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NATURAL CAPITAL AND LIFE SATISFACTION ACROSS COUNTRIES: A DIFFERENT PERSPECTIVE ON NATURAL CAPITAL ABUNDANCE AND DEPENDENCE

Te Kunenga ki Pūrehuroa

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Natural Capital and Life Satisfaction Across Countries: A Different Perspective on Natural Capital Abundance and Dependence

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ABSTRACT

This paper explores whether there are robust correlations between subjective well-being measures, especially life satisfaction, and natural capital per capita (i.e. natural capital abundance) and the share of natural capital in comprehensive wealth (i.e. natural capital dependence), using aggregate data for a cross-section of fifty-six countries. We estimate bivariate correlations as well as multiple regression models, and carefully analyse the importance of outliers. The results obtained for the natural capital variables mirror those in the literature on the resource curse that focuses on GDP growth rates. They seem to suggest there is a 'life satisfaction blessing' associated with natural capital abundance, and a 'life satisfaction curse' with natural capital dependence. However, if one concedes that the natural capital dependence variable might be misleading, the balance of evidence arguably shifts in favour of the 'life satisfaction blessing' finding. Interestingly, for our sample of countries there is little evidence of a conventional resource curse or blessing. The analysis is also performed separately for the two major natural capital sub-categories, i.e. non-renewable and renewable resources. This produces similar, if somewhat weaker, results.

Keywords: Life satisfaction, subjective well-being, natural capital, natural capital abundance, natural capital dependence, resource curse.

JEL classification: O11, O13, Q26, Q32, Q51

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1. INTRODUCTION

The resource curse literature suggests that many countries have not been able to use their natural resource wealth as a basis for sustained economic development. However, in recent years there has been a revival of interest in the relationship between natural resources and economic growth. Many 'revisionists' have questioned the existence of the curse, especially for countries with good institutions and policies[1], and successful natural resource abundant countries are being analysed and put forward as possible role models for so far less successful ones.[2] Others see the emergence of a new sub-discipline of economics, i.e. a 'new resource economics' (Bleischwitz et al., 2009).

In this paper, we explore the importance of natural resource abundance and natural resource dependence highlighted by Gylfason (2009) and others from a different perspective. Instead of focussing on the relationship between natural resources and economic growth, we explore how natural resources are correlated with subjective well-being measures, in particular life satisfaction. In an earlier study, the author found robust macro-level correlations between subjective well-being measures and the World Bank's (2006) natural capital *per capita* estimates in a cross-country setting, once outliers and regional effects had been accounted for (Engelbrecht, 2009). As a result, it was argued that subjective well-being measures should be included in debates about sustainable development, natural capital and social welfare.[3] For a discussion of the capital approach to sustainable development adopted in World Bank (2006) see, for example, United Nations (2008). A review of the literature on natural capital in economic development and comprehensive wealth as a measure of social welfare has recently been provided by Dasgupta (2010).

The current paper extends the earlier analysis by distinguishing between the share of natural capital in total wealth, and natural capital per capita, thereby relating the study more closely to the literature on the resource curse. Further, natural capital is disaggregated into its two major sub-categories, i.e. non-renewable and renewable natural capital, in order to explore which of these might be mostly responsible for any correlation with subjective well-being. Last but not least, the analysis of the importance of economic inequality is explored further by employing a new household wealth Gini coefficient as an alternative to the income Gini coefficient.

The analysis reported in this paper amounts to a test of the hypothesis that there is a 'life satisfaction curse or blessing of natural resources', similar to the conventional resource curse or blessing. However, an important caveat about our empirical findings concerns the quality of the natural capital and wealth data. It is assumed the data are meaningful, despite of their current limitations. Future data improvements should make a major contribution to further exploration of the links between subjective well-being and natural capital.

[1] For a recent review of the large literature on the natural resource curse see, for example, Frankel (2010) and the special journal issue edited by van der Ploeg and Venables (2009).
[2] See, for example, Torvik (2009), Cappelen and Mjøset (2009).
[3] Engelbrecht (2009) builds on earlier work by Vemuri and Costanza (2006) and Abdalla et al. (2008). However, the earlier authors do not employ the World Bank's natural capital estimates. There is also much micro-level evidence of positive associations between 'nature', i.e. environmental variables, and SWB (for further references, see Engelbrecht, 2009, and Diener et al., 2009, especially chapter nine).

It is also hoped that the paper will contribute to the debate about the need for progress indicators that go beyond GDP. This issue has been highlighted by the recent report by Stiglitz et al. (2009) that was commissioned by French President Nicolas Sarkozy. They argue (ibid., p. 12) that "the time is ripe for our measurement system to *shift emphasis from measuring economic production to measuring people's wellbeing"* (italics in the original). Subjective well-being measures are explicitly included in the report, alongside more 'objective' indicators. Here we adopt the view that the resource curse or blessing also should be explored with regard to subjective well-being. However, it should be noted that by focussing on the contemporaneous relationship between subjective well-being measures and natural capital, this paper does not address the issue of sustainability. Sustainability is complementary to the issue addressed in this paper, but it should not be confused with it.

The paper is organised as follows. Section 2 reviews previous studies that have used the World Bank's (2006) comprehensive capital data in analysing the role of natural resources in economic development. Section 3 introduces the regression models and data. Section 4 reports the empirical analysis, which consists of three parts: first, we focus on bivariate correlations; secondly, multiple regressions that include (total) natural capital variables are reported; lastly, the multiple regressions are re-estimated with the two major natural capital sub-categories. This is followed by concluding comments (Section 5).

2. REVIEW OF STUDIES USING THE WORLD BANK'S NATURAL CAPITAL AND TOTAL WEALTH DATA

A number of authors have used the World Bank's (1997, 2006) comprehensive natural capital and total capital (i.e. 'wealth') data when analysing the role of natural resources in economic development. Before reviewing this literature it should be noted that natural capital is defined much broader than natural resources data used in earlier discussions of the resource curse (see Section 3.2.2 below). This is also indicated by the fact that natural capital *per capita* is much higher in high income countries compared to low income countries (World Bank, 2006, Table 1.1, p. 4). Brunnschweiler (2008) has argued that per capita resource wealth measures are more appropriate than the standard measures used in much of the resource curse literature (e.g. primary exports in total exports or GDP). First, primary exports might be a bad proxy for natural capital abundance. Secondly, a high primary exports to GDP ratio might be due to deliberate policies to specialise in such exports, rather than a 'natural' phenomenon.[4] Thirdly, the export variable also tends to be rather volatile, suggesting that use of the beginning-of-period value, as is often done in the resource curse literature, might be misleading.

Gylfason (2001) focuses on the negative correlation between economic growth and the *share* of natural capital in total wealth, using 1994 data from World Bank (1997) for the latter. Botswana and Norway are exceptions to the rule, although even in Norway oil exports seem to have crowded out other exports. Gylfason also finds negative correlations between various measures of human capital and the share of natural capital in total wealth and argues that natural capital appears to crowd out human capital.

[4] This is further explored in Brunnschweiler and Bulte (2008).

However, Gylfason's (2001) findings seem less relevant in the context of this paper. First, our focus is on subjective well-being, not economic growth. It is well known that for countries that have reached a certain material standard of living, i.e. mostly upper-middle income and high-income countries, the two are not strongly correlated. This is the well-known Easterlin Paradox.[5] Secondly, using the share of natural capital in total wealth may be misleading for both conceptual and empirical (i.e. data quality) reasons. The share declines with the level of economic development, as other forms of capital, i.e. physical and, especially, intangible capital (including human capital), become more important.[6] One would, therefore, expect it to be negatively correlated with any economic, social, political, subjective well-being etc. variables that increase with economic development.[7] Moreover, Stijn's (2006) has pointed out the potentially distorting impact of using total wealth in the denominator as it includes natural capital by definition.[8] Therefore, using per capita measures seem better on theoretical grounds.

