

Comprehensive Wealth or Inclusive Wealth?

Preliminary results from a comparison of alternative wealth estimates for a sample of 123 countries*

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ABSTRACT

In recent years a number of major reports have published estimates of national wealth measured in terms of diverse aggregate capital stocks. Such data are used to assess the sustainability of countries' development trajectories. There are two major approaches, i.e. the 'indirect approach' used by the World Bank and the 'direct approach' used in the Inclusive Wealth Reports. The basic idea behind both is the same: Economic sustainability requires a non-declining level of total capital assets per capita over time, and ecological sustainability is more likely to occur if the value of nature is properly measured and incorporated into the wealth accounts. The World Bank estimates 'comprehensive wealth' as the present value of future consumption. Intangible Capital (IC), its largest component, is obtained as a residual. In the Inclusive Wealth Reports, all major capital components are estimated directly and then added up to obtain an aggregate estimate. Only one type of IC is included, i.e. human capital.

Both approaches are usually cited by governments that try to develop national wealth accounts. Conceptual advantages and shortcomings of both are acknowledged, but the extent to which the differences matter empirically is not well explored, if at all. We attempt to fill this gap in our knowledge by obtaining insights from a comparison of alternative wealth estimates for the largest matching sample of countries currently available. The comparison focusses on data in levels, shares, growth rates, and sustainability indices associated with wealth accounting.

Keywords: Comprehensive wealth, inclusive wealth, natural capital, produced capital, human capital, intangible capital, sustainability.

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1. INTRODUCTION

Over the last decade a number of major reports have published estimates of comprehensive wealth at the national level. Such data are required to assess the economic and environmental sustainability of countries' development paths. In what could be termed the millennium capital assessment, World Bank (2006) published a snapshot of wealth for 120 countries for the year 2000, providing estimates not only of comprehensive (i.e. total) wealth, but also of its major components, i.e. natural capital (NC), produced capital (PC) and intangible capital (IC). Insights were derived from the changing composition of comprehensive wealth (CW) and special emphasis was put on the importance of NC and the need to improve its estimation. Extended and updated estimates for three years (1995, 2000 and 2005) were published in World Bank (2011). This enables analysis of changes in CW and its major components over a decade for a large number of countries. The World Bank studies estimate CW as the present value of future consumption. The estimate for IC is obtained indirectly as the residual after subtracting the directly estimated NC and PC from CW.

An alternative approach associated with Arrow et al. (2012) is to estimate as many of the components of wealth as possible directly, and then add them up to obtain an aggregate estimate of wealth. In particular, this means measuring only the largest component of IC, i.e. human capital (HC). In December 2014, the United Nations University-International Human Dimensions Programme and the United Nations Environment Programme published such estimates for 140 countries for five-yearly intervals from 1990 to 2010 in their 'Inclusive Wealth Report 2014' (UNU-IHDP&UNEP 2014).¹ Its primary objective "is to provide quantitative information and analysis on long-term trends in global inclusive wealth (IW)" and show "how nations are performing in their efforts to sustainably improve the well-being of their citizens" (ibid., p. xxvii). Further, it aims to

... cement the role of the Inclusive Wealth Index ... as the leading comprehensive indicator for measuring nations' progress on building and maintaining inclusive wealth – a central pillar of the sustainability agenda – and gauging global sustainability as part of the post-2015 development agenda as outlined in the Sustainable Development Goals.

(UNU-IHDP&UNEP 2014, p. xxvii)

Confusingly, the terms CW and IW are used interchangeably in the Inclusive Wealth Report 2014 (ibid., p. 324). In order to avoid confusion, in this paper the term CW is reserved for the

¹ The scope of the report is much greater than that of the 2012 Inclusive Wealth Report (UNU-IHDP&UNEP 2012) that covers only 20 countries over the period 1990 to 2008. The 2012 Report has a special focus on NC. The 2014 Report has a special focus on HC, but it also includes improved and expanded NC data. Inclusive Wealth Reports are planned to be published bi-annually. Some potential methodological changes to be implemented in the 2016 report are already foreshadowed, e.g. the better integration of health capital (UNU-IHDP&UNEP 2014, p. 7).

total wealth measure associated with the World Bank approach, and IW for the total wealth measure associated with UNU-IHDP&UNEP (2014).²

Many governments are exploring how to comprehensively estimate national wealth and how to implement wealth accounts, especially NC accounts. Estimation of NC is promoted internationally, e.g. by ‘The Economics of Ecosystems and Biodiversity’ (TEEB) initiative, on-going since 2007, that focusses on estimating the economic benefits of ecosystems and biodiversity³, by the global ‘Wealth Accounting and the Valuation of Ecosystem Services’ (WAVES) partnership that was inaugurated in October 2010⁴, and by the Global Legislators Organisation (GLOBE) ‘Natural Capital Initiative’ launched in 2012⁵.

