.61%
Latvia	LVA	Face-to-face	2006	2013	7	7	865	44.02%	47.03%	44.56%	47.67%
Morocco	MAR	Face-to-face	2006	2013	7	11	1008	64.35%	65.56%	64.62%	65.75%
Moldova	MDA	Face-to-face	2006	2013	8	8	1000	39.21%	43.48%	40.30%	44.96%
Madagascar	MDG	Face-to-face	2006	2013	5	5	1002	40.30%	40.42%	40.40%	40.56%
Mexico	MEX	Face-to-face	2006	2013	8	9	1001	61.73%	62.85%	62.57%	63.59%
Former Yugoslav Republic of Macedonia	MKD	Face-to-face	2006	2013	7	7	1018	46.09%	50.82%	47.71%	51.90%
Mali	MLI	Face-to-face	2006	2013	7	7	1000	28.77%	29.01%	29.10%	29.40%
Malta	MLT	Telephone	2008	2013	5	5	805	16.38%	18.69%	15.98%	18.99%
Myanmar	MMR	Face-to-face	2006	2013	3	3	1029	34.05%	35.28%	33.98%	35.28%
Montenegro	MNE	Face-to-face	2006	2013	7	7	977	43.22%	45.41%	43.67%	45.99%
Mongolia	MNG	Face-to-face	2007	2013	6	6	1000	34.15%	37.00%	34.90%	37.82%
Mozambique	MOZ	Face-to-face	2006	2011	4	4	1000	75.03%	75.03%	75.03%	75.03%
Mauritania	MRT	Face-to-face	2007	2013	7	10	999	30.94%	51.17%	50.62%	51.31%
Mauritius	MUS	Face-to-face	2011	2011	1	1	1000	2.30%	2.80%	1.90%	2.80%

Malawi	MWI	Face-to-face	2006	2013	6	6	1000	33.48%	33.50%	33.48%	33.53%
Malaysia	MYS	Face-to-face	2006	2012	7	7	1037	46.84%	48.18%	47.95%	49.12%
Namibia	NAM	Face-to-face	2007	2007	1	1	1000	100.00%	100.00%	100.00%	100.00%
Niger	NER	Face-to-face	2006	2013	8	8	1001	49.35%	49.43%	49.39%	49.55%
Nigeria	NGA	Face-to-face	2006	2013	8	9	1000	47.88%	37.62%	37.89%	38.89%
Nicaragua	NIC	Face-to-face	2006	2013	8	8	1002	51.52%	51.05%	51.52%	52.23%
Netherlands	NLD	Telephone	2006	2013	7	7	965	46.10%	47.25%	46.27%	47.41%
Norway	NOR	Telephone	2006	2012	3	3	1002	67.92%	69.68%	68.19%	69.98%
Nepal	NPL	Face-to-face	2006	2013	8	9	1006	36.36%	34.64%	34.68%	35.13%
New Zealand	NZL	Telephone	2006	2013	7	7	827	45.92%	46.72%	46.02%	46.92%
Oman	OMN	Telephone	2011	2011	1	2	1008	52.58%	100.00%	100.00%	100.00%
Pakistan	PAK	Face-to-face	2006	2013	8	14	1011	58.14%	59.13%	58.99%	59.84%
Panama	PAN	Face-to-face	2006	2013	8	8	1004	38.88%	39.72%	39.69%	41.16%
Peru	PER	Face-to-face	2006	2012	7	7	1000	45.13%	47.36%	45.97%	48.40%
Philippines	PHL	Face-to-face	2006	2013	8	9	1022	35.16%	35.52%	35.32%	35.83%
Poland	POL	Face-to-face	2006	2013	8	8	1004	41.10%	43.75%	41.24%	44.53%
Puerto Rico	PRI	Face-to-face	2006	2006	1	1	500	100.00%	100.00%	100.00%	100.00%
Portugal	PRT	Telephone	2006	2013	7	7	1002	32.18%	33.47%	32.47%	34.48%
Paraguay	PRY	Face-to-face	2006	2012	7	7	1000	45.22%	45.36%	45.18%	45.79%
Palestinian Authority	PSE	Face-to-face	2006	2013	8	12	1001	34.57%	51.56%	51.07%	51.73%
Qatar	QAT	Telephone	2008	2012	5	6	1010	84.17%	100.00%	83.93%	100.00%
Romania	ROU	Face-to-face	2006	2013	7	7	1004	59.05%	60.54%	59.69%	61.25%
Russia	RUS	Face-to-face	2006	2013	8	10	2002	39.40%	46.16%	40.33%	47.65%
Rwanda	RWA	Face-to-face	2006	2013	6	6	1084	39.04%	39.50%	39.04%	39.62%
Saudi Arabia	SAU	Face-to-face	2006	2013	8	12	1032	62.21%	78.03%	78.11%	78.93%
Sudan	SDN	Face-to-face	2009	2012	4	7	942	15.08%	43.46%	41.98%	43.86%
Senegal	SEN	Face-to-face	2006	2013	8	8	1000	50.58%	50.94%	50.85%	51.15%
Singapore	SGP	Face-to-face	2006	2012	7	8	1082	54.09%	55.42%	54.66%	55.81%
Sierra Leone	SLE	Face-to-face	2006	2011	5	5	1000	60.18%	60.22%	60.22%	60.30%
El Salvador	SLV	Face-to-face	2006	2013	8	8	1001	38.41%	39.75%	39.80%	41.31%
Serbia	SRB	Face-to-face	2006	2013	7	7	1088	48.11%	50.12%	48.21%	50.54%
Suriname	SUR	Face-to-face	2012	2012	1	1	504	10.32%	8.93%	8.53%	9.13%
Slovak Republic	SVK	Face-to-face	2006	2013	5	5	1010	21.35%	26.07%	22.54%	26.92%
Slovenia	SVN	Telephone	2006	2013	6	6	919	20.06%	22.00%	20.03%	22.40%
Sweden	SWE	Telephone	2006	2013	8	8	970	40.29%	42.35%	40.74%	42.93%
Swaziland	SWZ	Face-to-face	2011	2011	1	1	1000	2.00%	2.00%	2.00%	2.00%
Syrian Arab Republic	SYR	Face-to-face	2008	2013	6	10	1045	28.96%	53.28%	54.17%	60.12%
Chad	TCD	Face-to-face	2006	2013	8	8	1000	37.74%	37.96%	37.89%	38.19%
Togo	TGO	Face-to-face	2006	2011	3	3	1000	66.93%	67.57%	67.57%	68.13%

Thailand	THA	Face-to-face	2006	2013	8	9	1053	36.85%	37.20%	37.07%	37.51%
Tajikistan	TJK	Face-to-face	2006	2013	8	8	1000	38.44%	44.64%	41.13%	46.44%
Turkmenistan	TKM	Face-to-face	2009	2013	4	4	1000	1.00%	10.03%	6.58%	14.58%
Trinidad and Tobago	TTO	Face-to-face	2006	2011	3	3	505	67.70%	67.77%	67.70%	67.77%
Tunisia	TUN	Face-to-face	2008	2013	6	10	1034	31.94%	53.56%	52.11%	54.10%
Turkey	TUR	Face-to-face	2006	2013	8	9	1000	34.93%	38.61%	36.46%	39.34%
Chinese Taipei	TWN	Telephone	2006	2013	6	6	1001	34.83%	35.65%	34.50%	35.83%
Tanzania	TZA	Face-to-face	2006	2013	8	8	1001	37.84%	37.82%	37.85%	37.86%
Uganda	UGA	Face-to-face	2006	2013	8	8	1000	62.73%	62.80%	62.75%	62.81%
Ukraine	UKR	Face-to-face	2006	2013	8	8	1040	41.73%	48.66%	43.46%	49.89%
Uruguay	URY	Face-to-face	2006	2013	8	8	1003	43.70%	44.61%	43.61%	45.26%
United States	USA	Telephone	2006	2012	7	8	1043	54.29%	55.56%	55.23%	55.65%
Uzbekistan	UZB	Face-to-face	2006	2013	7	7	1000	30.41%	33.49%	30.59%	34.96%
Venezuela	VEN	Face-to-face	2006	2012	7	7	1000	61.24%	61.07%	60.97%	61.19%
Viet Nam	VNM	Face-to-face	2006	2013	8	9	1009	49.70%	52.93%	50.00%	53.67%
Kosovo	XK	Face-to-face	2006	2013	7	7	1026	47.43%	50.83%	48.13%	51.30%
Yemen	YEM	Face-to-face	2006	2013	6	10	1000	20.89%	41.44%	40.63%	41.71%
South Africa	ZAF	Face-to-face	2006	2012	7	8	1000	50.52%	50.59%	50.52%	50.64%
Zambia	ZMB	Face-to-face	2006	2013	7	7	1000	57.28%	57.58%	57.78%	58.06%
Zimbabwe	ZWE	Face-to-face	2006	2013	8	8	1000	62.78%	62.90%	62.85%	63.05%

*This describes the % missing from the baseline model in the country fixed effects analyses (see Annex 9, below) with each of the subjective well-being outcomes as dependent variables. The main source of missing data is the absence of employment variables before 2009, meaning that all baseline model analyses concern data from 2009 onwards only.

[†]Note by Turkey

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Annex 2: Basic descriptive statistics for baseline model analyses

Variable	N (baseline model)	Weighted Mean	Std. Dev.	Skewness	Min	Max
Dependent Variables:						
Ladder Of Life	679898	5.377	2.242	-0.075	0	10
Positive Affect	628183	2.100	1.035	-0.819	0	3
Negative Affect	642978	0.747	0.966	1.043	0	3
Affect Balance	620478	1.359	1.666	-0.879	-3	3
Independent Variables:						
Female	688623	0.512	0.500	-0.050	0	1
Coupled	688623	0.587	0.492	-0.353	0	1
Nb Children	688623	1.131	1.185	0.477	0	3
Immigrant	688623	0.046	0.210	4.310	0	1
Not recent (>5yrs) immigrant	688623	0.990	0.102	-9.640	0	1
log Equivalized Income	688623	8.206	1.528	-1.397	-2.295919	14.72666
Unemployed	688623	0.065	0.247	3.514	0	1
Primary School	688623	0.425	0.494	0.302	0	1
Secondary School	688623	0.472	0.499	0.110	0	1
Tertiary School	688623	0.102	0.303	2.629	0	1
Rural	688623	0.292	0.454	0.918	0	1
Village	688623	0.313	0.464	0.807	0	1
Suburb	688623	0.091	0.288	2.841	0	1
Large City	688623	0.305	0.460	0.850	0	1

Annex 3: Descriptive statistics to accompany world map summaries

Table A1: Mean average life evaluation, 2012 or closest year (0-10 Cantril Ladder scale)

Abbreviation code	Ladder of Life	Abbreviation code	Ladder of Life	Abbreviation code	Ladder of Life	Abbreviation code	Ladder of Life
TGO	2.9362	LBN	4.5726	IDN	5.367774	THA	6.300235
SYR	3.1645	IND	4.5973	JAM	5.374446	CZE	6.334149
BEN	3.1935	HND	4.6022	CUB	5.417869	COL	6.37488
RWA	3.333	IRN	4.6089	NIC	5.448006	URY	6.449728
MDG	3.5506	COD	4.6392	TKM	5.463827	BLZ	6.450644
GIN	3.6516	MKD	4.6396	MUS	5.477073	SAU	6.464448
SEN	3.6687	PSE	4.6466	HKG	5.483764	ARG	6.468387
CAF	3.6778	IRQ	4.6595	NGA	5.492954	TTO	6.518746
BDI	3.7059	MRT	4.6732	ALB	5.510124	SGP	6.533207
CIV	3.7394	HUN	4.6834	VNM	5.53457	PRI	6.592634
AFG	3.7829	BGD	4.7244	BTN	5.569092	CHL	6.599129
NER	3.7981	DOM	4.7533	DZA	5.604596	FRA	6.649365
KHM	3.8987	BIH	4.7731	RUS	5.620736	DEU	6.702362
COG	3.9193	BWA	4.8359	XK	5.639588	QAT	6.733401

BFA	3.955	SWZ	4.8671	BLR	5.749043	OMN	6.852982
COM	3.9556	LAO	4.8761	LBY	5.754394	PAN	6.859836
GAB	3.9721	MNG	4.8852	KAZ	5.75947	GBR	6.880784
TZA	4.0069	NAM	4.8856	LTU	5.771037	BRA	6.931056
TCD	4.033	LSO	4.8975	PRY	5.820058	BEL	6.935122
YEM	4.0606	AZE	4.9108	PER	5.824557	LUX	6.964097
LBR	4.1961	MAR	4.9545	ITA	5.839314	IRL	6.964645
EGY	4.2042	ZWE	4.9551	GTM	5.855717	USA	7.026227
BGR	4.2223	MOZ	4.9711	POL	5.875932	VEN	7.066577
LKA	4.2246	PRT	4.994	SVK	5.911059	ISR	7.110855
NPL	4.2332	PHL	5.002	MYS	5.914284	AUS	7.195586
CMR	4.2446	ZMB	5.0134	SLV	5.934371	ARE	7.217767
GEO	4.2544	BHR	5.0272	ECU	5.960716	NZL	7.24963
MWI	4.2793	UKR	5.0303	MLT	5.962872	CRI	7.27225
UGA	4.3092	GHA	5.0573	JPN	5.968216	MEX	7.320185
MLI	4.313	CHN	5.0949	GUY	5.992826	AUT	7.400689
ARM	4.3197	GRC	5.0964	MDA	5.995713	CAN	7.415144
AGO	4.3602	LVA	5.125	KOR	6.003287	FIN	7.420209
DJI	4.3692	PAK	5.1316	BOL	6.018895	NLD	7.470716
HTI	4.4135	JOR	5.132	UZB	6.019332	DNK	7.519909
MMR	4.4389	ZAF	5.1339	HRV	6.027635	SWE	7.560148
TUN	4.4635	SRB	5.1545	SVN	6.062891	ISL	7.59066
TJK	4.4966	ROU	5.1669	TWN	6.125917	NOR	7.678277
SLE	4.5016	KGZ	5.2078	CYP	6.180508	CHE	7.776209
KEN	4.5473	MNE	5.2187	KWT	6.221095		
SDN	4.5505	TUR	5.3091	SUR	6.269287		
ETH	4.5612	EST	5.3639	ESP	6.29069		