Also, total wealth is a theoretical concept that is not measured precisely. Its measurement relies on many assumptions, both theoretical and empirical, which might, or might not, hold (see Section 3.2.2 below). For this reason alone it seems more appropriate to explore the correlation between subjective well-being and *per capita* measures of natural capital, instead of that between subjective well-being and natural capital shares. The denominator used in constructing natural capital per capita is likely to be estimated more accurately than is total wealth.

Gylfason and Zoega (2006) and Gylfason (2009) address some of these concerns by using the natural capital share and natural capital per capita side-by-side in cross-country growth regressions. The share variable is interpreted as a measure of *resource dependence*, i.e. the extent to which resources are important for economic development; the per capita variable is interpreted as a measure of *resource abundance*, i.e. the availability of natural resources. This distinction will also be adhered to in this paper. Much of the earlier literature on the resource curse seemed to have used the term resource abundance when using share measures (Sachs and Warner, 2001, is a prominent example). Gylfason and Zoega (2006) report a number of interesting findings: Resource dependence (abundance) is negatively (positively) correlated with growth, education and investment; the negative impact of the natural resource share applies to poorer countries but not developed countries; introduction of an institutional variable in growth regressions does not overturn these findings, in fact there seems to be some evidence of causation running from natural resources to current institutions.[9]

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[5] However, the extent of the weaker correlation in richer countries is an area of controversy and of on-going research (Clark et al., 2008; Graham et al., 2010).

[6] In fact, for some poor countries, the share of natural capital in total wealth is greater than one. Gylfason excludes such cases from his sample of countries, as do we.

[7] The same point was made in a somewhat different way by Sachs and Warner (2001, pp. 829-31). However, focussing on economic growth rates and using a natural resource measure scaled by GDP, they find support for the resource curse.

[8] Stijn's (2006) derives a number of other resource abundance indicators using World Bank (1997) data both in the nominator and denominator, for example natural capital divided by physical capital, for which similar biases seem to apply. However, he focuses on the correlation of natural resource measures with human capital measures, not economic growth.

[9] Also see Ding and Field (2005) who use the same definition of resource dependence and resource abundance and obtain similar results for their single equation model, but statistically insignificant results for natural capital variables when estimating a simultaneous equation model that includes human capital. Stijn's (2006) also reports divergent results for share versus per capita natural resource variables.

Gylfason (2009) extends the analysis by establishing the robustness of the resource dependence and abundance effects to the introduction of a number of further growth determinants, by using updated capital data from World Bank (2006), and by using a larger sample of countries. He confirms the earlier findings and reports that the effect of an increase in resource dependence on growth remains negative as long as total wealth per capita is less than US$ 50,000, which applies to about two-thirds of the countries in his sample. Gylfason (2009) repeats his regression analysis for a major sub-category of natural capital, i.e. subsoil assets (non-renewable natural resources), in order to focus on mineral wealth, and obtains results similar to those for total natural capital per capita. However, in this case, the negative effects of the share variable only persist as long as per capita wealth is less than US $25,000, which applies to half of the countries in his sample. Gylfason does not explicitly analyse renewable resources.

Brunnschweiler (2008) re-assesses the effects of natural resource abundance on economic growth using the World Bank's total natural capital and subsoil natural capital data, and considering the important mediating effect of institutional quality. Like Gylfason, she finds a direct and positive relationship between natural resource abundance and economic growth, with the positive effects being particularly strong for subsoil wealth. By contrast, regression estimates for renewable resources are not reported as they were found to be statistically insignificant. Brunnschweiler (2008) also interacts the resource variables with two proxies for institutional quality and finds that the interaction term is negative, indicating that the positive growth effect of resource abundance diminishes as institutional quality increases. Overall, however, the effect remains positive. In another paper, Brunnschweiler and Bulte (2009) explore the relationship between natural resources and the onset of civil wars. They again find divergent results for natural resource dependence versus abundance, i.e. the former is found to become statistically insignificant when instrumented, whereas the latter is associated with a reduced probability of the onset of civil war. Renewable resources are again not analysed separately.

3. REGRESSION MODELS AND DATA

3.1 The Regression Models

We first regress life satisfaction on the share of natural capital in total wealth and two regional dummy variables in order to test whether the negative correlation reported in the literature between the share variable and GDP growth also applies in this case (model 1). Next, natural capital per capita is also included to test (a) whether the share variable is robust to its inclusion and (b) whether the positive estimate obtained for many GDP growth regressions also applies in the case of life satisfaction (model 2). In model (3) the list of 'explanatory variables' is extended in order to control for well-known macro-level determinants of life satisfaction. Given current data limitations the aim is not to develop and test a model of the causal relationships between life satisfaction and its major determinants. Rather, the more modest aim is to establish whether the correlations between life satisfaction and natural capital variables are relatively robust or not.

The estimated models take the following forms:

$$\mathrm{LSF}^{i} = \alpha_0 + \alpha_1 \mathrm{NatCS}^{i} + \alpha_2 \text{Ex-SovD} + \alpha_3 \mathrm{LatD} + \varepsilon^{i} \quad (1)$$

$$\mathrm{LSF}^{i} = \alpha_0 + \alpha_1 \mathrm{NatCS}^{i} + \alpha_2 \mathrm{NatCpc}^{i} + \alpha_3 \text{Ex-SovD} + \alpha_4 \mathrm{LatD} + \varepsilon^{i} \quad (2)$$

$$\mathrm{LSF}^{i} = \alpha_0 + \alpha_1 \mathrm{NatCS}^{i} + \alpha_2 \mathrm{NatCpc}^{i} + \alpha_3 \mathrm{GNIpc}^{i} + \alpha_4 \mathrm{Un}^{i} + \alpha_5 \mathrm{Inf}^{i} + \alpha_6 \mathrm{Trust}^{i} + \alpha_7 \mathrm{Gini}^{i} + \alpha_8 \text{Ex-SovD} + \alpha_9 \mathrm{LatD} + \varepsilon^{i} \quad (3)$$

Where i indexes countries, LSF is average life satisfaction, NatCS is the share of natural capital in total wealth, NatCpc is natural capital per capita, GNIpc is Gross National Income per capita, Un is the unemployment rate, Inf is the inflation rate, Trust is a trust variable, Gini is a Gini coefficient measuring the degree of unequal distribution of either income or wealth, Ex-SovD is a dummy variable for ex Soviet Union countries, LatD is a dummy variable for Latin American countries, and ε is an error term. The models are also estimated with, respectively, renewable and non-renewable natural capital variables instead of total natural capital variables, where NRRS is the share of non-renewable capital in total wealth, NRRpc is non-renewable natural capital per capita, RRS is the share of renewable natural capital in total wealth, and RRpc is renewable natural capital per capita. This is done in order to explore which of the major sub-categories of natural capital is likely to drive the results for (total) natural capital. Some authors have argued that it is not necessary to subdivide natural resources. For example, Sachs and Warner (2001, p. 831) state that for most countries, "changes in the definition of natural resources is not as quantitatively important as one might think". It seems interesting to explore this issue for our sample of countries.

The models were first estimated using Box-Cox regressions, which indicated that the double log functional form is appropriate for LSF regressions (with the exception of the Inf variable). The LSF regressions reported in this paper have all been estimated in that form using OLS. To test for the robustness of the estimates, DFFITS statistics are calculated to identify outliers. Subsequently, regressions are re-estimated without these outliers. Finally, models (1) to (3) have also been estimated with an alternative subjective well-being variable instead of life satisfaction. Some of the estimates are referred to in the discussion of regression results, but they are not reported in the Tables. Further details are available from the author.

3.2 Data

Many of the data used in this paper are the same as those in Engelbrecht (2009). However, we do not include data for Nigeria and Singapore, thereby restricting the sample to fifty-six countries. Nigeria is excluded because its share of natural capital in total wealth exceeds one. Singapore is excluded because World Bank (2006) reports its natural capital as zero. The data for renewable natural capital, non-renewable natural capital and the wealth Gini were not used in the earlier paper. Descriptive statistics for all variables are provided in Appendix Table 1. Data for the subjective well-being variables, GNIpc, total wealth and the natural capital variables are given in Appendix Table 2.