Table A2: Percentage of the population reporting a positive affect balance yesterday, 2012 or closest year

Abbreviation code	% positive affect balance	Abbreviation code	% positive affect balance	Abbreviation code	% positive affect balance	Abbreviation code	% positive affect balance
SYR	21.21%	ISR	64.85%	MUS	73.53%	SAU	80.45%
IRQ	40.89%	CUB	64.87%	BRA	73.84%	NIC	80.82%
ARM	45.43%	BOL	65.30%	EST	73.88%	MRT	80.85%
IRN	45.92%	IND	65.53%	CHL	73.99%	HKG	80.85%
SLE	47.88%	LBY	65.78%	COD	74.10%	ZAF	80.96%
SRB	48.30%	LTU	66.21%	TJK	74.32%	NOR	81.03%
MNE	50.39%	ESP	66.34%	ETH	74.50%	URY	81.28%
TGO	51.30%	LVA	66.93%	UGA	74.86%	RWA	81.48%
EGY	53.25%	CYP	66.95%	KOR	74.87%	DEU	81.65%
LBN	54.03%	SVK	66.96%	BLZ	75.05%	MLI	81.78%
MKD	54.53%	BEN	67.15%	USA	75.12%	NZL	82.08%
YEM	55.99%	BLR	67.34%	BGD	75.27%	CAN	82.10%
BIH	56.11%	DZA	67.51%	MNG	75.52%	GHA	82.10%
PSE	57.88%	UKR	67.61%	ECU	75.92%	LKA	82.24%
GEO	58.63%	CZE	67.68%	SWZ	75.94%	GBR	82.39%
GAB	58.67%	CMR	67.97%	MEX	75.97%	XK	82.40%
JOR	58.99%	KHM	68.03%	PRI	76.40%	CRI	82.58%
AGO	59.14%	MAR	68.15%	BDI	76.46%	SGP	82.73%
ROU	59.30%	SVN	68.96%	KEN	76.54%	DNK	82.74%
TUN	59.37%	ALB	69.09%	KGZ	76.72%	LSO	82.80%
MDA	59.46%	GIN	69.54%	KAZ	76.95%	AUT	82.87%
TCD	59.82%	SLV	70.08%	MDG	77.07%	NLD	82.93%
ITA	60.11%	VNM	70.16%	POL	77.12%	NAM	83.52%
COG	60.22%	QAT	70.53%	GTM	77.36%	CHE	84.26%
BFA	61.01%	AFG	70.62%	TKM	77.48%	MWI	84.49%
HUN	61.34%	CIV	70.90%	COL	77.64%	MYS	85.12%
TUR	61.43%	HTI	71.45%	BEL	77.66%	CHN	85.29%
CAF	62.02%	TZA	72.18%	IRL	77.70%	IDN	85.38%
PER	62.03%	DOM	72.45%	AUS	77.79%	BTN	85.44%
AZE	62.24%	GUY	72.49%	MMR	78.04%	SWE	85.55%
MLT	62.33%	COM	72.51%	ARE	78.81%	JPN	85.75%
SDN	62.80%	DJI	72.53%	LUX	78.90%	PAN	86.78%
BHR	62.83%	ZMB	72.63%	FIN	79.01%	THA	86.80%
HRV	63.01%	PHL	72.76%	HND	79.22%	TWN	86.82%
PAK	63.35%	LAO	72.77%	JAM	79.66%	ISL	87.23%
GRC	63.60%	NPL	72.84%	ARG	79.66%	VEN	87.49%
PRT	64.10%	FRA	73.12%	BWA	79.68%	UZB	87.70%
LBR	64.39%	NER	73.14%	SUR	79.88%	PRY	89.59%
BGR	64.53%	RUS	73.27%	NGA	79.93%	TTO	89.91%
MOZ	64.57%	ZWE	73.32%	SEN	79.98%	KWT	90.01%

Table A3: Mean average number of positive affects experienced yesterday

(0-3 scale of feeling enjoyment, smiling or laughing, and feeling well-rested a lot yesterday)

Abbreviation code	Number of positive affects	Abbreviation code	Number of positive affects	Abbreviation code	Number of positive affects	Abbreviation code	Number of positive affects
IRQ	1.342169	CUB	1.872876	BDI	2.124875	URY	2.350849
SLE	1.368992	ETH	1.882185	PER	2.125072	ISL	2.357843
SRB	1.440609	BHR	1.888521	ESP	2.127238	SUR	2.361107
ARM	1.494819	DZA	1.890868	MUS	2.13121	GBR	2.361784
YEM	1.51441	LVA	1.898564	TJK	2.139923	LSO	2.365638
MNE	1.546452	PAK	1.907229	HKG	2.143841	CAN	2.367082
GAB	1.560649	IND	1.910626	BRA	2.148642	NOR	2.367755
LBN	1.568766	CZE	1.918058	NPL	2.149694	UZB	2.371066
GEO	1.603877	VNM	1.928043	CYP	2.156492	NZL	2.373836
SYR	1.613129	TKM	1.928929	KAZ	2.174815	ECU	2.378289
BIH	1.633738	SVN	1.929212	MRT	2.181355	PHL	2.379943
TGO	1.665417	COM	1.937617	FIN	2.190393	DNK	2.383039
AGO	1.682348	CMR	1.940465	MMR	2.198404	NGA	2.39084
LBR	1.690123	ISR	1.948903	DOM	2.204545	CHE	2.394164
EGY	1.69024	XK	1.953907	GUY	2.214621	SLV	2.398542
MDA	1.690735	RUS	1.958245	MAR	2.216192	LKA	2.402852
AZE	1.71875	EST	1.959675	BOL	2.218129	JPN	2.402889
TCD	1.718889	ALB	1.985445	AUS	2.232917	SAU	2.403668
TUN	1.740892	ZWE	1.990456	BLZ	2.234674	SWE	2.405989
BLR	1.758763	GRC	1.990489	QAT	2.237401	TWN	2.412359
BEN	1.765627	SVK	1.99353	BWA	2.249101	MWI	2.413077
JOR	1.767912	MNG	2.003625	CHL	2.249181	NLD	2.416371
BFA	1.771082	BGD	2.015574	SGP	2.249601	ARG	2.431764
SDN	1.776579	ITA	2.030995	UGA	2.25189	NAM	2.435723
NER	1.777493	PRT	2.042389	KHM	2.259506	BTN	2.436125
HUN	1.789391	MLI	2.049124	SEN	2.260995	HND	2.4432
BGR	1.793471	LBY	2.049696	IRL	2.266342	COL	2.446497
HRV	1.794057	GIN	2.050161	GHA	2.272034	THA	2.454725
CAF	1.794181	MDG	2.056248	AUT	2.275308	CHN	2.454912
MOZ	1.79604	TZA	2.061243	MEX	2.276532	NIC	2.470309
ROU	1.824581	MLT	2.071453	LUX	2.286029	MYS	2.477537
IRN	1.824939	FRA	2.092763	DEU	2.286484	GTM	2.49351
MKD	1.846614	ZMB	2.106355	BEL	2.296487	CRI	2.546215
HTI	1.851211	COD	2.107964	POL	2.302235	LAO	2.552425
UKR	1.853918	KGZ	2.109364	JAM	2.329202	VEN	2.56429
LTU	1.856341	RWA	2.114302	USA	2.331342	PAN	2.568029
PSE	1.862009	AFG	2.115731	PRI	2.336665	TTO	2.577582
DJI	1.867393	KOR	2.119389	SWZ	2.347942	KWT	2.608828
TUR	1.868755	KEN	2.120365	ZAF	2.348069	PRY	2.645722
COG	1.869605	CIV	2.120899	ARE	2.348265	IDN	2.65495

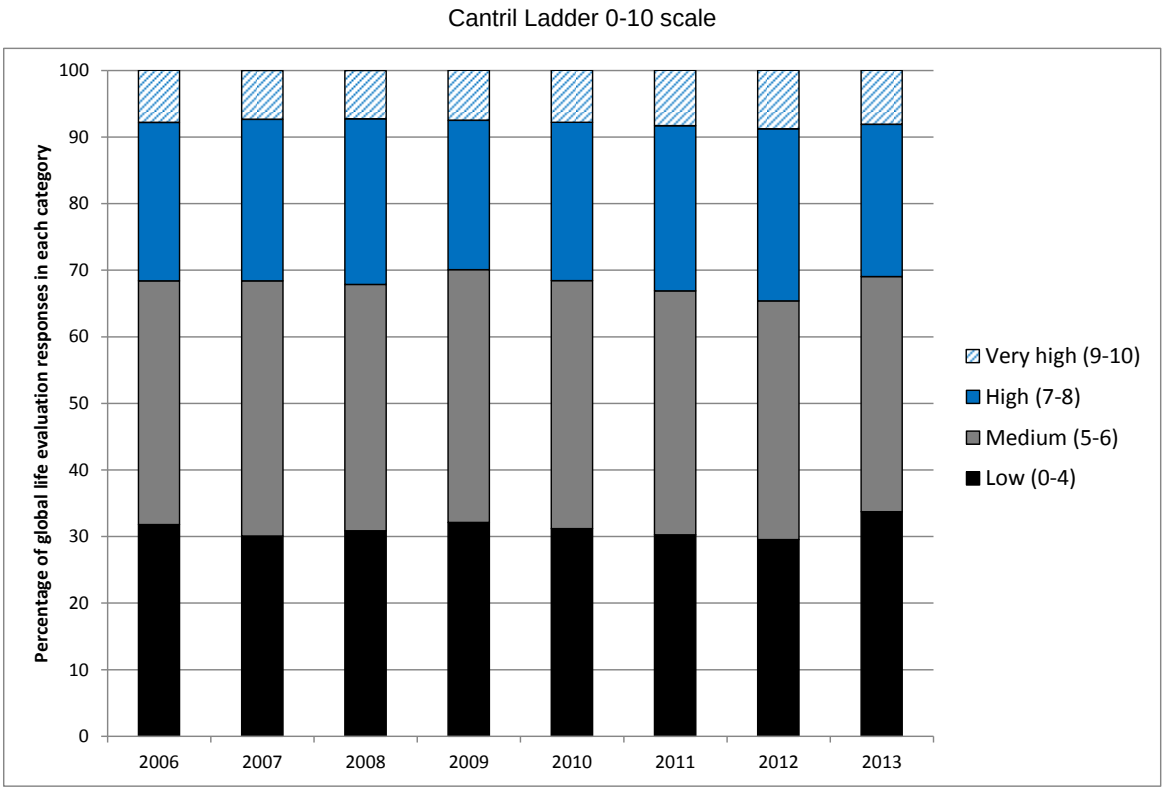
Table A4: Mean average negative affect experienced yesterday

(0-3 scale of feeling anger, worry and sadness a lot yesterday)

Abbreviation code	Number of negative affects	Abbreviation code	Number of negative affects	Abbreviation code	Number of negative affects	Abbreviation code	Number of negative affects
KWT	0.286471	TZA	0.585921	ZMB	0.751105	MDA	0.941178
XK	0.298891	LKA	0.590613	BLZ	0.751787	HUN	0.946194
MLI	0.328342	TJK	0.594574	SWZ	0.75316	TCD	0.947241
TKM	0.350642	EST	0.5969	MUS	0.757514	LBY	0.948449
UZB	0.354531	MWI	0.601389	FRA	0.758964	ISR	0.957694
RWA	0.397194	FIN	0.604963	NIC	0.763981	COG	0.967749
TTO	0.402272	MMR	0.616243	CZE	0.769524	TUN	0.980999
ETH	0.411498	KOR	0.619094	USA	0.778932	PAK	0.997343
THA	0.412509	PAN	0.619924	YEM	0.78845	ECU	0.999927
TWN	0.420032	NZL	0.620634	CRI	0.789081	TUR	1.004498
NER	0.424659	DNK	0.625709	UGA	0.795967	BIH	1.014722
SGP	0.443063	NGA	0.627298	GAB	0.797229	LBN	1.016571
GHA	0.457129	COM	0.635531	AZE	0.79828	ROU	1.027844
AUT	0.470025	NOR	0.638463	POL	0.80024	JOR	1.036009
ISL	0.471461	PRY	0.638516	AFG	0.803757	GTM	1.048215
CHN	0.476109	SEN	0.640809	HRV	0.813122	PHL	1.053376
NAM	0.479268	URY	0.642608	ALB	0.81418	GRC	1.054519
MRT	0.491044	AUS	0.643191	ARG	0.816657	KHM	1.055576
DEU	0.508729	BTN	0.65205	CUB	0.829805	SLV	1.095662
LSO	0.51003	VNM	0.664068	CAF	0.83154	ESP	1.099423
SWE	0.510678	ARE	0.671956	LTU	0.832157	CYP	1.105899
BWA	0.513772	NLD	0.67887	MEX	0.834332	PRT	1.11051
JPN	0.514424	LUX	0.682235	HTI	0.851419	SRB	1.113709
RUS	0.520813	SAU	0.686249	SVN	0.85197	PSE	1.135512
CHE	0.528021	IDN	0.686939	CMR	0.853344	MNE	1.137844
VEN	0.528924	CAN	0.687996	GIN	0.85372	BHR	1.142444
MYS	0.530646	COD	0.688954	CHL	0.862776	LAO	1.160038
ZWE	0.531932	DZA	0.689147	HND	0.880774	ITA	1.162957
ZAF	0.53455	BEN	0.691994	COL	0.881107	MLT	1.171512
DJI	0.541778	NPL	0.693212	OMN	0.885492	TGO	1.186088
BLR	0.542294	LVA	0.696674	GUY	0.889259	PER	1.193875
MNG	0.543199	LBR	0.700217	IND	0.889965	EGY	1.195269
KGZ	0.54715	BGR	0.709898	DOM	0.891129	BOL	1.22664
BGD	0.549736	IRL	0.709985	SLE	0.898583	MKD	1.265256
HKG	0.550048	JAM	0.711476	BFA	0.899169	IRQ	1.347177
GBR	0.552734	BEL	0.71483	SVK	0.906782	ARM	1.391566
KAZ	0.553145	SDN	0.727122	MAR	0.912341	IRN	1.574906
BDI	0.571035	MOZ	0.730248	AGO	0.91467	SYR	2.113769
UKR	0.578457	PRI	0.746136	BRA	0.917691		
MDG	0.581932	GEO	0.750264	CIV	0.918197		
KEN	0.582532	SUR	0.751095	QAT	0.933144		

Annex 4: The distribution of global life evaluations, assessed year by year

Figure A1: Global life evaluations: year by year

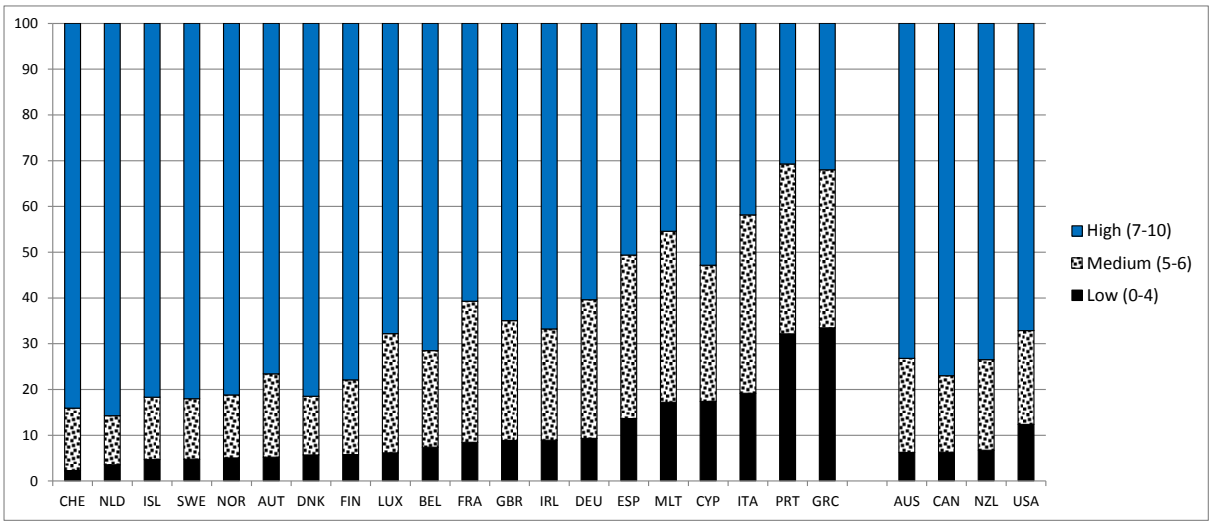


Source: Gallup World Poll, authors' calculations

Annex 5: Distribution of life evaluations in different world regions

Figure A2: Distribution of life evaluations in Western Europe, Northern America, Australia and New Zealand

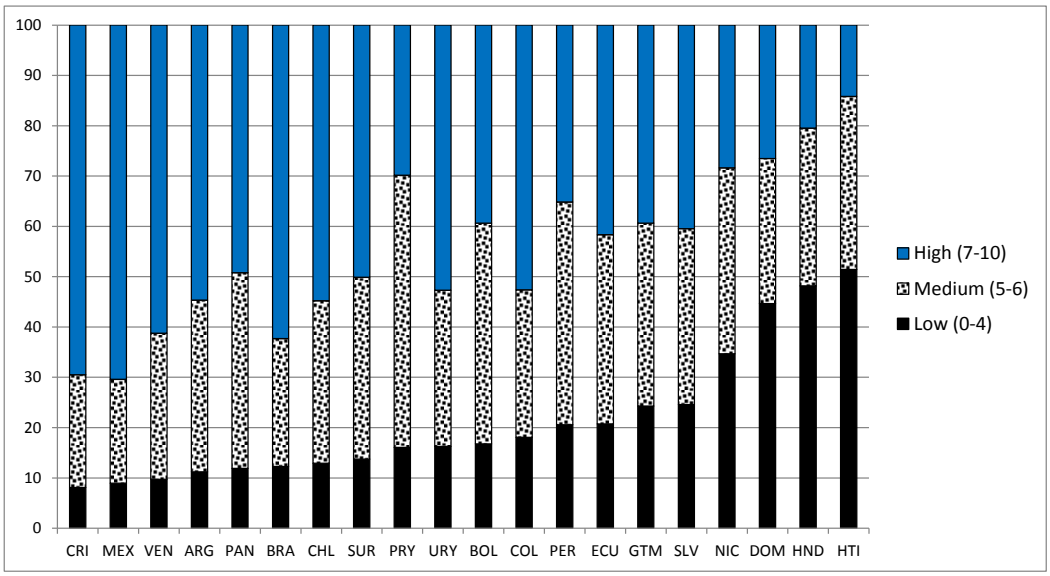
(2012, Cantril Ladder 0-10 scale)



Source: Gallup World Poll, authors' calculations

Figure A3: Distribution of life evaluations in Latin America & Caribbean

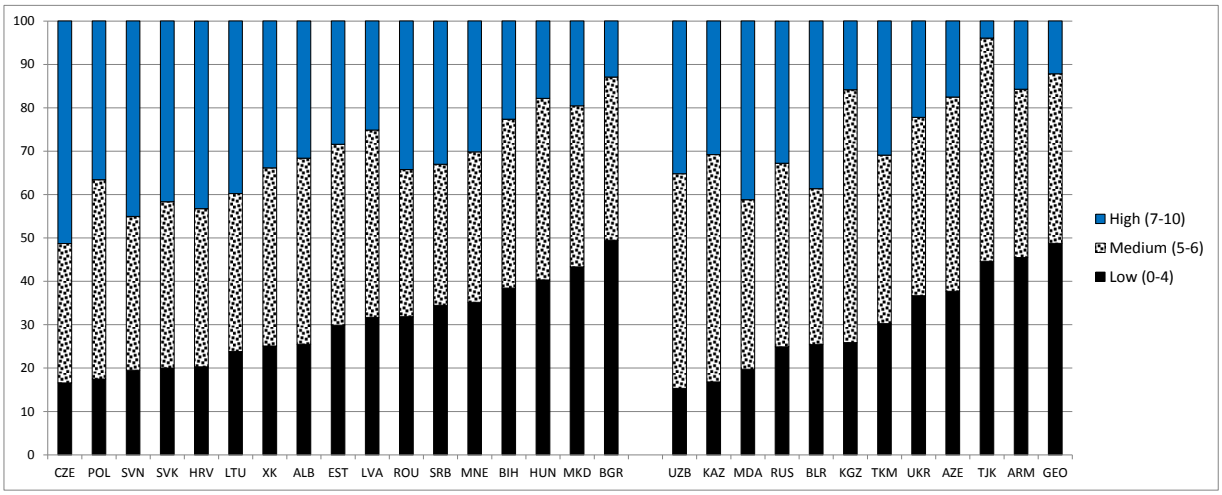
(2012, Cantril Ladder 0-10 scale)



Source: Gallup World Poll, authors' calculations

Figure A4: Distribution of life evaluations in Central and Eastern Europe, and EECCA

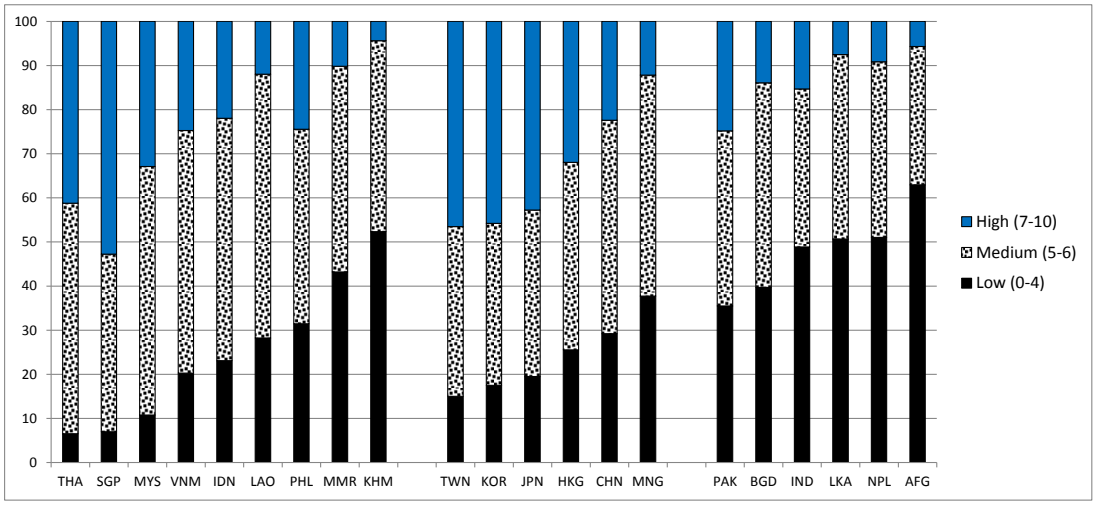
(2012, Cantril Ladder 0-10 scale)



Source: Gallup World Poll, authors' calculations.

Figure A5: Distribution of life evaluations in Southeast Asia, East Asia and South Asia

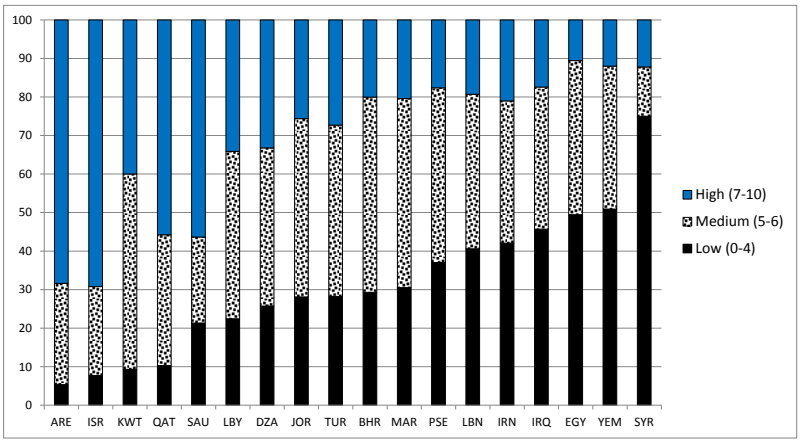
(2012, Cantril Ladder 0-10 scale)



Source: Gallup World Poll, authors' calculations.

Figure A6: Distribution of life evaluations in Middle East and North Africa

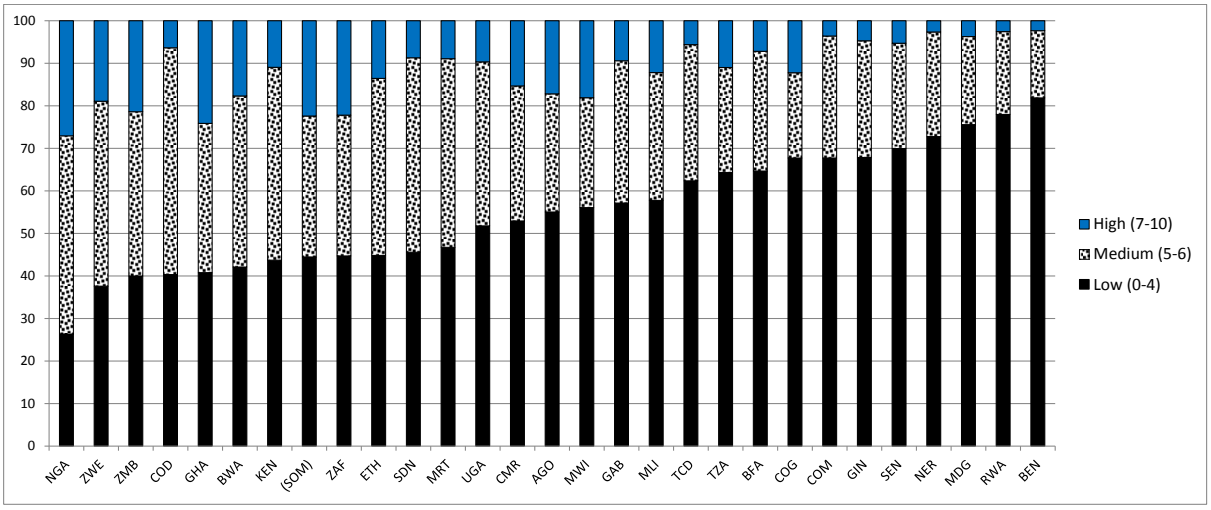
(2012, Cantril Ladder 0-10 scale)



Source: Gallup World Poll, authors' calculations.