3.2.1 Subjective well-being variables

The main subjective well-being variable used is LSF. It is derived from responses to the World Values Survey (WVS) question “All things considered, how satisfied are you with your life as a whole these days?” The WVS data are from representative national samples of people 18 years and older. They were obtained from the WVS website (http://www.worldvaluessurvey.org/) and from Inglehart et al. (2008). The latter report data from the 2005 wave of the WVS. Our aim has been to obtain data for the year 2000, or as close as possible. Some data have been interpolated from two surveys (see Engelbrecht, 2009).

LSF is commonly interpreted as being closer related to intrinsic goals and cognitive judgements (‘eudaimonic well-being) than to short-lived pleasant emotions (‘happiness’ or ‘hedonic well-being’). Inglehart et al. (2008) find that LSF is more sensitive to economic conditions than is ‘happiness’, citing the example of some ex-Soviet Union countries where for a while both measures moved in opposite directions. Also, a number of authors have argued that LSF is a more appropriate measure of subjective well-being at the aggregate level than is happiness (see, for example, Vemuri and Costanza, 2006, Helliwell and Putnam, 2004). However, Inglehart et al.’s (2008) preferred subjective well-being measure is a combination of LSF and happiness, the latter also being derived from answers to a question in the WVS (see Engelbrecht, 2009, for details). Given the different measurement scales etc. of the two constituent variables, this measure is calculated as ‘life satisfaction – 2.5 · happiness’. We refer to this combined variable simply as ‘subjective well-being’ (SWB). Engelbrecht (2009) employs all three subjective well-being variables and finds happiness to be the least preferable. When SWB is used in models (1) to (3) instead of LSF, regressions are estimated in lin-log form.

3.2.2 Natural capital and total wealth

The natural capital and comprehensive, i.e. total, wealth data are from the World Bank’s Millennium Capital Assessment (World Bank, 2006) and given in per capita terms. Total wealth is measured as the net present value of sustainable consumption. Its calculation requires an estimate of the current level of sustainable consumption (measured as the average of 1998-2000 consumption corrected for any negative adjusted net savings), as well as values for the pure rate of time preference (assumed to be 1.5 percent) and the time horizon considered (assumed to be 25 years, i.e. roughly a generation).[10] Total wealth is made up of natural capital, physical capital, and intangible capital, including human capital. Due to lack of appropriate direct estimates, intangible capital is measured as the residual.[11] Direct

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[10] It can be shown that $W_t = \int_t^{\infty} C(t) e^{-\rho(s-t)} ds$, where C is current consumption, ρ is the pure rate of time preference, and s is another time index. This requires the further assumptions that the elasticity of utility with respect to consumption equals one and that consumption grows at a constant rate (see World Bank, 2006, p. 144).

[11] See Engelbrecht (2008) for a detailed analysis of the bivariate correlations between the wealth sub-categories and, respectively, SWB and GNIpc. The positive correlation between GNIpc and total wealth seems mostly driven by physical capital and, to a lesser extent, intangible capital, whereas that between SWB and total wealth seems mostly driven by intangible capital and, when some outliers are deleted, natural capital. For rich countries, the differences in importance of natural capital versus physical capital for SWB versus GNIpc stand out.

measurement of total wealth, natural capital and physical capital relies on numerous assumptions and approximations, and can best be described as a work in progress.[12]

Non-renewable natural capital includes the following resources: oil, gas, coal and ten metals and minerals (bauxite, copper, gold, iron ore, lead, nickel, phosphate rock, silver, tin, zinc). The value of the metals and minerals is calculated as the present discounted value of (estimated) economic profits over the (estimated) life of the resource, which inevitably requires making numerous simplifying assumptions and using guesstimates for many of the important parameter values (see World Bank, 2006, Appendix 1). Renewable natural capital includes cropland, pastureland, forested areas, and protected areas. Some of the renewable resources (i.e. nontimber forest resources and protected areas) are only measured very crudely. Due to lack of data, other resources which should be included are missing (in particular subsoil water, diamonds, and fisheries).

Table 1 reports the total wealth data and their major sub-categories and shares for our sample of countries. There are only seven low-income countries, which explains why the natural capital share is lower than in the full sample reported in World Bank (2006, Table 1.1, p. 4). Also, the proportion of non-renewable natural capital in total natural capital in lower-middle and upper-middle income countries is larger than that in the full World Bank sample. In short, our sample of countries should not be interpreted as being necessarily representative of the larger World Bank (2006) sample. However, the broad pattern of intangible capital's share increasing and natural capital's shares declining with the level of economic development also applies in our sample.

3.2.3 GNIpc and GDP growth rates

It is possible that NatCS is an inverse proxy for the level of economic development, at least to a certain extent (see Table 1). Moreover, subjective well-being in general is positively correlated with the level of economic development, especially for poorer economies. For richer economies, the Easterlin Paradox suggests that the relationship is weaker. Given the mix of countries in our sample, GNIpc in US$ for the year 2000 is used as an important control variable. It is taken from the same source as the wealth measures (i.e. World Bank, 2006). For all countries, GNIpc is only a small proportion of their total wealth, i.e. on average only 5.7% (see Table 1). This highlights the difference in magnitude between conventional measures of the material standard of living and total wealth. Average annual GDP growth rates for 1990-2007 used in Figures 1 and 2 are taken from the UN data website (http://data.un.org/).

[12] World Bank (2006) is an extension of an earlier effort (World Bank, 1997) that provides comprehensive wealth estimates for a smaller group of countries in 1994. The estimates of natural and produced capital reported in World Bank (2006) are based on a broader set of data, which means the 1994 and 2000 data are not comparable and, in our view, should not be averaged or used side-by-side, as is done by, for example, Brunnschweiler (2008).

Table 1. GNI, total wealth and its sub-categories by country income group

Country income group	GNI	Natural capital	Produced capital	Intangible capital	Total wealth	Natural capital share	Produced capital share	Intangible capital share
Low (N=7)	497 (5.3%)	2,046 (11.6%)	1,663	5,717	9,426	22%	18%	60%
Lower-middle (N=16)	1,670 (5.7%)	5,221 (52.8%)	5,597	18,635	29,453	18%	19%	63%
Upper-middle (N=10)	4,710 (6.1%)	9,323 (43.6%)	13,854	53,655	76,831	12%	18%	70%
High-income (N=23)	22,686 (5.7%)	12,131 (37.3%)	63,011	323,070	398,212	3%	16%	81%
Complete sample (N=56)	*10,698 (5.7%)*	*8,395 (40.7%)*	*30,161*	*148,309*	*186,865*	*4.5%*	*16.1%*	*79.4%*

Notes: GNI and the wealth variables are measured in year 2000 US$ per capita. Countries are classified as low-income (L), lower-middle income (LM), upper-middle income (UM), and high income (H) using the World Bank classification for 2001 (in GNI per capita in US$) available from http://web.world.bank.org/: L: <= $745; LM: $746-$2,975; UM: $2,976-$9,205; H: > $9,205. N=Number of countries. The percentages in brackets below GNI are the ratios of GNI/total wealth. The percentages in brackets below the natural capital values are the ratios of non-renewable natural capital to total natural capital. Data source: World Bank (2006).

3.2.4 Unemployment and inflation rates

For all but one country, data for Un are taken from the World Development Indicators (WDI) database. Some of the WDI data are for years other than 2000 (see Engelbrecht, 2009, for further details). For Iran, Un in 1999 is from CIA (2002). All data for Inf are from the WDI database and for the year 2000.

3.2.5 Trust

Trust is acknowledged to be related to social capital, being used either as a proxy for it, or regarded as a consequence of it. There is also increasing evidence that trust is not only related to economic outcomes, but also to subjective well-being (see Helliwell and Wang, 2010, for further references). The Trust data used here are derived from the WVS question A165: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" This form of trust is often referred to as general social or interpersonal trust and has been used in many cross-country studies. Like in the case of LFS, we use data for the year 2000 or earlier, with data for some countries in 2000 being interpolated from two survey responses. Further details are available from the author.