Figure A7: Distribution of life evaluations in sub-Saharan Africa

(2012, Cantril Ladder 0-10 scale)



Source: Gallup World Poll, authors' calculations.

Annex 6: Regional groupings used throughout the document

Regional Grouping	Abbreviation codes
Western Europe	GBR, FRA, DEU, NLD, BEL, ESP, ITA, SWE, GRC, DNK, AUT, CYP, FIN, ISL, IRL, LUX, MLT, NOR, PRT, CHE
Central and Eastern Europe	POL, HUN, CZE, ROU, ALB, BIH, BGR, HRV, EST, LVA, LTU, MKD, MNE, SRB, SVK, SVN, XK
Eastern Europe, the Caucasus and Central Asia (EECCA)	BLR, GEO, KZA, KGZ, MDA, RUS, UKR, ARM, AZE, TJK, TKM, UZB
Southeast Asia	IDN, SGP, PHL, VNM, THA, KHM, LAO, MMR, MYS
South Asia	PAK, BGD, IND, LKA, AFG, NPL
East Asia	HKG, JPN, CHN, KOR, TWN, MNG
Latin America and Caribbean	VEN, BRA, MEX, CRI, ARG, BLZ, BOL, CHL, COL, CUB, DOM, ECU, SLV, GTM, GUY, HTI, HND, JAM, NIC, PAN, PRY, PER, PRI, SUR, TTO, URY
Northern America and ANZ	USA, CAN, AUS, NZL
Middle East and North Africa (MENA)	EGY, MAR, LBN, SAU, JOR, SYR, TUR, IRN, ISR, PSE, DZA, BHR, IRQ, KWT, LBY, OMN, QAT, TUN, ARE, YEM
Sub-Saharan Africa	NGA, KEN, TZA, GHA, UGA, BEN, MDG, MWI, ZAF, AGO, BWA, ETH, MLI, MRT, MOZ, NER, RAW, SEN, ZMB, BFA, CMR, ZWE, BDI, CAF, TCD, COM, COD, COG, DJI, GAB, GIN, CIV, LSO, LBR, MUS, NAM, SDN, SWZ, TGO, SOM

Annex 7: The baseline model

The "baseline model", common to all analyses, consists of basic demographic information, a series of measurable life circumstances, and a set of dummy variables to control for the year in which the survey took place. It takes the following form:

$$SWB_{ijt} = \beta X_{it} + \tau_t T_t + \varepsilon_i \quad (1)$$

Where:

- SWB_{ijt} denotes the subjective well-being outcome (life evaluation, positive affect, negative affect, or affect balance) for individual *i*, in country *j*, at time *t*,

- X_{it} denotes a vector of demographic information and life circumstances for individual *i* at time *t*. These include: respondents' age, age squared, a gender dummy variable (1 = female), a relationship status dummy variable (1 = married or living in a couple, 0 = single, divorced or widowed), a born abroad dummy variable (1 = yes), a dummy variable indicating duration of stay in current country (0 = less than five years; 1 = more than five years), the presence of children under 15 in the household (0, 1, 2, 3 or more); a set of three dummy variables representing local area characteristics (village, suburb or large city) with rural used as the reference group; two dummy variables indicating the highest level of education attained (secondary or tertiary) with primary education as the reference group; a dummy variable reflecting *un*employment status (1 = unemployed, 0 = all other groups, including employed, retired, unpaid household work *etc.*). Finally, the baseline model includes the logarithm of gross equivalised household income, including transfers, in purchasing power parity adjusted United Statesdollars, and corrected for inflation based on 2011 rates.[42] Due to high levels of missing data in the case of income (around 15% of the sample in total), a simple imputation procedure was used.[43] This means that the coefficients on income and other variables strongly related to income (such as education and employment) can only be interpreted with some caution.

- T_t denotes a set of four dummy variables to control for *t* years in which the survey took place (2010, 2011, 2012 or 2013), with 2009 used as the baseline year.

And ε_i is the error term.

[42] The equivalence scale use is the square root of the household size (number of adults + number of children). So our independent variable at time t is = log{ [(INC_001 +1)/sqrt(HHsize)]*[CPI(2011)/CPI(t)] }.

[43] Specifically, where income was missing, the average income for the country as a whole was imputed, based on Gallup's INC_002 variable. Thus, when imputed, the variable is equal to log{ Y* CPI(2011) / CPI(t) }, where Y is the national mean at time t of (INC_002+1)/sqrt(HHsize). The INC_002 variable is based on a more sophisticated multiple imputation method, but unfortunately the Gallup imputation procedure uses life evaluation in its estimation, making it INC_002 unsuitable for direct use in the present work. The use of a crude country-average imputation means that coefficients relating to log income, and those variables usually associated with it (such as unemployment, education etc.) should be interpreted with some caution. However, all variables in the baseline model are essentially regarded as control variables: the main estimation of interest is the country fixed effects, and thus an imperfect imputation was considered preferable to losing 15% of the total sample – and much more than this in certain countries with very high levels of missing income.

In most multivariate analyses, survey design has been controlled with Gallup's PSU and strata variables. When PSU and strata were missing, face-to-face surveys were imputed one unique PSU and stratum at the country-survey level. For telephone surveys (25% of the observations), a simple random sampling is assumed with PSUs taken at the observation level, and one unique stratum at the country-year level. Single PSU per strata were handled by Stata's "scaled" suboption of svyset (most conservative approach here): standard errors of coefficients are increased by 11.4% due to the 19.5% of observations belonging to lonely PSUs.

While all descriptive statistics were weighted (using Gallup's wgt variable) to adjust for any differences in composition of each country or territory's national sample, the weights made little difference to the results obtained in multivariate analyses, and were therefore dropped from these analyses.

Annex 8: Regression results for the baseline model only, 2009-2013 pooled

Dependent Variable	Ladder of Life now			Positive Affect			Negative Affect			Affect Balance		
Statistic	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE
Age	-0.0385	***	0.000956	-0.0260	***	0.000474	0.0190	***	0.000436	-0.0453	***	0.000767
Age²	0.000339	***	0.0000103	0.000205	***	0.0000051	-0.000167	***	0.0000046	0.000375	***	0.0000082
Female	0.141	***	0.00571	0.00644	**	0.00293	0.0778	***	0.00275	-0.0716	***	0.00477
Coupled	0.177	***	0.00708	0.0802	***	0.00357	-0.0636	***	0.00331	0.144	***	0.00577
Nb Children (0 to 3+)	-0.0555	***	0.00341	-0.0109	***	0.00167	0.0111	***	0.00156	-0.0206	***	0.00269
Immigrant	0.00339		0.0163	-0.114	***	0.00872	0.0743	***	0.00800	-0.190	***	0.0141
Immigrant > 5 years	-0.0402		0.0384	-0.116	***	0.0183	0.00161		0.0193	-0.127	***	0.0320
Eq.Income (-log- Constant 2011 PPP$)	0.471	***	0.00397	0.0775	***	0.00146	-0.0444	***	0.00130	0.122	***	0.00235
Primary [base]	0		.	0		.	0		.	0		.
Secondary	0.484	***	0.00840	0.0507	***	0.00410	-0.0671	***	0.00377	0.114	***	0.00667
Tertiary	0.850	***	0.0114	0.0982	***	0.00544	-0.125	***	0.00504	0.219	***	0.00882
Unemployed	-0.496	***	0.0135	-0.100	***	0.00680	0.252	***	0.00657	-0.351	***	0.0113
Rural [base]	0		.	0		.	0		.	0		.
Village	0.137	***	0.0123	-0.0240	***	0.00604	0.0607	***	0.00537	-0.0857	***	0.00962
Suburb	0.268	***	0.0183	0.00684		0.00838	0.0778	***	0.00785	-0.0701	***	0.0137
Large City	0.235	***	0.0123	-0.0539	***	0.00620	0.123	***	0.00556	-0.176	***	0.0101
2009 [base]	0		.	0		.	0		.	0		.
2010	-0.0644	***	0.0155	-0.0820	***	0.00736	0.0308	***	0.00678	-0.114	***	0.0116
2011	-0.0870	***	0.0150	-0.117	***	0.00704	0.0628	***	0.00651	-0.178	***	0.0111
2012	-0.0621	***	0.0147	-0.0901	***	0.00683	0.0959	***	0.00643	-0.180	***	0.0110
2013	-0.103	***	0.0157	-0.0903	***	0.00740	0.112	***	0.00698	-0.193	***	0.0121
Constant	1.932	***	0.0538	2.274	***	0.0239	0.550	***	0.0237	1.742	***	0.0401
r2	0.178			0.0309			0.0218			0.0346		
N	677302			625815			640564			618142		
N_psu	180768			173180			177504			172611		
N_strata	8848			8606			8620			8604		
* p<0.10 ** p<0.05 *** p<0.01												
Proportion of imputed income	0.149294			0.152016			0.153925			0.151619		

Annex 9: The country fixed effects model

The country fixed effects model consists of the baseline model (1), plus a set of dummy variables, one for each country included in the analysis, with Viet Nam used as the reference group in all cases (as the country average response for Viet Nam was reasonably close to the median country average across all four outcomes). While analyses are conducted at the individual level, the total sample included 156 countries and territories for life evaluations; 155 countries and territories for negative affect, and 153 for positive affect and affect balance. The model takes the following form:

$$SWB_{ijt} = \beta X_{it} + \tau_t T_t + \gamma_j D_j + \varepsilon_i \quad (2)$$

Where the baseline model is as described above, and *D* denotes a set of *j* country dummies.

Annex 10: Results for the country fixed effects model (2009-2013 pooled)

Dependent Variable	Ladder of Life now			Positive Affect			Negative Affect			Affect Balance		
Statistic	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE
Age	-0.0450	***	0.000898	-0.0269	***	0.000452	0.0190	***	0.000423	-0.0461	***	0.000734
Age²	0.000368	***	0.0000096	0.000216	***	0.0000048	-0.000171	***	0.0000045	0.000390	***	0.0000078
Female	0.0930	***	0.00542	0.00161		0.00283	0.0776	***	0.00264	-0.0746	***	0.00459
Coupled	0.201	***	0.00656	0.0782	***	0.00341	-0.0737	***	0.00318	0.152	***	0.00550
Nb Children (0 to 3+)	-0.0238	***	0.00315	-0.0141	***	0.00159	0.0189	***	0.00150	-0.0337	***	0.00257
Immigrant	-0.169	***	0.0156	-0.0714	***	0.00852	0.0626	***	0.00780	-0.134	***	0.0137
Immigrant > 5 years	0.0271		0.0364	-0.0445	**	0.0177	-0.0124		0.0176	-0.0344		0.0294
Eq.Income (-log- Constant 2011 PPP$)	0.283	***	0.00427	0.0698	***	0.00174	-0.0614	***	0.00159	0.132	***	0.00286
Primary [base]	0		.	0		.	0		.	0		.
Secondary	0.392	***	0.00790	0.104	***	0.00386	-0.0872	***	0.00365	0.191	***	0.00628
Tertiary	0.792	***	0.0105	0.171	***	0.00527	-0.138	***	0.00492	0.307	***	0.00847
Unemployed	-0.502	***	0.0127	-0.0919	***	0.00644	0.233	***	0.00630	-0.327	***	0.0107
Rural [base]	0		.	0		.	0		.	0		.
Village	0.0704	***	0.0123	-0.00518		0.00568	0.00604		0.00516	-0.0107		0.00883
Suburb	0.126	***	0.0177	-0.0131	*	0.00773	0.0392	***	0.00759	-0.0514	***	0.0125
Large City	0.182	***	0.0124	-0.0181	***	0.00593	0.0286	***	0.00547	-0.0463	***	0.00949
2009 [base]	0		.	0		.	0		.	0		.
2010	0.0422	***	0.0161	0.00902		0.00752	-0.0221	***	0.00703	0.0299	**	0.0120
2011	0.0290	*	0.0155	-0.0129	*	0.00710	0.00370		0.00672	-0.0177		0.0113
2012	-0.00687		0.0151	-0.0153	**	0.00683	0.0452	***	0.00655	-0.0599	***	0.0110
2013	-0.0134		0.0161	-0.0101		0.00735	0.0676	***	0.00703	-0.0758	***	0.0118
USA	0.927	***	0.0508	0.259	***	0.0263	0.359	***	0.0223	-0.0991	***	0.0382
EGY	-1.040	***	0.0671	-0.219	***	0.0456	0.612	***	0.0397	-0.827	***	0.0757
MAR	-0.386	***	0.0511	0.202	***	0.0269	0.189	***	0.0225	0.00976		0.0395
LBN	-0.850	***	0.0493	-0.391	***	0.0287	0.530	***	0.0248	-0.926	***	0.0422
SAU	0.315	***	0.0656	0.214	***	0.0298	0.313	***	0.0283	-0.0965	**	0.0481
JOR	-0.290	***	0.0525	-0.101	***	0.0296	0.400	***	0.0248	-0.498	***	0.0414
SYR	-1.734	***	0.0474	-0.284	***	0.0247	1.051	***	0.0201	-1.252	***	0.0335
TUR	-0.380	***	0.0476	-0.163	***	0.0267	0.550	***	0.0212	-0.719	***	0.0373
PAK	0.0345		0.0591	-0.0327		0.0294	0.360	***	0.0231	-0.392	***	0.0403
IDN	0.0866		0.0597	0.711	***	0.0276	0.0772	**	0.0312	0.629	***	0.0452
BGD	-0.493	***	0.0508	-0.00597		0.0282	0.120	***	0.0229	-0.121	***	0.0432
GBR	0.767	***	0.0457	0.267	***	0.0248	0.179	***	0.0195	0.0858	**	0.0345
FRA	0.473	***	0.0440	0.0721	***	0.0249	0.375	***	0.0199	-0.303	***	0.0348
DEU	0.477	***	0.0402	0.150	***	0.0229	0.129	***	0.0164	0.0238		0.0299
NLD	1.192	***	0.0432	0.343	***	0.0257	0.245	***	0.0211	0.103	***	0.0361
BEL	0.794	***	0.0449	0.207	***	0.0259	0.301	***	0.0215	-0.0917	**	0.0368
ESP	0.473	***	0.0442	0.110	***	0.0244	0.564	***	0.0200	-0.454	***	0.0341
ITA	0.262	***	0.0443	0.0465	*	0.0249	0.467	***	0.0197	-0.424	***	0.0337
POL	-0.153	***	0.0541	0.189	***	0.0271	0.295	***	0.0235	-0.103	**	0.0399
HUN	-1.021	***	0.0617	-0.123	***	0.0304	0.376	***	0.0248	-0.503	***	0.0436
CZE	0.267	***	0.0528	-0.0658	**	0.0291	0.335	***	0.0231	-0.402	***	0.0397
ROU	-0.701	***	0.0674	-0.242	***	0.0343	0.523	***	0.0295	-0.758	***	0.0519
SWE	1.036	***	0.0447	0.210	***	0.0250	0.172	***	0.0196	0.0423		0.0348
GRC	-0.377	***	0.0585	-0.00675		0.0293	0.510	***	0.0279	-0.517	***	0.0458
DNK	1.419	***	0.0443	0.266	***	0.0248	0.199	***	0.0199	0.0635	*	0.0347
IRN	-1.104	***	0.0600	-0.228	***	0.0296	0.901	***	0.0306	-1.126	***	0.0481
HKG	-0.620	***	0.0495	0.0836	***	0.0274	0.180	***	0.0219	-0.0966	**	0.0381
SGP	0.261	***	0.0360	-0.159	***	0.0205	0.0574	***	0.0142	-0.218	***	0.0259
JPN	-0.151	***	0.0463	0.338	***	0.0244	0.123	***	0.0190	0.213	***	0.0329
CHN	-0.470	***	0.0465	0.497	***	0.0236	-0.0808	***	0.0187	0.586	***	0.0333
IND	-0.522	***	0.0479	0.104	***	0.0251	0.249	***	0.0191	-0.136	***	0.0343
VEN	1.178	***	0.124	0.504	***	0.0345	0.0407		0.0311	0.466	***	0.0536
BRA	1.309	***	0.0524	0.219	***	0.0263	0.346	***	0.0216	-0.123	***	0.0368
MEX	1.399	***	0.0835	0.348	***	0.0320	0.233	***	0.0277	0.131	***	0.0471
NGA	-0.192	***	0.0664	0.309	***	0.0285	0.0654	***	0.0253	0.256	***	0.0428
KEN	-0.934	***	0.0671	0.342	***	0.0370	-0.132	***	0.0299	0.479	***	0.0573
TZA	-1.219	***	0.0678	0.377	***	0.0312	-0.124	***	0.0260	0.502	***	0.0458
ISR	1.143	***	0.0554	-0.137	***	0.0302	0.721	***	0.0304	-0.856	***	0.0475
PSE	-0.717	***	0.0489	-0.161	***	0.0287	0.544	***	0.0244	-0.707	***	0.0416
GHA	-0.181	**	0.0868	0.314	***	0.0339	-0.0499	*	0.0280	0.365	***	0.0482
UGA	-0.654	***	0.0762	0.160	***	0.0368	0.167	***	0.0335	-0.00280		0.0544
BEN	-1.419	***	0.0695	0.0306		0.0376	-0.00533		0.0296	0.0419		0.0547
MDG	-0.880	***	0.0545	0.0906	**	0.0353	-0.0122		0.0288	0.104	**	0.0470
MWI	-0.633	***	0.0829	0.427	***	0.0294	-0.00532		0.0265	0.434	***	0.0418
ZAF	-0.385	***	0.0659	0.423	***	0.0287	-0.0742	***	0.0226	0.501	***	0.0409
CAN	1.248	***	0.0449	0.312	***	0.0249	0.298	***	0.0203	0.0130		0.0350
AUS	1.215	***	0.0516	0.231	***	0.0286	0.165	***	0.0229	0.0651		0.0411
PHL	-0.365	***	0.0651	0.465	***	0.0277	0.405	***	0.0250	0.0655		0.0399
LKA	-0.950	***	0.0535	0.405	***	0.0296	-0.0127		0.0257	0.422	***	0.0422
VNM	0		.	0		.	0		.	0		.
THA	0.696	***	0.0515	0.580	***	0.0262	-0.0852	***	0.0222	0.666	***	0.0361
KHM	-0.970	***	0.0477	0.326	***	0.0285	0.464	***	0.0264	-0.134	***	0.0424
LAO	-0.419	***	0.0625	0.689	***	0.0363	0.302	***	0.0356	0.395	***	0.0570
MMR	-0.815	***	0.0769	0.369	***	0.0325	0.00279		0.0264	0.369	***	0.0456
NZL	1.113	***	0.0497	0.276	***	0.0272	0.173	***	0.0224	0.106	***	0.0389
AGO	-0.520	***	0.0970	0.00925		0.0397	0.418	***	0.0374	-0.402	***	0.0605
BWA	-1.181	***	0.0684	0.175	***	0.0328	-0.0457	*	0.0278	0.224	***	0.0493
ETH	-0.508	***	0.0582	0.0135		0.0331	-0.175	***	0.0244	0.190	***	0.0466
MLI	-0.716	***	0.0691	0.361	***	0.0339	-0.215	***	0.0231	0.581	***	0.0450
MRT	-0.735	***	0.0558	0.272	***	0.0318	-0.0655	***	0.0254	0.346	***	0.0464
MOZ	-0.284	**	0.144	-0.181	***	0.0592	0.180	***	0.0423	-0.358	***	0.0859
NER	-0.882	***	0.0588	0.0798	**	0.0347	-0.201	***	0.0248	0.283	***	0.0471
RWA	-1.102	***	0.0665	0.306	***	0.0338	-0.253	***	0.0233	0.562	***	0.0454
SEN	-0.976	***	0.0593	0.327	***	0.0342	-0.0998	***	0.0248	0.428	***	0.0464
ZMB	-0.0100		0.0896	0.269	***	0.0351	0.126	***	0.0301	0.146	***	0.0528
KOR	-0.228	***	0.0483	0.0189		0.0258	0.154	***	0.0194	-0.140	***	0.0356
TWN	0.195	***	0.0478	0.346	***	0.0254	-0.0273		0.0190	0.377	***	0.0348
AFG	-1.265	***	0.0528	0.0797	**	0.0314	0.172	***	0.0294	-0.0899	*	0.0501
BLR	-0.431	***	0.0573	-0.305	***	0.0305	0.202	***	0.0221	-0.504	***	0.0411
GEO	-1.411	***	0.0564	-0.458	***	0.0310	0.221	***	0.0276	-0.692	***	0.0480
KAZ	-0.141	***	0.0509	0.0798	***	0.0290	0.00347		0.0202	0.0806	**	0.0398
KGZ	-0.463	***	0.0495	0.0853	***	0.0297	-0.0454	**	0.0217	0.134	***	0.0412
MDA	0.124	**	0.0565	-0.320	***	0.0295	0.368	***	0.0227	-0.672	***	0.0405