3.2.6 Gini coefficients

Inequality measures have been employed in a few macro-level subjective well-being studies, with mixed results, including finding positive correlations between subjective well-being and income inequality (see, for example, Schyns, 2002, Kroll, 2008, Engelbrecht, 2009). We want to further explore this issue and include alternative measures of inequality in model (3). Gini coefficients measuring income inequality (IGini) are mostly taken from the WDI database. They are for the year 2000 or earlier. Those for China and India are taken from alternative sources (see Engelbrecht, 2009, for further details). A feature of the data is the high income inequality in Latin American countries.

Data for an alternative inequality measure, i.e. for a household wealth Gini coefficient (WGini), have recently been provided by Davies et al. (2009). It should be noted that household net wealth, which is used as the basis for calculating WGini, is a much narrower concept than the comprehensive wealth measure used in World Bank (2006). We explore whether WGini provides new insights into the relationship between subjective well-being and inequality at the macro-level. The WGini data are available for the year 2000. In general, inequality in household net wealth is much greater than inequality in income: The average value for WGini across the fifty-six countries is 0.69, the average IGini is 0.38.

3.2.7 Regional dummy variables

The regional dummy variables Ex-SovD and LatD are included in the regressions in order to account for some well-known regional differences. The Ex-SovD countries usually have low levels of subjective well-being, whereas the LatD countries have high levels compared to their stage of economic development. Moreover, the regional dummy variables might also capture some of the effects of the other correlates of LFS. For example, Engelbrecht (2009) found that the estimates for IGini are much more likely to be statistically insignificant when the regional dummy variables are included in the model.

4. EMPIRICAL ANALYSIS

The empirical analysis proceeds from scatterplots and bivariate correlations to multiple regression analyses with different numbers of covariates. The multiple regression analysis is subdivided into that focussing on the (total) natural capital variables and that focussing on the natural capital sub-categories of non-renewable and renewable resources.

4.1 Scatterplots and Bivariate Correlations

Figures 1 and 2 provide scatterplots of NatCS and NatCpc against the annual growth rate of GDP per capita over the period 1990-2007. Fitting linear trend lines, they seem to indicate that there is little, if any, bivariate correlation between the natural capital variables and GDP growth, with R^2 values being almost zero. Figure 1 differs greatly from a similar figure provided in Gylfason (2001) that indicates a strongly negative correlation between economic growth rates and NatCS, whereas Figure 2 differs greatly from a similar figure in

Brunnschweiler (2008) that shows a positive association between growth rates and NatCpc. In both cases, the differences are probably due to differences in time periods and country coverage. The matching of natural capital data with LSF data has resulted in a smaller sample of countries that includes few low income countries. Figures 1 and 2 seem to indicate that in our sample, there is little evidence of a resource curse being associated with NatCS, or of a resource blessing being associated with NatCpc.

By contrast, when we focus on the bivariate relationships between the natural capital variables and LSF (Figures 3 and 4), a negative correlation emerges between NatCS and LSF, and a positive correlation between NatCpc and LSF, with R^2 values of low but not uncommon size for cross-section data. Figures 3 and 4 motivate the incorporation of the natural capital variables in macro-level LSF regressions in order to explore whether these relationships are robust to the inclusion of major explanatory variables identified in subjective well-being research.