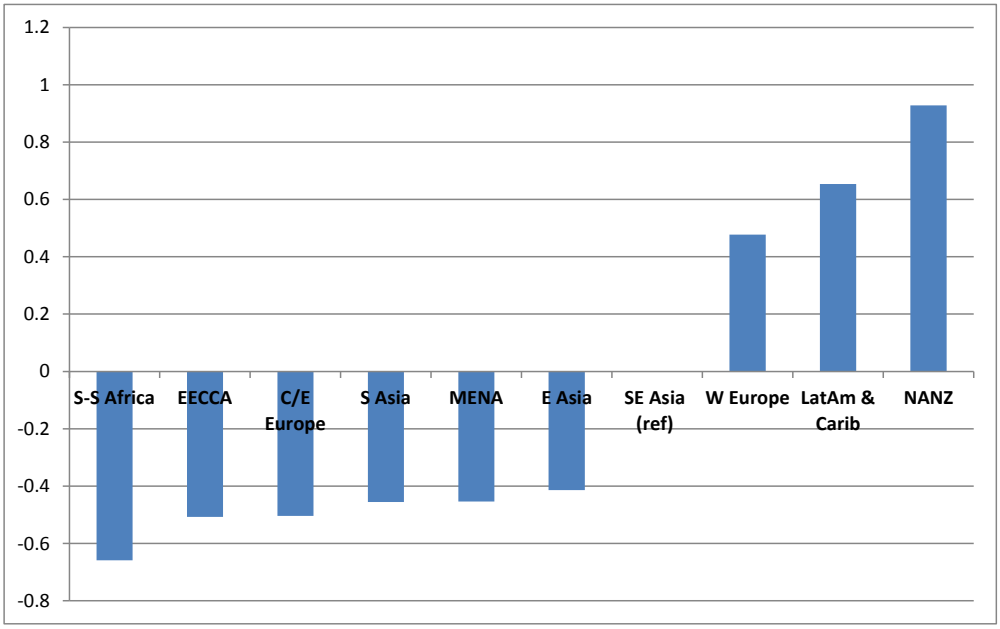
Dependent Variable	Ladder of Life now			Positive Affect			Negative Affect			Affect Balance		
Statistic	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE	Coef.	Sig.Star	Clust.SE
RUS	-0.500	***	0.0440	-0.118	***	0.0240	0.0815	***	0.0170	-0.209	***	0.0314
UKR	-0.884	***	0.0582	-0.194	***	0.0309	0.171	***	0.0230	-0.369	***	0.0446
BFA	-0.747	***	0.0673	0.0236		0.0405	0.0311		0.0312	-0.00216		0.0569
CMR	-0.778	***	0.0591	0.0345		0.0310	0.224	***	0.0260	-0.190	***	0.0453
SLE	-0.626	***	0.128	-0.320	***	0.0510	0.195	***	0.0434	-0.509	***	0.0747
ZWE	-0.378	***	0.0650	0.170	***	0.0349	-0.134	***	0.0255	0.312	***	0.0496
CRI	1.505	***	0.0578	0.520	***	0.0254	0.263	***	0.0221	0.259	***	0.0369
ALB	-0.237	***	0.0662	0.0309		0.0341	0.321	***	0.0316	-0.278	***	0.0523
DZA	-0.0412		0.0594	-0.109	***	0.0338	0.162	***	0.0261	-0.264	***	0.0479
ARG	0.685	***	0.0540	0.420	***	0.0277	0.255	***	0.0231	0.170	***	0.0413
ARM	-1.289	***	0.0508	-0.505	***	0.0291	0.800	***	0.0254	-1.302	***	0.0432
AUT	1.212	***	0.0450	0.186	***	0.0257	0.0661	***	0.0186	0.115	***	0.0343
AZE	-0.711	***	0.0573	-0.268	***	0.0340	0.278	***	0.0292	-0.533	***	0.0482
BHR	-0.388	***	0.0690	-0.0319		0.0382	0.623	***	0.0371	-0.620	***	0.0587
BTN	0.289	***	0.0601	0.542	***	0.0326	0.0257		0.0369	0.532	***	0.0539
BOL	0.155	**	0.0646	0.209	***	0.0305	0.642	***	0.0308	-0.425	***	0.0502
BIH	-0.581	***	0.0681	-0.249	***	0.0343	0.535	***	0.0290	-0.780	***	0.0470
BGR	-1.679	***	0.0537	-0.181	***	0.0305	0.262	***	0.0238	-0.439	***	0.0432
BDI	-0.899	***	0.0778	0.264	***	0.0425	-0.148	***	0.0304	0.418	***	0.0601
CAF	-1.248	***	0.0800	-0.0435		0.0467	0.144	***	0.0355	-0.186	***	0.0671
TCD	-1.217	***	0.0586	-0.0737	**	0.0328	0.182	***	0.0269	-0.252	***	0.0469
CHL	0.884	***	0.0542	0.336	***	0.0262	0.355	***	0.0229	-0.00990		0.0382
COL	0.730	***	0.0611	0.461	***	0.0260	0.326	***	0.0231	0.140	***	0.0388
COM	-1.491	***	0.0538	0.0933	***	0.0337	-0.0347		0.0256	0.131	***	0.0467
COD	-0.808	***	0.0626	0.0483		0.0321	0.0494	**	0.0242	0.000932		0.0455
COG	-0.889	***	0.169	0.0470		0.0530	0.143	***	0.0454	-0.0757		0.0799
HRV	-0.149	**	0.0614	-0.238	***	0.0325	0.342	***	0.0263	-0.567	***	0.0466
CYP	0.384	***	0.0534	0.0902	***	0.0270	0.541	***	0.0235	-0.445	***	0.0396
DJI	-0.795	***	0.0849	-0.0746		0.0768	-0.0386		0.0528	-0.0476		0.103
DOM	-0.575	***	0.0683	0.281	***	0.0273	0.344	***	0.0245	-0.0616		0.0418
ECU	0.263	***	0.0980	0.382	***	0.0330	0.415	***	0.0373	-0.0277		0.0583
SLV	0.679	***	0.0608	0.527	***	0.0247	0.382	***	0.0229	0.156	***	0.0360
EST	-0.578	***	0.0614	-0.0614	**	0.0312	0.130	***	0.0253	-0.191	***	0.0455
FIN	1.334	***	0.0455	0.179	***	0.0267	0.171	***	0.0203	0.00461		0.0364
GAB	-1.277	***	0.0745	-0.303	***	0.0398	0.114	***	0.0304	-0.414	***	0.0488
GTM	0.726	***	0.0724	0.534	***	0.0270	0.338	***	0.0259	0.209	***	0.0414
GIN	-0.850	***	0.0789	0.137	***	0.0373	0.170	***	0.0338	-0.0275		0.0569
HTI	-0.771	***	0.0860	-0.177	***	0.0445	0.210	***	0.0446	-0.327	***	0.0758
HND	-0.0205		0.0791	0.482	***	0.0270	0.268	***	0.0237	0.235	***	0.0390
ISL	1.337	***	0.0576	0.259	***	0.0313	0.0301		0.0264	0.230	***	0.0467
IRQ	-0.487	***	0.0960	-0.425	***	0.0578	0.837	***	0.0381	-1.217	***	0.0642
IRL	0.906	***	0.0476	0.297	***	0.0256	0.201	***	0.0206	0.0957	***	0.0362
CIV	-1.013	***	0.132	0.276	***	0.0554	0.216	***	0.0487	0.0636		0.0877
JAM	0.141		0.146	0.449	***	0.0520	0.127	**	0.0589	0.314	***	0.0826
KWT	0.164	**	0.0752	0.232	***	0.0380	0.149	***	0.0382	0.0756		0.0634
LVA	-0.766	***	0.0580	-0.144	***	0.0319	0.206	***	0.0259	-0.350	***	0.0466
LSO	-0.297	*	0.179	0.474	***	0.0532	-0.0645		0.0540	0.541	***	0.0832
LBR	-0.451	***	0.127	-0.0386		0.0511	-0.0210		0.0386	-0.0137		0.0699
LBY	-0.822	***	0.0365	-0.108	***	0.0209	0.375	***	0.0145	-0.477	***	0.0265
LTU	-0.485	***	0.0630	-0.313	***	0.0314	0.380	***	0.0260	-0.695	***	0.0444
LUX	0.883	***	0.0470	0.133	***	0.0279	0.240	***	0.0223	-0.108	***	0.0392
MKD	-0.920	***	0.0721	-0.237	***	0.0347	0.538	***	0.0320	-0.784	***	0.0543
MYS	-0.150	***	0.0482	0.456	***	0.0283	0.0337		0.0227	0.421	***	0.0391
MLT	-0.0104		0.0530	-0.0420		0.0282	0.698	***	0.0234	-0.741	***	0.0401
MUS	-0.0483		0.105	0.222	***	0.0533	0.193	***	0.0447	0.0366		0.0741
MNG	-0.781	***	0.0437	0.0982	***	0.0276	-0.0249		0.0182	0.129	***	0.0363
MNE	-0.463	***	0.0680	-0.290	***	0.0338	0.553	***	0.0274	-0.842	***	0.0476
NPL	-0.781	***	0.0591	0.107	***	0.0328	0.108	***	0.0303	0.00206		0.0461
NIC	-0.102		0.0713	0.430	***	0.0268	0.322	***	0.0256	0.116	***	0.0412
NOR	1.265	***	0.0695	0.219	***	0.0371	0.252	***	0.0339	-0.0396		0.0562
OMN	0.758	***	0.0868									
PAN	1.330	***	0.0627	0.570	***	0.0250	0.0362		0.0222	0.554	***	0.0361
PRY	0.204	***	0.0595	0.643	***	0.0259	0.0496	**	0.0219	0.600	***	0.0374
PER	0.128	**	0.0556	0.269	***	0.0278	0.519	***	0.0248	-0.242	***	0.0410
PRT	-0.685	***	0.0477	0.0830	***	0.0256	0.477	***	0.0201	-0.390	***	0.0360
QAT	0.585	***	0.0857				0.485	***	0.0399			
SRB	-0.814	***	0.0717	-0.501	***	0.0338	0.683	***	0.0304	-1.187	***	0.0523
SVK	0.0102		0.0581	-0.0569	*	0.0309	0.399	***	0.0269	-0.455	***	0.0449
SVN	0.0740		0.0489	-0.113	***	0.0270	0.420	***	0.0207	-0.532	***	0.0374
SDN	-0.833	***	0.0536	-0.0669	*	0.0367	0.131	***	0.0300	-0.188	***	0.0548
SUR	0.887	***	0.0944	0.458	***	0.0430	0.127	***	0.0439	0.334	***	0.0717
SWZ	-0.357	***	0.127	0.403	***	0.0462	0.161	***	0.0501	0.245	***	0.0789
CHE	1.464	***	0.0550	0.248	***	0.0308	0.154	***	0.0253	0.0948	**	0.0445
TJK	-0.893	***	0.0502	0.0221		0.0342	0.0342		0.0251	-0.0169		0.0490
TGO	-1.928	***	0.129	-0.125	**	0.0620	0.542	***	0.0544	-0.655	***	0.0974
TTO	0.953	***	0.138	0.630	***	0.0442	-0.111	**	0.0457	0.744	***	0.0736
TUN	-0.597	***	0.0591	-0.176	***	0.0393	0.257	***	0.0312	-0.425	***	0.0547
TKM	0.349	***	0.0540	0.0278		0.0305	-0.127	***	0.0200	0.173	***	0.0388
ARE	0.888	***	0.0607	0.232	***	0.0354	0.235	***	0.0298	0.00319		0.0537
URY	0.614	***	0.0576	0.395	***	0.0284	0.223	***	0.0231	0.177	***	0.0413
UZB	-0.0562		0.0529	0.327	***	0.0255	-0.0614	***	0.0190	0.388	***	0.0351
YEM	-1.030	***	0.0788	-0.311	***	0.0383	0.212	***	0.0289	-0.520	***	0.0539
XK	0.137	*	0.0806	0.129	***	0.0344	-0.0676	***	0.0248	0.221	***	0.0467
Constant	3.862	***	0.0629	2.035	***	0.0315	0.596	***	0.0270	1.440	***	0.0472
r2	0.267			0.0950			0.0799			0.0998		
N	677302			625815			640564			618142		
N_psu	180768			173180			177504			172611		
N_strata	8848			8606			8620			8604		
* p<0.10 ** p<0.05 *** p<0.01												
Proportion of imputed income	0.149294			0.152016			0.153925			0.151619		

Annex 11: Regional fixed effects

163. The country-level results reported in Section 5 of the paper often suggested broad regional clusters of effects. In an attempt to summarise and test these clusters more formally, a third set of analyses examined fixed effects for broad regional groupings (instead of specific countries). A set of regional dummies (using Southeast Asia as the reference group) were added to the same baseline model as above for all four subjective well-being outcomes.[44] Relative to the baseline model alone, the regional dummies added to the overall variance explained in all four outcomes, but the increases in R^2 values over and above the baseline were considerably smaller than those for the country fixed effects model (total model R^2= 0.219 for life evaluations, 0.066 for positive affect, 0.046 for negative affect, and 0.066 for affect balance). This suggests that there is sizeable variation *within* these broad geographic regions that is lost when effects are summarised in this way.

164. Coefficients on life evaluations for each of the regions are shown in Figure A8, below. They indicate that, over and above observed differences in life circumstances, life evaluations are considerably higher in Northern America and Australasia, Latin America and the Caribbean, and Western Europe (relative to those in Southeast Asia). Living in these regions is associated with a 0.48 – 0.93 scale point difference in life evaluations on a 0-10 scale. Conversely, life evaluations are more negative in all other regions, and especially in sub-Saharan Africa, where life evaluations are reduced on average by 0.66 scale points.

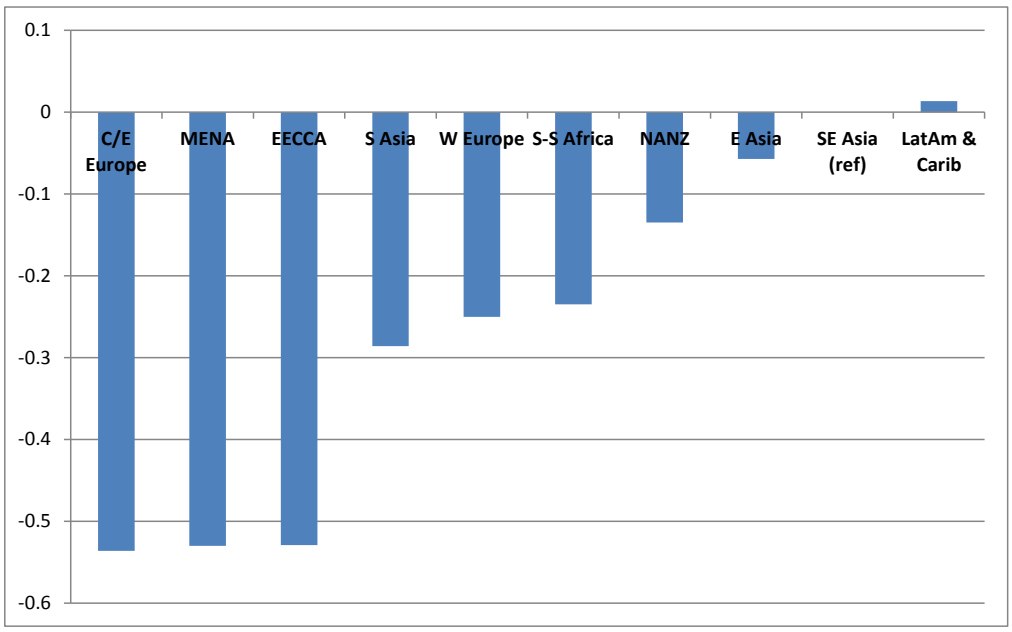
Figure A8: Regional fixed effect coefficients on life evaluation (2009-2013)



165. Regional coefficients for affect differ from those for life evaluations. In the case of positive affect (Figure A9, below), only Latin America and the Caribbean has a significant coefficient, relative to Southeast Asia (the reference region). Positive affect is significantly lower elsewhere, and particularly for the MENA region, EECCA, and Central and Eastern Europe.

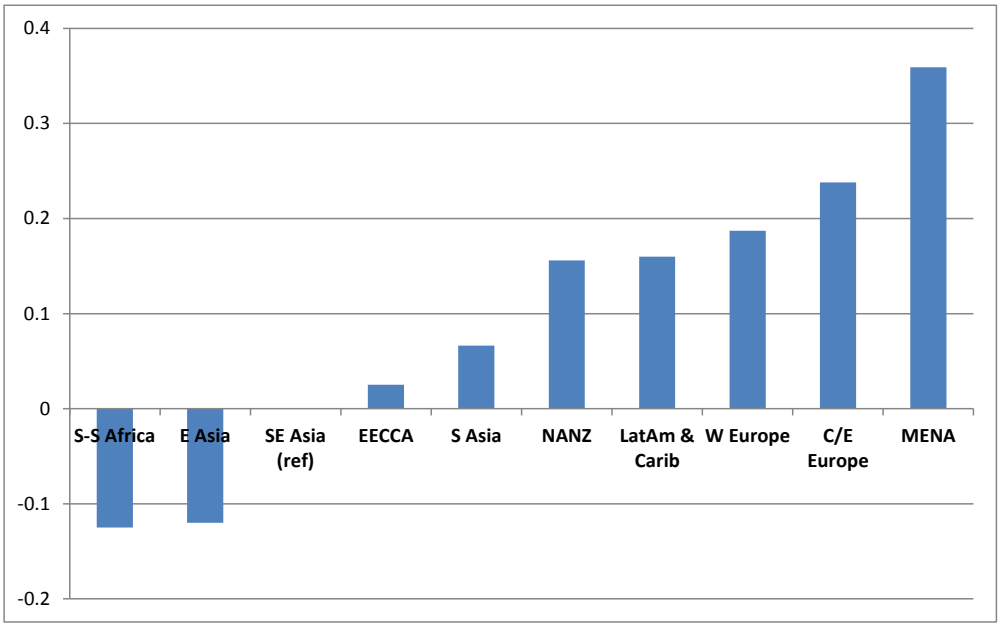
[44] Regional dummies were added here *in the place of* country fixed effects.

Figure A9: Regional fixed effect coefficients on positive affect (2009-2013)



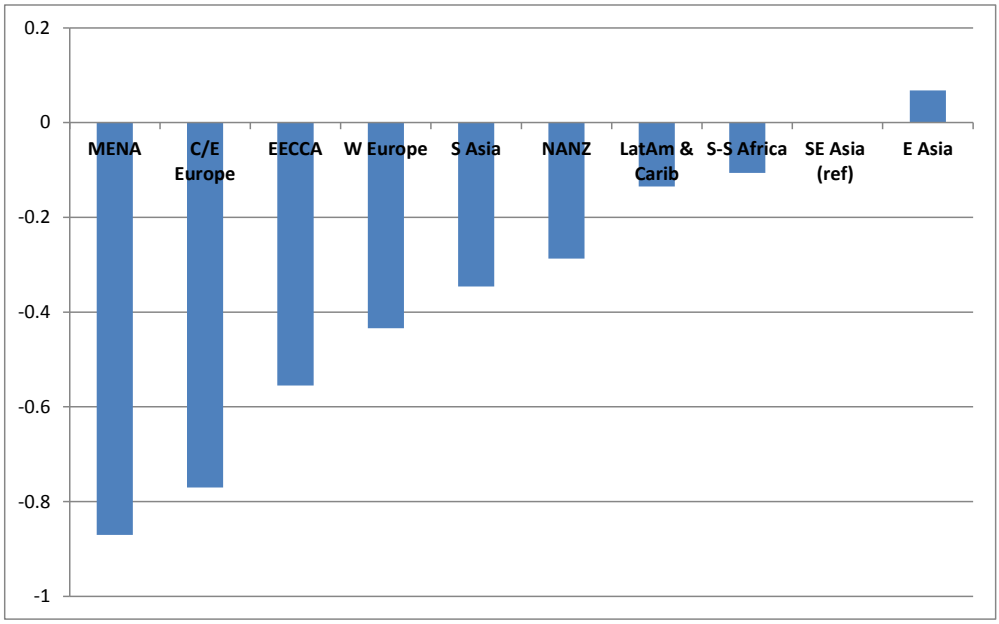
166. In the case of negative affect (Figure A10), most regions experience greater levels of negative affect than Southeast Asia. Negative affect is markedly higher in the MENA region, as well as in Central and Eastern Europe. East Asia and sub-Saharan Africa, on average, report lower negative affect than Southeast Asia.

Figure A10: Regional fixed effect coefficients on negative affect (2009-2013)



167. Consistent with the findings for positive and negative affect separately, positive affect balance (Figure A11) tends to be worse than Southeast Asia in every region, except for East Asia. Positive affect balance is particularly low in MENA and Central and Eastern Europe.

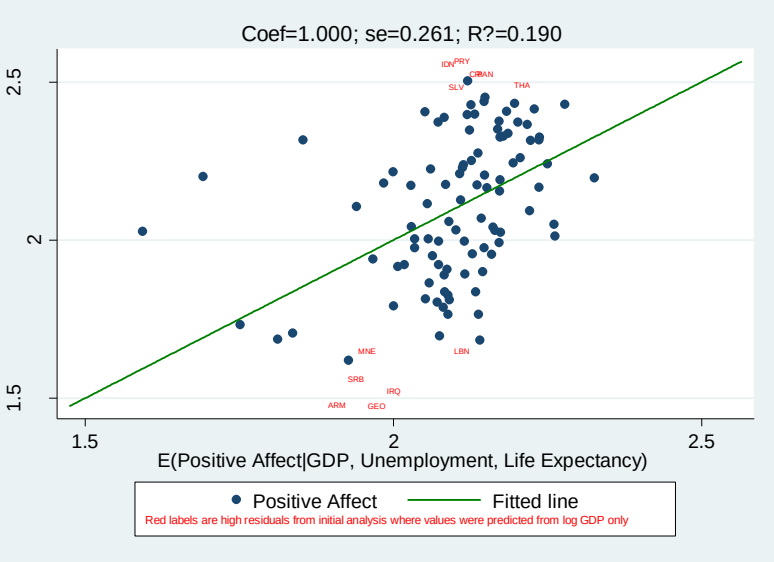
Figure A11: Regional fixed effect coefficients on affect balance (2009-2013)



Annex 12: Affect and the drivers of subjective well-being.

Figure A12: Positive affect yesterday vs. values predicted from log GDP, life expectancy and unemployment

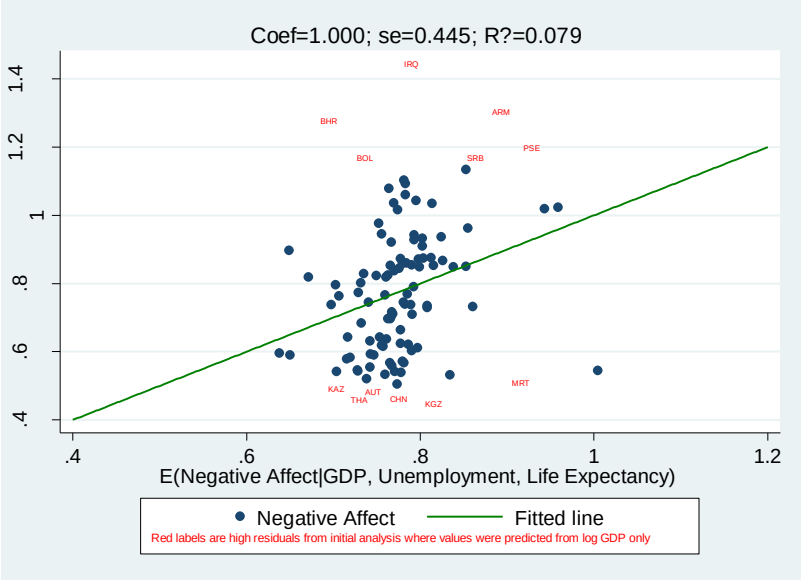
(0-3 scale: enjoyment, smiling and laughing and feeling well-rested yesterday)



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013.

Figure A13: Negative affect yesterday vs. values predicted from log GDP, life expectancy and unemployment

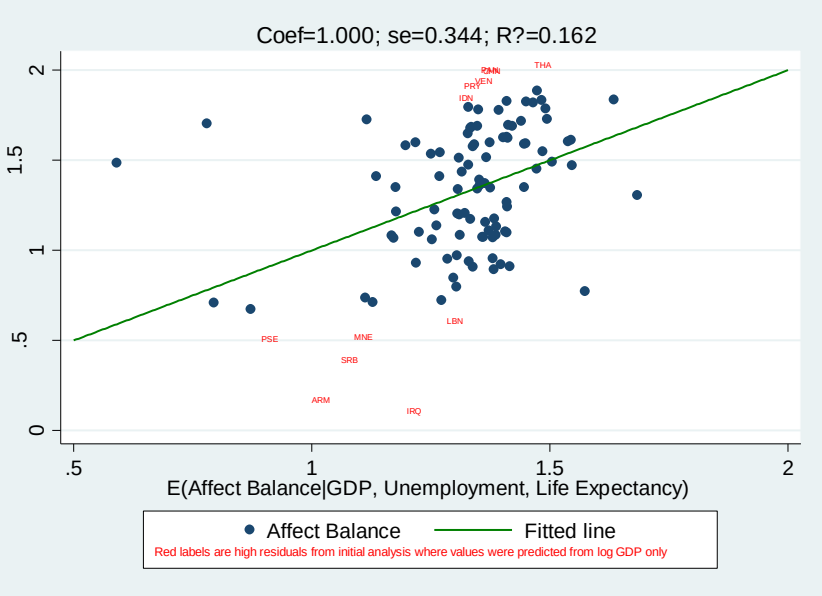
(0-3 scale: sadness, anger and worry yesterday)



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013.

Figure A14: Affect balance yesterday vs. values predicted from log GDP, life expectancy and unemployment

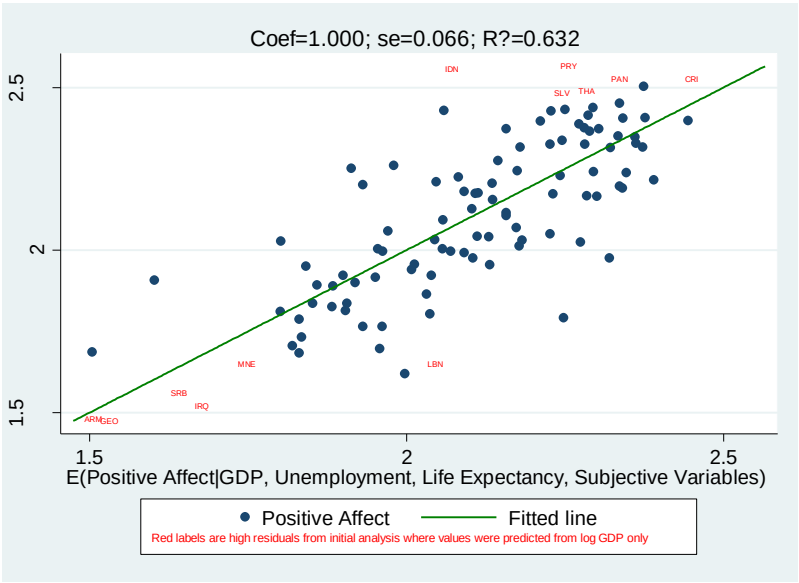
(-3 to +3 scale, positive affect balance)



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013.

Figure A15: Positive affect vs. predicted values from objective and self-reported well-being variables

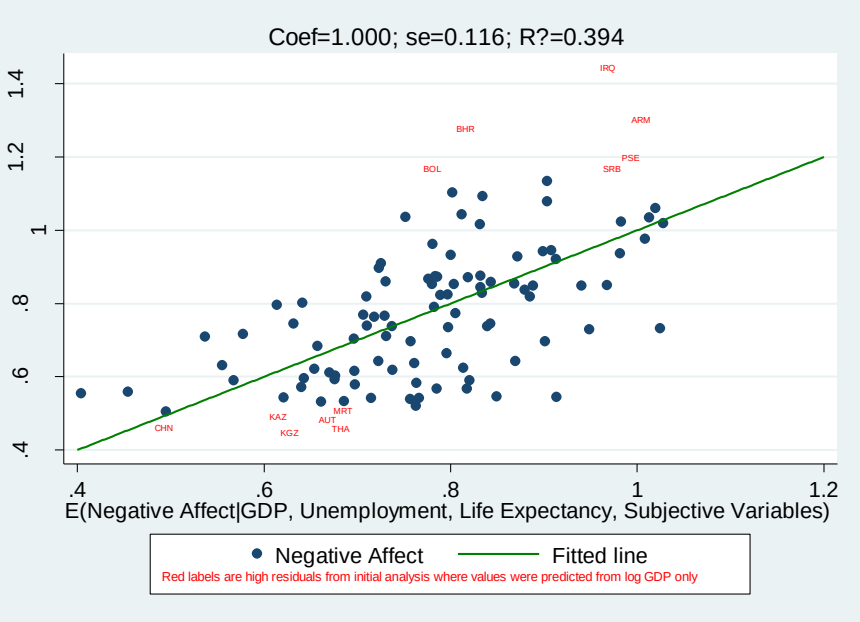
(0-3 scale: enjoyment, smiling/laughing and feeling well-rested yesterday)



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013.

Figure A16: Negative affect vs. predicted values from objective and self-reported well-being variables

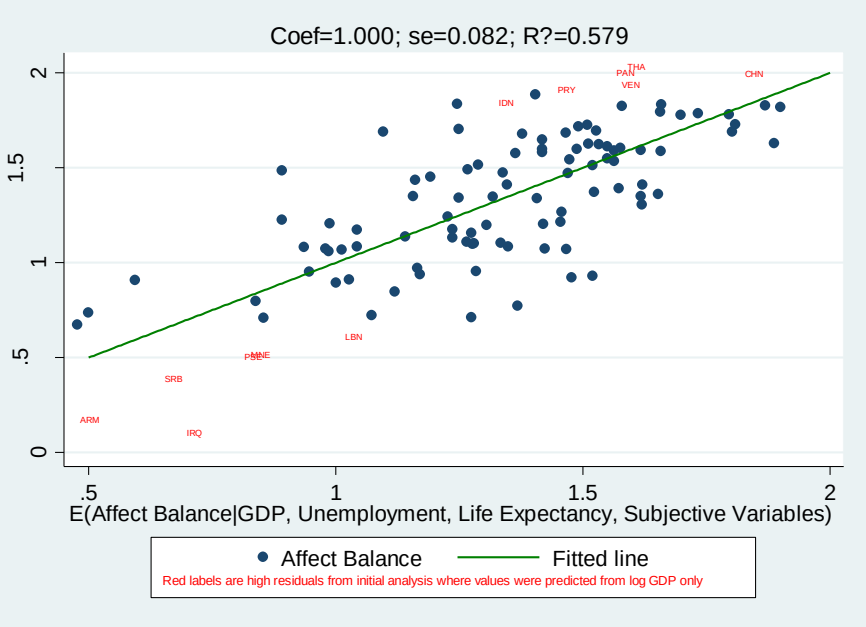
(0-3 scale of sadness, anger and worry yesterday)



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013.

Figure A17: Affect balance vs. predicted values from objective and self-reported well-being variables

(-3 to +3 scale)



Source: Gallup World Poll and World Bank World Development Index data; authors' calculations. *N* = 107 countries and territories. Pooled observations, 2009-2013.