Figure 1. Economic growth and the share of natural capital in total wealth

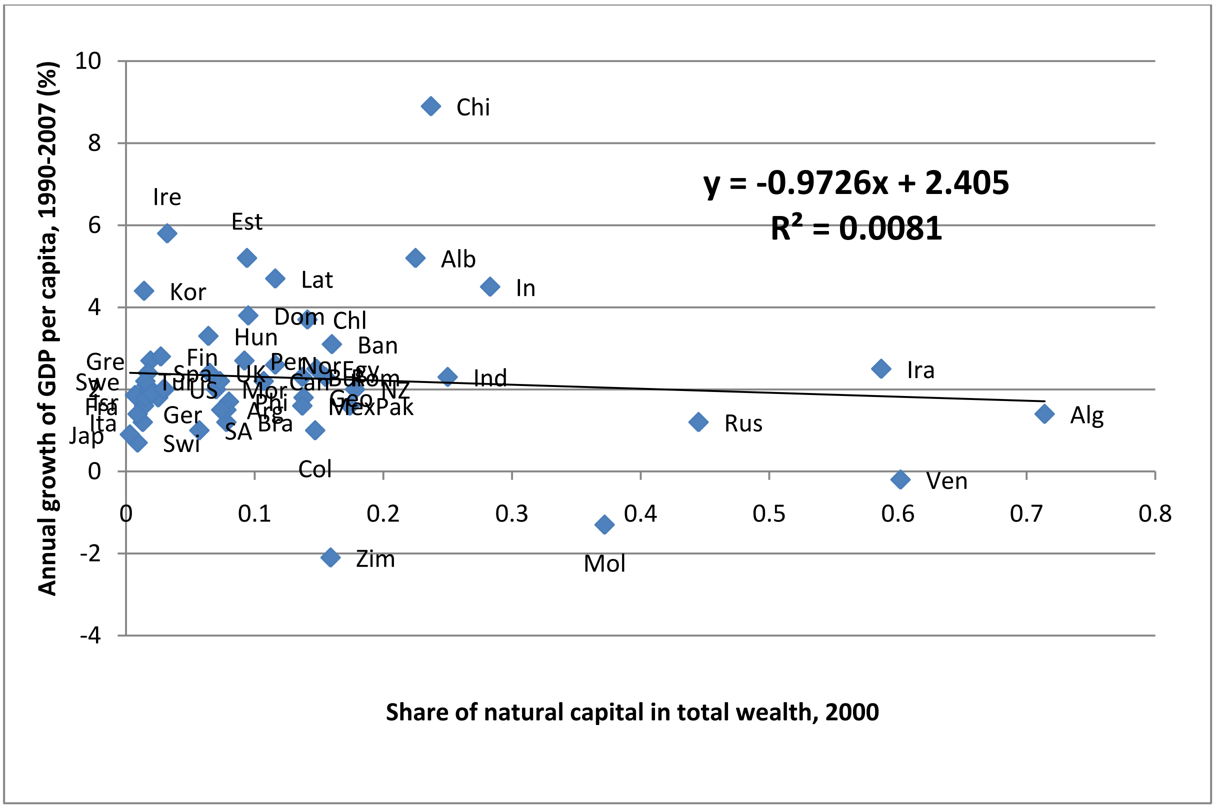


Figure 2. Economic growth and natural capital per capita

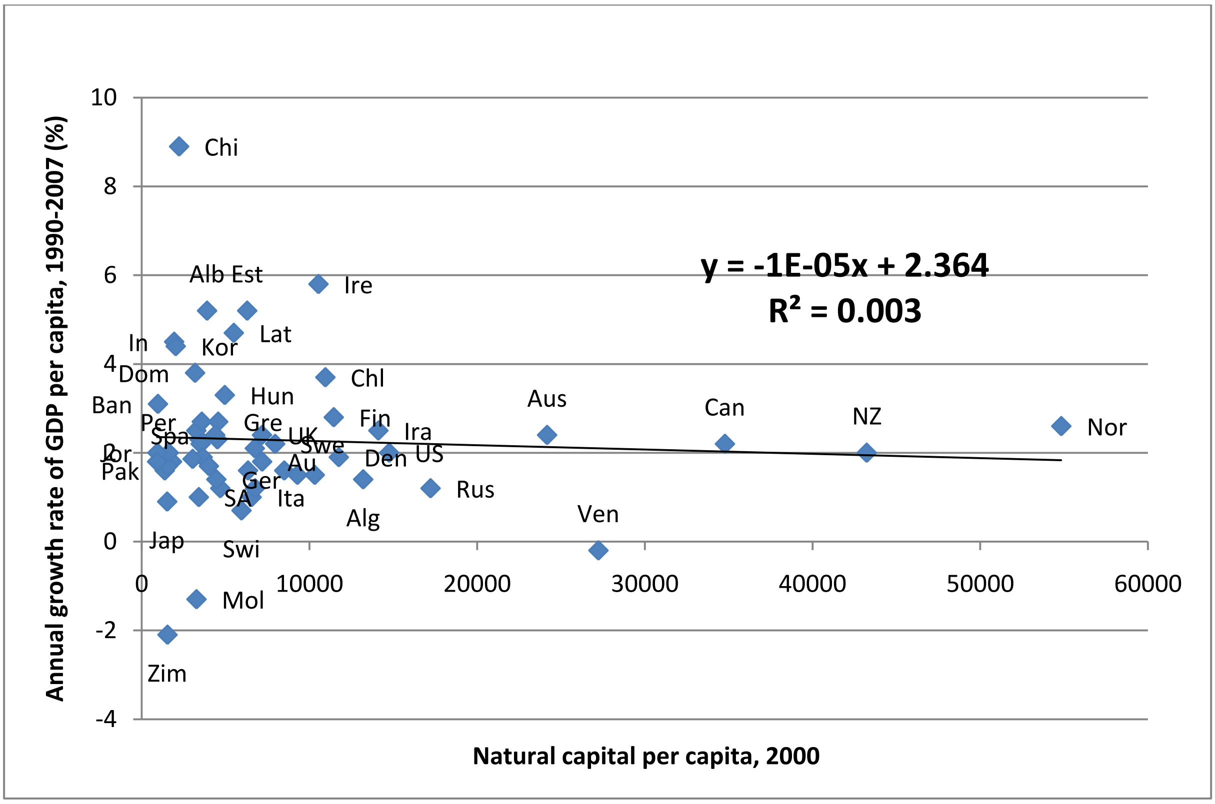


Figure 3. Life satisfaction and the share of natural capital in total wealth

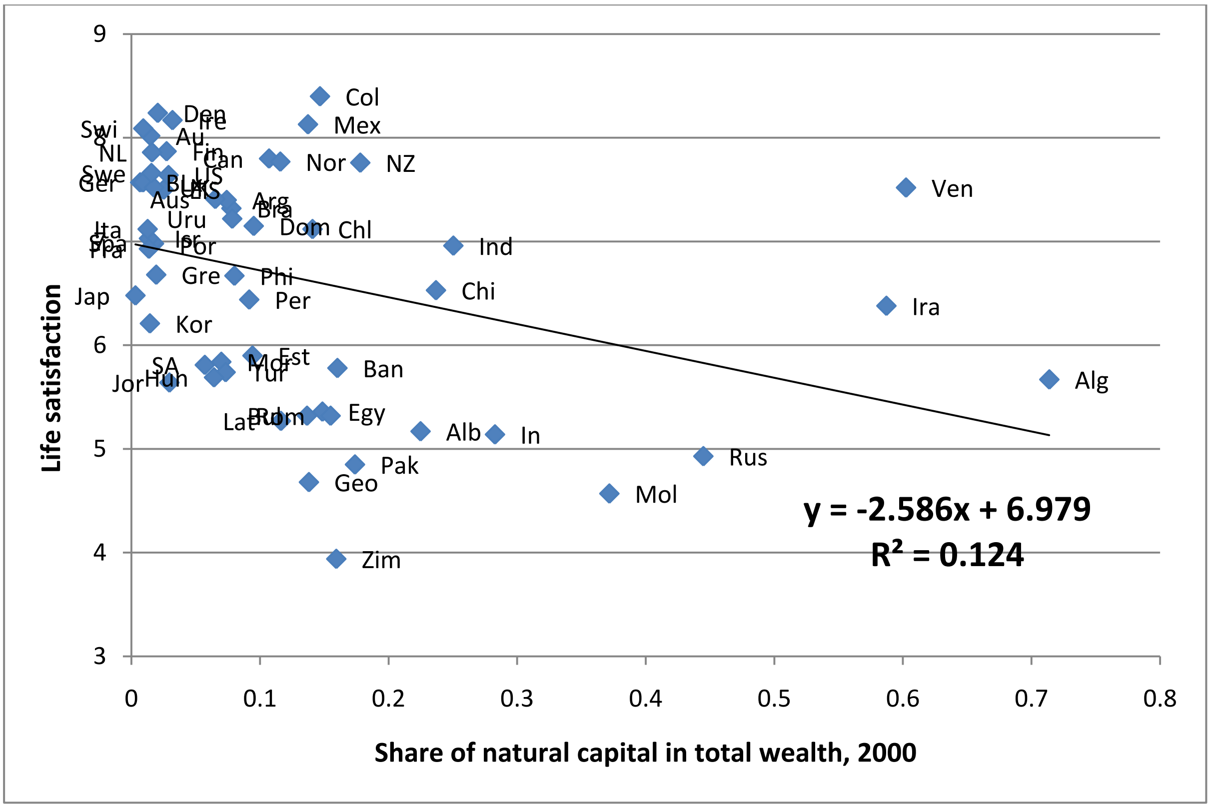
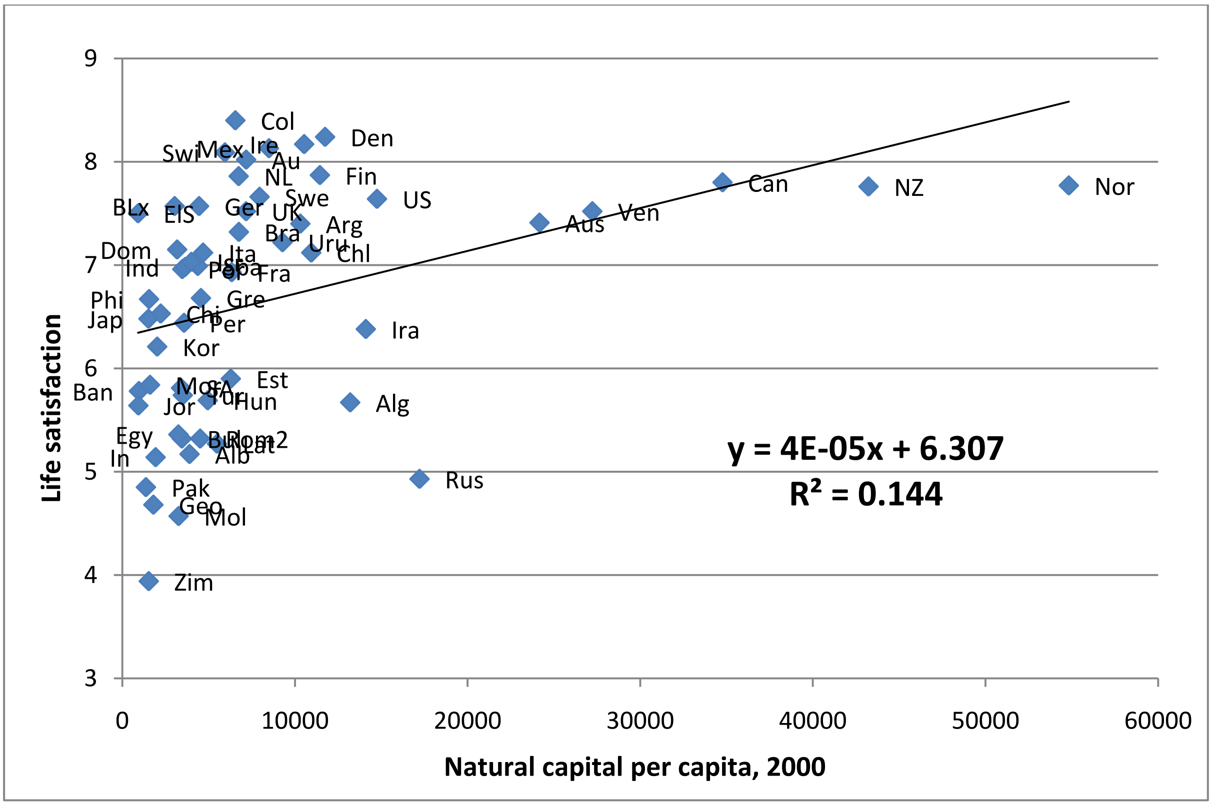


Figure 4. Life satisfaction and natural capital per capita



It is also interesting to look at the bivariate correlations between the different natural capital variables (see Table 2). They suggest that the moderate positive correlation between NatCpc and NatCS is due to a fairly high correlation between NRRpc and NRRS. By contrast, the correlation between RRpc and RRS is basically zero. Moreover, while NatCpc (NatCS) is positively correlated with NRRpc and RRpc (NRRS and RRS), the correlations between the (total) natural capital variables and the non-renewable resource variables are higher than those between the (total) natural capital variables and the renewable resource variables. Turning to the correlations between the natural capital variables and LSF, it can be seen that LSF is positively correlated with all three natural capital per capita variables, with the positive correlation between LSF and RRpc being basically the same as that between LSF and NatCpc. However, the largest negative correlation is observed between LSF and RRS, whereas that between LSF and NRRS is very small.