Annex 13: Items used to construct secular and emancipative values scales from World Values Survey and European Values Survey data

Secular values

Defiance

- (reversed) R says he is proud of his/her nationality
- (reversed) One of R's main goals in life has been to make my parents proud
- (reversed) Greater respect for authority is needed for R's country

Agnosticism

- (reversed) R describes him/herself as a religious person
- (reversed) R mentions "faith" as an important child quality
- (reversed) R attends frequently religious services

Relativism

- R justifies people avoiding a fare on public transport
- R justifies people accepting a bribe in the course of their duties
- R justifies cheating on tax if he/she has the chance

Skepticism

- (reversed) Confidence in justice system/courts
- (reversed) Confidence in the police
- (reversed) Confidence in armed forces

Emancipative values

Choice

- R justifies abortion
- R justifies divorce
- R justifies homosexuality

Equality

- (reversed) R agrees that education is more important for a boy than a girl
- (reversed) R agrees that when jobs are scarce, men should have priority over women to get a job
- (reversed) R agrees that men make better political leaders than women

Voice [Contructed from Materialism/Postmaterialism items]

- R gives national priority to protecting freedom of speech
- R gives national priority to giving people more say in important government decisions

- R gives national priority to giving people more say about how things are done at their jobs and their communities

Autonomy

- R mentions “independence” as an important child quality
- R mentions “imagination” as an important child quality
- (reversed) R mentions “obedience” as an important child quality

Annex 14: Flows of people born abroad

Sample		**Immigration** (i.e. number of current residents born abroad)				**Emigration** (i.e. number of people now resident abroad)			
Abbreviation code	N Observations (full sample):	N immigrants:	N origins:	Most prevalent origin:	N immigrants from most prevalent origin:	N emigrants	N of destinations:	Most prevalent destination	N emigrants towards most prevalent destination
USA	3,752	131	46	MEX	36	439	84	CAN	61
EGY	11,582	21	8	SAU	5	2,415	55	KWT	990
MAR	3,952	8	4	FRA	4	371	38	ISR	75
LBN	7,905	172	34	SYR	38	399	28	ARE	107
SAU	4,659	543	21	EGY	212	390	23	JOR	80
JOR	7,680	900	27	PSE	435	619	17	ARE	254
SYR	7,403	135	21	LBN	20	752	23	ARE	274
TUR	5,855	24	9	DEU	11	120	30	NLD	16
PAK	5,923	82	7	IND	34	222	28	AFG	131
IDN	6,071	2	2	CHN	1	142	13	NLD	41
BGD	5,865	18	2	IND	17	58	17	IND	23
GBR	5,176	180	56	IRL	22	1,302	45	IRL	388
FRA	5,504	425	69	DZA	71	653	53	LUX	257
DEU	11,858	277	50	POL	59	752	61	LUX	137
NLD	3,604	230	47	SUR	44	145	22	BEL	44
BEL	3,723	411	66	FRA	74	221	27	LUX	145
ESP	5,921	554	45	ECU	55	159	37	ARG	21
ITA	5,661	250	55	ROU	59	362	36	LUX	85
POL	4,728	40	10	UKR	12	288	37	DEU	59
HUN	3,967	98	14	ROU	64	85	23	AUT	15
CZE	4,876	99	13	SVK	66	144	27	SVK	33
ROU	2,879	4	4	BGR	1	384	41	HUN	64
SWE	4,617	354	64	FIN	108	83	24	NOR	14
GRC	4,835	550	44	ALB	233	158	24	CYP	79
DNK	4,666	193	52	DEU	27	60	19	SWE	14
IRN	2,822	5	4	AFG	2	172	25	AFG	40
HKG	3,105	707	18	CHN	615	52	6	SGP	14
SGP	3,967	538	16	MYS	204	27	8	NZL	8
JPN	4,924	46	9	CHN	22	40	13	KOR	24
CHN	22,473	13	7	IDN	3	968	39	HKG	615
IND	27,156	64	10	BGD	23	832	44	BHR	210
VEN	2,710	90	21	COL	40	69	21	ESP	23
BRA	6,014	21	13	PRT	9	191	32	PRT	55
MEX	3,445	14	10	ALB	3	73	18	USA	36
NGA	4,692	13	7	GHA	5	130	24	TCD	23

KEN	2,954	25	6	UGA	12	36	18	UGA	6
TZA	4,976	28	9	RWA	7	73	18	RWA	16
ISR	3,599	741	48	RUS	279	54	19	PSE	28
PSE	7,860	498	25	JOR	144	697	16	JOR	435
GHA	3,655	19	8	TGO	7	84	20	BFA	17
UGA	2,982	38	9	RWA	10	123	11	RWA	95
BEN	2,966	94	20	TGO	23	42	11	GAB	13
MDG	2,990	0		-		147	6	COM	137
MWI	3,991	103	15	ZWE	35	45	6	ZWE	23
ZAF	3,953	71	25	ZWE	14	221	34	NZL	71
CAN	4,579	600	91	GBR	85	128	44	MLT	15
AUS	2,934	721	69	GBR	253	167	25	NZL	75
PHL	5,965	1	1	SAU	1	150	26	SGP	40
LKA	5,938	3	3	MYS	1	41	15	AUS	12
VNM	4,568	8	4	CHN	3	31	15	FRA	8
THA	5,982	10	3	EGY	7	39	16	MYS	7
KHM	2,986	0		-		8	6	AUS	2
LAO	1,940	9	2	THA	6	2	1	FRA	1
MMR	2,036	1	1	THA	1	23	5	SGP	11
NZL	3,039	743	52	GBR	315	100	12	AUS	84
AGO	2,791	30	7	COD	23	105	14	PRT	64
BWA	3,978	89	14	ZWE	40	7	5	LSO	2
ETH	2,487	4	4	USA	1	137	17	DJI	103
MLI	4,986	88	16	CIV	34	177	17	MRT	84
MRT	6,890	306	23	SEN	161	15	7	SEN	6
MOZ	998	4	4	TZA	1	85	7	PRT	38
NER	4,056	38	11	NGA	6	50	10	BFA	14
RWA	3,958	220	13	UGA	95	35	10	UGA	10
SEN	3,942	59	15	GIN	21	244	22	MRT	161
ZMB	2,988	38	11	MWI	10	72	12	MWI	29
KOR	4,832	38	7	JPN	24	30	12	NZL	7
TWN	3,912	114	10	CHN	90	37	11	JPN	13
AFG	4,954	178	9	PAK	131	42	19	ISR	7
BLR	4,938	422	20	RUS	273	238	16	LVA	74
GEO	3,920	58	9	RUS	30	191	15	ARM	97
KAZ	4,647	435	15	RUS	237	315	22	RUS	110
KGZ	4,911	272	12	RUS	105	74	11	RUS	29
MDA	4,863	167	11	RUS	78	74	20	RUS	16
RUS	12,123	575	30	UKR	144	2,319	53	EST	344
UKR	4,850	316	20	RUS	216	617	40	RUS	144
BFA	2,978	242	13	CIV	179	75	12	CIV	33
CMR	4,144	60	17	NGA	17	72	14	TCD	37
SLE	1,991	20	7	GIN	11	25	8	GIN	13
ZWE	2,977	73	17	MWI	23	124	10	BWA	40

CRI	3,935	275	11	NIC	235	15	4	NIC	7
ALB	3,805	16	7	XK	9	293	18	GRC	233
DZA	6,875	38	12	FRA	17	140	21	FRA	71
ARG	4,900	203	15	PRY	50	127	17	ESP	36
ARM	4,891	382	20	AZE	177	112	14	AZE	49
AUT	4,869	352	51	DEU	105	72	22	CHE	14
AZE	2,925	99	8	ARM	49	266	14	ARM	177
BHR	2,907	574	31	IND	210	21	7	ARE	6
BTN	986	2	1	IND	2	0		-	
BOL	3,844	15	5	ARG	10	96	11	ESP	42
BIH	3,969	162	11	HRV	56	538	27	HRV	202
BGR	4,855	44	16	ROU	11	119	28	GRC	37
BDI	1,995	32	5	TZA	16	69	8	RWA	56
CAF	1,984	19	4	TCD	9	44	8	TCD	32
TCD	4,980	185	28	CMR	37	33	10	CMR	15
CHL	4,871	49	10	PER	21	71	15	ARG	31
COL	3,850	15	7	VEN	7	182	22	ESP	50
COM	5,956	143	4	MDG	137	4	2	FRA	3
COD	3,938	72	17	AGO	21	147	21	RWA	34
COG	964	40	16	COD	15	68	17	BEL	19
HRV	3,831	292	19	BIH	202	338	24	SRB	103
CYP	3,421	226	36	GRC	79	24	5	GRC	16
DJI	2,881	127	12	ETH	103	6	1	TCD	1
DOM	3,874	51	8	HTI	38	35	11	ESP	18
ECU	1,936	13	2	COL	10	72	12	ESP	55
SLV	4,932	9	4	NIC	4	38	12	CRI	7
EST	2,982	465	16	RUS	344	44	13	FIN	14
FIN	3,692	69	20	RUS	21	128	13	SWE	108
GAB	1,959	144	25	MLI	32	19	12	FRA	3
GTM	2,960	8	3	SLV	4	18	10	CRI	4
GIN	2,946	70	9	SEN	15	75	14	SEN	21
HTI	1,442	3	3	FRA	1	56	6	DOM	38
HND	4,896	17	5	NIC	7	25	8	ARE	5
ISL	1,465	39	18	DNK	8	10	4	DNK	7
IRQ	7,615	27	12	JOR	4	206	27	ARE	50
IRL	4,255	649	62	GBR	388	71	12	GBR	22
CIV	1,001	58	9	BFA	33	276	17	BFA	179
JAM	459	0		-		31	7	CAN	15
KWT	5,486	1,621	36	EGY	990	354	17	JOR	202
LVA	3,384	443	18	RUS	248	53	15	LTU	14
LSO	994	6	3	ZAF	3	10	6	BWA	4
LBR	989	30	10	GHA	15	28	10	GIN	12
LBY	963	0		-		83	22	PSE	13
LTU	4,367	178	11	RUS	90	73	16	LVA	25

LUX	3,322	1,110	67	FRA	257	11	5	BEL	4
MKD	3,842	103	19	SRB	46	71	18	SRB	19
MYS	3,857	36	7	IDN	18	257	11	SGP	204
MLT	3,363	138	29	GBR	53	17	5	AUS	9
MUS	976	4	4	BEL	1	14	7	BEL	4
MNG	3,951	7	4	RUS	4	11	7	KAZ	4
MNE	3,882	256	13	SRB	130	105	9	SRB	44
NPL	5,764	118	4	IND	114	7	6	IND	2
NIC	3,886	13	4	CRI	7	261	9	CRI	235
NOR	957	73	31	SWE	14	41	10	SWE	17
OMN	934	82	11	EGY	29	28	8	ARE	15
PAN	4,903	75	20	COL	32	14	4	CRI	5
PRY	3,835	96	8	EGY	40	64	4	ARG	50
PER	3,841	4	4	ECU	1	102	17	ESP	33
PRT	4,727	283	31	AGO	64	370	22	LUX	252
QAT	955	441	22	EGY	159	25	9	PSE	6
SRB	3,953	322	13	BIH	140	385	22	MNE	130
SVK	3,970	66	10	CZE	33	96	12	CZE	66
SVN	4,401	291	17	HRV	102	60	15	AUT	16
SDN	5,586	88	19	SAU	32	497	20	ARE	267
SUR	452	0		-		44	1	NLD	44
SWZ	979	20	9	ZAF	9	10	7	ZAF	3
CHE	1,955	303	50	DEU	73	72	26	ESP	7
TJK	4,925	44	10	UZB	17	63	9	KGZ	23
TGO	992	38	8	GHA	16	65	20	BEN	23
TTO	489	10	7	USA	2	6	4	CAN	3
TUN	7,034	29	12	LBY	6	104	21	FRA	30
TKM	3,959	98	10	RUS	54	52	10	KAZ	25
ARE	6,363	2,126	43	EGY	679	151	16	JOR	22
URY	4,511	107	15	ARG	35	49	10	SAU	13
UZB	4,871	134	12	RUS	71	248	18	KAZ	69
YEM	7,901	73	10	SAU	60	188	14	ARE	75
XK	3,775	77	11	SRB	36	72	19	MNE	12
SUM	676117	28698				28698			

Annex 15: Estimating the average country of birth and country of residence effects

In this analysis, two new values have been imputed for each subjective well-being outcome, and for every individual in the data set, based on the outputs of model (2) above. Specifically the (continuous) value of the coefficient associated with country fixed effect of a person's country of birth (COB), and the coefficient associated with the country fixed effect of a person's country of residence (COR) have been added at the individual level. For example, in the case of life evaluations, an individual born in Denmark but living in Japan will take on a COB value reflecting the coefficient on the country fixed effect of Denmark on life evaluations (+1.419) , and a COR value reflecting the coefficient on the country fixed effect Japan (-0.151) on life evaluations. We then estimate the average effect that a person's COB has on their overall life evaluation scores, and the average effect that a person's COR has on their overall life evaluation scores, across the full sample, and controlling for the standard baseline model. For the majority (95%) of respondents, COB and COR are identical, and thus foreign-born respondents are identified by their differing COB and CORs. COB aims to encapsulate what people inherit from their country of origin (which could be seen as a cultural effect), whereas COR indicates how country circumstances in general influence subjective well-being. The model specification is as follows:

$$SWB_{ijt} = \beta X_{it} + \tau_t T_t + \gamma COB_i + \delta COR_i + \varepsilon_i \quad (3)$$

Where COB is a continuous number reflecting the coefficient associated with the country fixed-effect for individual *i*'s country of birth (estimated in model [2]), and COR is a continuous number reflecting the coefficient associated with individual *i*'s country of residence (also estimated in model [2]).

Estimating the interaction between COB, COR, and the number of years spent in a country

As noted earlier, the Gallup World Poll includes two pieces of information about migrant status: first, whether a respondent was born abroad, and second, whether those who were born abroad moved to their current country of residence within the last five years.

In the analyses described below, foreign-born respondents who have been in their current country of residence will be called "established" migrants, while those with less than five years of residence will be referred to as "new" migrants. The form of the equation is the same as (3), but with two interaction terms added:

$$SWB_{ijt} = \beta X_{it} + \tau_t T_t + \gamma COB_i + \delta COR_i + \mu E \cdot COB_i + \alpha E \cdot COR_i + \varepsilon_i \quad (4)$$

Where ECOB is the interaction term between being an established migrant (E) and country of birth (COB), and ECOR is the interaction term between being an established migrant (E) and country of residence (COR). The main effects of being foreign-born and being a "new" migrant are included in the vector of variables, X.