Table 2. Correlation matrix: Life satisfaction and natural capital variables - 56 countries

NatCS	-0.353	1.0				
NatCpc	0.380	0.226	1.0			
NRRS	-0.082	0.890	0.319	1.0		
NRRpc	0.222	0.355	0.840	0.485	1.0	
RRS	-0.619	0.574	-0.081	0.138	-0.101	1.0
RRpc	0.382	-0.085	0.648	-0.099	0.131	-0.006
	LSF	NatCS	NatCpc	NRRS	NRRpc	RRS

The bivariate correlations between LSF and the natural capital variables observed so far might be misleading if they are greatly affected by outliers and omitted variables. Multiple regression analysis has to be used to establish whether we can have some degree of confidence in their robustness.

4.2 Main Regressions Results

Table 3 reports the main results for the life satisfaction regressions including NatCS and NatCpc. Regressions were initially estimated without regional dummy variables. However, they are always highly statistically significant when included (negative for ex Soviet Union countries and positive for Latin American countries) and increase the explanatory power of the regressions. We, therefore, only report estimates for regressions that include Ex-SovD and LatD.

When LSF is regressed on NatCS across all fifty-six countries, the estimate for the latter is negative and highly statistically significant (regression 3.1). However, comparison with the trend line estimates in Figure 3 suggests that most of the explanatory power of this regression is due to the two regional dummy variables. When NatCS and NatCpc are included side-by-side, the findings are again similar in nature to those found in the resource curse literature, i.e. the share variable is negatively correlated with LSF, in contrast to the per capita variable. Very similar estimates were obtained using SWB as dependent variable instead of LSF.

It is also tested to what extent the estimates obtained for regressions (3.1) and (3.2) are sensitive to data outliers. DFFITS analysis finds three outliers in regression (3.1). They are Pakistan, Zimbabwe and Japan. Six outliers are identified in regression (3.2) (see Table 3). However, when these countries are excluded, very similar estimates are obtained and the adjusted R^2s increase. Regression (3.3) reports estimates when outliers are deleted from regression (3.2). Again, using SWB instead of LSF produces very similar results.

Next, we test whether the introduction of major macro-level determinants of LSF significantly change the results obtained for the two natural capital variables. Regression (3.4) reports estimates when all fifty-six countries are included. The nature of the results obtained for the natural capital variables does not change. GNIpc is statistically insignificant. Un and Inf have the expected signs and are statistically significant. By contrast, estimates for Trust and IGini have the expected signs, but are not statistically significant. Very similar estimates are obtained when WGini is used instead of IGini, i.e. the results seem to be unaffected by which GINI variable is employed.

Table 3. Main regressions: Life satisfaction regressions with natural capital

	Dependent variable: LSF				
	3.1	3.2	3.3	3.4	3.5
NatCS	-0.057** (-3.613)	-0.073** (-5.898)	-0.074** (-8.565)	-0.104* (-2.236)	-0.082* (-2.255)
NatCpc		0.102** (7.129)	0.109** (9.733)	0.142* (2.609)	0.112* (2.578)
GNIpc				-0.049 (-0.927)	-0.010 (-0.252)
Un				-0.043** (-2.917)	-0.040** (-2.953)
Inf				-0.003* (-2.122)	-0.001 (-1.921)
Trust				0.019 (0.814)	0.032* (2.329)
IGini				-0.011 (-0.147)	0.050 (0.969)
Ex-SovD	-0.182** (-4.252)	-0.153** (-4.612)	-0.134** (-5.803)	-0.124** (-3.560)	-0.094** (-4.070)
LatD	0.148** (3.507)	0.139** (4.046)	0.107** (4.214)	0.162** (3.831)	0.145** (4.995)
Constant	1.724** (26.95)	0.804** (4.952)	0.736** (6.084)	0.877* (2.532)	0.568 (1.994)
Adjusted R^2	0.47	0.76	0.87	0.80	0.89
Countries	56	56	50	56	49

Notes: Variables are in logs, except for Inf, Ex-SovD and LatD. * and ** indicate statistical significance at the 5% and 1% levels, respectively. t-values are shown in parentheses. Ordinary least squares with White's correction for unknown heteroscedasticity is used. Countries equals number of observations.
Deleted outliers: Regression 3.3: Zimbabwe, Indonesia, China, the Russian Federation, Columbia, El Salvador deleted as outliers. Regression 3.5: Zimbabwe, Indonesia, China, Philippines, Romania, Russia, Colombia.

Regression (3.4) has been subjected to further sensitivity analysis. This revealed that inclusion of the two regional dummy variables is important for obtaining the reported estimates. When the regression is run without the regional dummy variables (not shown in Table 3), both natural capital variables become statistically insignificant, GNIpc stays statistically insignificant, and IGini becomes positive and statistically significant. Moreover, when regression (3.4) is estimates with SWB as the dependent variable, both natural capital variables are statistically insignificant, whether regional dummy variables are included or not. This indicates that our main findings are sensitive to the subjective well-being variable chosen. This is similar to Diener et al. (2010), who find that it is no longer productive to talk about one category of subjective well-being. Finally, use of the WGini produced very similar results to those reported for regression (3.4), with marginally higher explanatory power.

DFFITS analysis identified seven lower or lower-middle income countries included in regression (3.4) as outliers (see Table 3). When they are excluded, the estimates reported for regression (3.5) are obtained. The estimates are little changed, except that the trust variable becomes statistically significant, whereas the inflation variable becomes only marginally significant. Using SWB as dependent variable and deleting six outliers (Zimbabwe, Indonesia, Philippines, Russia, Colombia, El Salvador) again produces statistically insignificant results for the natural capital variables. However, the parameter estimate for NatCpc is positive and very close to being statistically significant (p-value of 0.056). The estimate for NatCS remains statistically insignificant (p-value of 0.3). Further details are available from the author.

4.3 Renewable Versus Non-renewable Natural Capital

Model (3) has also been estimated separately with renewable and non-renewable natural capital variables. All fifty-six countries in our sample are reported to have some renewable natural capital. Regressions for total renewable natural capital are shown in Table 4. Estimates obtained for regressions (4.1) to (4.3) are similar to those for regressions (3.1) to (3.3), suggesting that the results obtained for the total natural capital variables are mostly driven by renewable natural capital. The six outliers identified from regression (4.2) and excluded from regression (4.3) are similar to those identified from regression (3.2), except that the Russian Federation has been replaced by Japan.

When the other macro-level determinants of LSF are included (regression 4.4), the estimate for RRpc is positive and statistically significant, but that for RRS, although negative, is no longer statistically significant. This might be taken as a possible indication that there is no ‘life satisfaction curse’ associated with renewable resources, only a ‘life satisfaction blessing’. Estimates for the other variables are similar to those in regression (3.4). However, DFFITS analysis identifies seven outliers in regression (4.4) (see Table 4). When these are deleted (regression 4.5), both renewable natural capital variables become statistically insignificant. When the regression is re-run with WGini, GNIpc becomes statistically significant at the 5% level (not shown in Table 4).

Turning to non-renewable natural capital (Table 5), there are five countries in our sample for which this capital stock is zero according to World Bank (2006). These are Moldova, El Salvador, Latvia, Uruguay, Switzerland. At first, we include them in the sample with their non-renewable natural capital stock values set to 0.01, which enables log transformation of the non-renewable natural capital variables. In the regression that only includes NRRS and the regional dummy variables, the former is negative but statistically insignificant (regression 5.1). When NRRpc is also included, the results are similar to those obtained for renewable natural capital. Regressions (5.3) and (5.4) replicate regressions (5.1) and (5.2) for the sample that only includes countries with positive values for non-renewable natural capital reported in World Bank (2006). In that case, the share variable becomes statistically significant even if entered without NRRpc, but otherwise the estimates are very similar. Deletion of six outliers (regression 5.5) produces somewhat stronger but similar results.

Table 4. Life satisfaction regressions with renewable natural capital

	Dependent variable: LSF				
	4.1	4.2	4.3	4.4	4.5
RRS	-0.085** (-3.933)	-0.068** (-4.812)	-0.077** (-8.408)	-0.051 (-1.121)	-0.013 (-0.417)
RRpc		0.107** (7.444)	0.105** (9.485)	0.096* (2.011)	0.032 (0.969)
GNIpc				0.003 (0.057)	0.658 (1.982)
Un				-0.038* (-2.482)	-0.033* (-2.503)
Inf				-0.003* (-2.027)	-.001 (-1.540)
Trust				0.020 (0.842)	0.026 (1.374)
IGini				0.001 (0.020)	0.001 (0.019)
Ex-SovD	-0.132** (-2.668)	-0.165** (-4.771)	-0.153** (-6.158)	-0.131** (-3.723)	-0.111** (-4.450)
LatD	0.157** (4.046)	0.141** (3.882)	0.116** (3.857)	0.162** (3.694)	0.160** (5.800)
Constant	1.606** (18.28)	0.788** (5.062)	0.775** (6.962)	0.931** (2.750)	0.984** (3.534)
Adj. R^2	0.552	0.759	0.871	0.796	0.903
Countries	56	56	50	56	49

Notes: Variables are in logs, except for Inf, Ex-SovD and LatD. * and ** indicate statistical significance at the 5% and 1% levels, respectively. t-values are shown in parentheses. Ordinary least squares with White's correction for unknown heteroscedasticity is used. Countries equals number of observations.
Deleted outliers: Regression 4.3: Zimbabwe, Indonesia, China, Columbia, El Salvador, Japan.
Regression 4.5: Zimbabwe, Indonesia, China, the Philippines, Romania, Colombia, Japan.

Table 5. Life satisfaction regressions with non-renewable natural capital

	Dependent variable: LSF							
	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8
NRRS	-0.007 (-1.736)	-0.084** (-6.857)	-0.017* (-2.194)	-0.082** (-6.460)	-0.089** (-10.42)	-0.106 (-1.767)	-0.134* (-2.157)	-0.058 (-1.243)
NRRpc		0.087** (7.157)		0.092** (7.324)	0.101** (11.61)	0.116 (1.839)	0.146* (2.226)	0.066 (1.322)
GNIpc						-0.036 (-0.554)	-0.067 (-0.997)	0.023 (0.467)
Un						-0.029 (-1.729)	-0.028 (-1.823)	-0.034* (-2.573)
Inf						-0.003 (-1.803)	-0.003 (-1.810)	-0.0005 (-0.750)
Trust						0.028 (1.176)	0.027 (1.114)	0.033* (2.087)
IGini						-0.008 (-0.097)		
WGini							-0.167 (-1.167)	-0.181 (-1.822)
Ex-SovD	-0.261 (-6.604)**	-0.134** (-3.978)	-0.211** (-4.872)	-0.136** (-3.858)	-0.100** (-4.679)	-0.108** (-2.817)	-0.115** (-3.730)	-0.088** (-4.450)
LatD	0.100** (2.680)	0.154** (4.615)	0.146** (2.899)	0.137** (3.726)	0.125** (4.547)	0.170** (3.500)	0.179** (4.065)	0.171** (7.171)
Constant	1.865** (45/37	0.906** (5.913)	1.806** (29.81)	0.884** (5.641)	0.788** (7.610)	0.931* (2.573)	0.766** (2.909)	0.857** (4.814)
Adj. R^2	0.354	0.749	0.310	0.724	0.862	0.758	0.763	0.878
Countries	56	56	51	51	45	51	51	44

Notes: Variables are in logs, except for Inf, Ex-SovD and LatD. * and ** indicate statistical significance at the 5% and 1% levels, respectively. T-values are shown in parentheses. Ordinary least squares with White's correction for unknown heteroscedasticity is used. Countries equal number of observations.
Regressions (5.3) and (5.4) exclude the five countries with zero non-renewable capital, i.e. Moldova, El Salvador, Latvia, Uruguay, Switzerland.
Deleted outliers: Regression 5.5: Zimbabwe, Indonesia, China, the Philippines, Russia, Colombia. Regression 5.8: Zimbabwe, Indonesia, Philippines, Romania, Russia, Colombia, Japan.

When other macro-level determinants of LSF are included (regression 5.6), all but the regional variables and the constant are statistically insignificant, although four of the insignificant variables, including both natural capital variables, are significant at the 10% level. When WGini is used instead of the IGini, the two non-renewable natural capital variables become statistically significant at the 5% level (regression 5.7). However, this result is fragile. When seven outliers identified by DFFITS are deleted, the natural capital variables again become statistically insignificant (regression 5.8). However, UN and Trust become significant with expected signs.

To sum up, differences between renewable and non-renewable natural capital variables do not seem all that important in driving the estimates obtained for the two total natural capital variables. This is in contrast to Stijn's (2006) findings for the relationship between natural capital sub-categories and human capital accumulation. It is not clear whether the different findings are due to our focus on LSF, or simply to our smaller data sample.

5. CONCLUDING COMMENTS

This paper provides a new perspective on natural resource abundance and dependence by exploring their link with subjective well-being variables, especially LSF. Subjective well-being measures have obtained increased prominence in the context of recent attempts to improve measurement of economic performance and economic progress (Stiglitz et al., 2009).

Overall, our findings suggest that natural capital might be an important correlate of LSF in a cross-country setting. The correlations between LSF and the natural capital share and natural capital per capita variables, i.e. negative for the first, positive for the second, seem fairly robust to the inclusion of other macro-level correlates of LSF. They are also similar to those usually found in the resource curse literature that focuses on natural resource variables and GDP growth rates. This is despite the fact that for our sample of countries, bivariate correlations between the natural capital variables and GDP growth rates suggest that the conventional resource curse is absent.

If one concedes that the natural capital share variables might be misleading, the balance of evidence seems to suggest that natural capital is a blessing, not a curse. The regression results for non-renewable and renewable natural capital are not quite as strong as those for total natural capital, especially when all the other macro-level correlates of LSF are included in the regressions. This might simply be due to data limitations. However, it is reassuring that in the multiple regressions (model 3) the unemployment and inflation rates always have the expected signs and are mostly statistically significant. Also, the Trust variable is statistically significant in some regressions when outliers are deleted. The always highly statistically significant regional dummy variables have the expected signs. While model (3) is not meant to provide a comprehensive explanation of differences in average LSF across countries, it seems able to account for most of the variation in the data.

However, the evidence provided in this paper is only suggestive, not conclusive, simply because of the current nature of natural capital and total wealth data, and because of our relatively small data sample. Future studies, using more extensive data sets, are needed that test the hypothesis of a 'life satisfaction curse or blessing of natural capital', and how that compares to the conventional resource curse or blessing. Should it become possible to match subjective well-being and natural capital data for a larger sample of, especially poorer, countries, differences between rich and poor countries should be explored in more detail.[13]

[13] The relatively small number of observations in our sample limits the usefulness of conducting separate regressions for poor and rich countries. There is evidence from studies employing larger data sets that there are differences in the correlations between natural resource wealth and growth in developed versus developing countries, and a number of potential theoretical explanations have been put forward, like differences in the quality of institutions, ethnic fractionalization and many others (see, for example, Hodler, 2006, Collier and Hoeffler, 2009, Bhattacharyya and Hodler, 2009).

Appendix Table 1. Descriptive statistics

NAME	MEAN	ST. DEV	MINIMUM	MAXIMUM
LSF	6.656	1.128	3.940	8.400
SWB	1.700	1.832	-2.400	4.340
NatCS	0.125	0.154	0.003	0.714
NatCpc	8395	1032	912	54828
NRRS	0.053	0.127	0.0	0.631
NRRps	3414	7931	0.0	49839
RRS	0.073	0.071	0.003	0.372
RRpc	4981	5648	877	39630
GNIpc	10698	11484	316	37879
Un	9.284	5.726	2.200	27.30
Inf	7.241	12.10	-0.940	55.86
Trust	29.69	16.36	2.800	66.50
IGini	0.381	0.093	0.247	0.592
WGini	0.690	0.065	0.547	0.845

Appendix Table 2. Subjective well-being, GNI, natural capital and total wealth data by country

Country	Abb.		LSF	SWB	GNIpc	TotWpc	NatCpc	RRpc	NRRpc	NatCS	RRS	NRRS
Moldova	Mol	L	4.57	-1.61	316	8771	3260	3259	0	0.372	0.372	0
Bangladesh	Ban	L	5.78	0.54	373	6000	961	877	83	0.160	0.146	0.014
India	In	L	5.14	0.03	446	6820	1928	1727	201	0.283	0.253	0.029
Pakistan	Pak	L	4.85	-0.3	517	7871	1368	1102	265	0.174	0.140	0.034
Zimbabwe	Zim	L	3.94	-1.88	550	9612	1531	1230	301	0.159	0.128	0.031
Georgia	Geo	L	4.68	-1.11	601	13036	1799	1734	66	0.138	0.133	0.005
Indonesia	Ind	L	6.96	-2.4	675	13869	3472	1923	1549	0.250	0.139	0.112
China	Chi	LM	6.53	1.2	844	9387	2223	1712	511	0.237	0.182	0.054
Philippines	Phi	LM	6.67	2.32	1033	19351	1549	1519	30	0.080	0.078	0.002
Morocco	Mor	LM	5.84	0.74	1131	22965	1604	1499	106	0.070	0.065	0.005
Albania	Alb	LM	5.17	-0.86	1220	17312	3892	3591	300	0.225	0.207	0.017
Bulgaria	Bul	LM	5.32	-1.05	1504	25256	3448	3203	244	0.137	0.127	0.010
Egypt	Egy	LM	5.36	0.52	1569	21879	3249	1705	1544	0.149	0.078	0.071
Iran	Ira	LM	6.38	0.93	1580	24023	14105	2735	11370	0.587	0.114	0.473
Romania	Rom	LM	5.32	-1.14	1639	29113	4508	3286	1222	0.155	0.113	0.042
Algeria	Alg	LM	5.67	0.57	1670	18491	13200	1530	11670	0.714	0.083	0.631
Jordan	Jor	LM	5.64	0.39	1727	31546	931	923	9	0.030	0.029	0.0003
Russian Fed.	Rus	LM	4.93	-1.29	1738	38709	17217	5441	11777	0.445	0.140	0.304
Colombia	Col	LM	8.4	4.18	1926	44660	6547	3542	3006	0.147	0.079	0.067
Peru	Per	LM	6.44	1.32	1991	39046	3575	2642	934	0.092	0.068	0.024
El Salvador	ElS	LM	7.5	3.67	2075	36476	912	912	0	0.025	0.025	0
Dominican Republic	Dom	LM	7.15	2.25	2234	33410	3176	2891	286	0.095	0.087	0.009
South Africa	SA	LM	5.81	1.11	2837	59629	3400	2282	1118	0.057	0.038	0.019
Turkey	Tur	UM	5.74	0.76	2980	47859	3504	3315	190	0.073	0.069	0.004
Latvia	Lat	UM	5.27	-0.7	3271	47198	5485	5485	0	0.116	0.116	0
Brazil	Bra	UM	7.32	2.57	3432	86922	6752	5044	1708	0.078	0.058	0.020
Estonia	Est	UM	5.9	0.18	3836	66769	6283	5899	384	0.094	0.088	0.006
Hungary	Hun	UM	5.69	0.23	4370	77072	4947	4412	536	0.064	0.057	0.007
Chile	Chl	UM	7.12	2.53	4779	77726	10944	5756	5188	0.141	0.074	0.067
Venezuela	Ven	UM	7.52	3.58	4970	45196	27227	3924	23302	0.602	0.087	0.516
Mexico	Mex	UM	8.13	4.34	5783	61872	8493	2419	6075	0.137	0.039	0.098
Uruguay	Uru	UM	7.22	2.35	5962	118463	9279	9280	0	0.078	0.078	0
Argentina	Arg	UM	7.4	2.74	7718	139232	10312	7060	3253	0.074	0.051	0.023
Portugal	Por	H	6.98	2.01	10256	207477	3629	3588	41	0.017	0.017	0.0002
Greece	Gre	H	6.68	1.45	10706	236972	4554	4237	318	0.019	0.018	0.001
Korea, Rep	Kor	H	6.21	1.12	10843	141282	2020	1987	33	0.014	0.014	0.0002
New Zealand	NZ	H	7.76	3.53	12679	242934	43226	39630	3596	0.178	0.163	0.015
Spain	Spa	H	6.99	2.16	13723	261205	4374	4323	50	0.017	0.017	0.0002
Israel	Isr	H	7.03	2.08	17354	294723	3999	3990	10	0.014	0.014	0.00004
Italy	Ita	H	7.12	2.06	18478	372666	4678	4316	361	0.013	0.012	0.001
Australia	Aus	H	7.41	3.21	19703	371031	24167	12675	11491	0.065	0.034	0.031
Ireland	Ire	H	8.17	4.12	21495	330490	10534	10150	385	0.032	0.031	0.001
Belgium-Luxemb.	BLx	H	7.57	3.24	21756	451714	3030	3010	20	0.007	0.007	0.00004
France	Fra	H	6.93	2.49	22399	468024	6335	6248	87	0.014	0.013	0.0002
Canada	Can	H	7.8	3.78	22612	324979	34771	16204	18566	0.107	0.050	0.057
Germany	Ger	H	7.57	2.68	22641	496447	4445	4177	269	0.009	0.008	0.0005
Finland	Fin	H	7.87	3.2	22893	419346	11445	11388	58	0.027	0.027	0.0001
Netherlands	NL	H	7.86	3.86	23382	421389	6739	4686	2053	0.016	0.011	0.005
Austria	Au	H	8.02	3.68	23403	493080	7174	6689	485	0.015	0.014	0.001
United Kingdom	UK	H	7.52	3.28	24606	408753	7167	2427	4739	0.018	0.006	0.012

Sweden	Swe	H	7.66	3.42	26809	513424	7950	7687	263	0.015	0.015	0.0005
Denmark	Den	H	8.24	4.24	29009	575138	11746	7572	4173	0.020	0.013	0.007
United States	US	H	7.64	3.48	35188	512612	14752	7647	7106	0.029	0.015	0.014
Norway	Nor	H	7.77	3.44	36800	473708	54828	4990	49839	0.116	0.011	0.105
Switzerland	Swi	H	8.09	3.97	37165	648241	5943	5943	0	0.009	0.009	0
Japan	Jap	H	6.48	1.96	37879	493241	1513	1484	28	0.003	0.003	0.00006

Notes: The wealth variables and GNIpc are measured in year 2000 US$ per capita. Countries are classified as low-income (L), lower-middle income (LM), upper-middle income (UM), and high income (H) using the World Bank classification for 2001 (in GNI per capita in US$) available from http://web.world.bank.org/. L: <= $745; LM: $746-$2,975; UM: $2,976-$9,205; H: > $9,205.

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