The basic idea behind the World Bank and the UNU-IHDP&UNEP approaches to ‘wealth accounting’ is the same, i.e. that economic sustainability requires a non-declining level of total assets (i.e. capital or wealth) per capita over time, not a non-declining level of output as conventionally measured by GDP per capita (GDPpc), and that ecological sustainability is more likely to occur if the value of nature (i.e. all forms of NC) is properly measured and incorporated into the wealth accounts⁶. However, GDP is still regarded as a useful indicator of production, although it is an inadequate measure of sustainable well-being. Like Piketty (2014), both approaches to wealth accounting use the terms capital and wealth interchangeably, but unlike Piketty, who rejects the inclusion of HC and of most other forms of IC, they try to account for all forms of wealth.⁷

Both the World Bank’s ‘indirect approach’ and Arrow et al.’s and UNU-IHDP&UNEP’s ‘direct approach’ to wealth accounting are usually cited by governments that try to develop detailed national wealth accounts. A prominent example is the U.K. (Kahn 2013, Kahn et al. 2014). Conceptual shortcomings and advantages of both approaches are acknowledged. However, the extent to which the differences in methodology matter empirically is not well explored, if at all. Hamilton (2012) discusses discrepancies between wealth estimates derived

² The choice of the term IW is also confusing because it might suggest that wealth is inclusive in the sense of benefitting disadvantaged groups in society. However, the IW estimates say nothing about how wealth is distributed among different groups of the population.

³ For further details, see <http://www.teebweb.org/> (accessed 12 March 2015).

⁴ This partnership brings together a broad coalition of United Nations agencies, governments, international institutes, nongovernmental organisations and academics to develop standardised ‘natural capital accounting’ (NCA) and estimate ecosystem services. See <https://www.wavespartnership.org/en/about-us> (accessed 12 March 2015).

⁵ Launched in 1989, Globe International is a non-party political organisation of national parliamentarians from now over 80 countries that aims to support legislators through national chapters to develop and advance laws on climate change, natural capital accounting and forests. See <http://globelegislators.org/> (accessed 12 March 2015).

⁶ During the process of economic development, the proportion of NC in total wealth usually decreases (although its per capita value is usually higher in more developed countries). It is also widely recognised that the monetary estimates of NC form only part of the assessment of whether a development path is ecologically sustainable. Wealth accounting has to be supplemented with non-monetary indicators (Stiglitz et al. 2009, World Bank 2011, UNU-IHDP&UNEP 2014).

⁷ Piketty’s restrictive and incomplete definition of wealth has been criticized by a number of authors (see, e.g., Weil 2015).

from both approaches, but only for the U.S. We attempt to fill this gap in our knowledge by comparing wealth estimates from both approaches for the largest sample of countries currently possible. The comparison is in terms of levels, shares, growth rates and sustainability indices derived from changes in wealth. This sheds light on some peculiar features of the wealth estimates and indicates areas for improvement.

Section 2 reviews major aspects of the methodologies used in the two wealth accounting approaches and some of the major assumptions made in the derivation of the empirical estimates. Section 3 first describes the country sample used in this paper and then analyses the data. Estimates for the U.S. and New Zealand are highlighted. Combining data from both approaches seems to make some sense for OECD countries and might resolve some of the previously observed anomalies. Next, the differences in wealth shares implied by both approaches are analysed, before focussing on growth rates and their correlations. Section 4 explores how closely economic and ecological sustainability indices derived from both approaches are correlated. Section 5 contains concluding comments.

2. WEALTH ACCOUNTING METHODOLOGIES

The same body of theory linking wealth to sustainability and intergenerational well-being underpins both approaches to wealth accounting. World Bank (2006, 2011) and UNU-IHDP&UNEP (2014) provide reviews of this literature. However, the empirical derivation of the wealth stocks differs in many ways.

2.1 Comprehensive wealth (the World Bank's 'indirect approach')

Following Hamilton and Hartwick (2005), the current value of CW in year t , CW_t , is estimated as the present value of *sustainable consumption*, i.e. the *present value of the consumption level that leaves the capital stock intact*. Measured this way, CW tries to account for intertemporal equity issues and thus becomes the object of the sustainable development paradigm (Hamilton and Naikal 2014).

It can be shown that $CW_t = \int_t^{\infty} C(s) e^{-\rho(s-t)} ds$, where C is current (sustainable) consumption, ρ is the pure rate of time preference, and s is another time index. CW_t is a function of consumption at time t and the pure rate of time preference. Derivation of this formula requires the assumptions that the elasticity of utility with respect to consumption equals one and that consumption changes at a constant rate. Sustainable consumption levels for 1995, 2000 and 2005 are proxied by five-year centred consumption averages, i.e. the consumption level for 1995 is the average of 1993 to 1997 consumption levels (World Bank, 2011, p. 142).⁸ Furthermore, the pure rate of time preference is presumed to be 1.5% and the time

⁸ In cases where savings adjusted for depletion of PC and NC are negative, they are subtracted from actual consumption in order to obtain corrected (i.e. sustainable) consumption levels (World Bank 2011, p. 142).

horizon is set at 25 years (ibid., p. 143). The CW estimates are divided by population to obtain ‘CW per capita’ (CWpc). All wealth estimates in World Bank (2011) are reported in constant 2005 U.S. dollars, using nominal market exchange rates, not purchasing power adjusted exchange rates. This implies that it makes more sense to analyse changes over time (i.e. growth rates and changes in the composition of CWpc over time) than to directly compare data for individual countries in levels. For level comparisons, World Bank (2011) recommends to focus on broad country income groups (ibid., p. 24, Note 5).

The availability of wealth data for more than one point in time enables calculation of the conceptually preferred economic sustainability measure ‘change in CWpc’ ($\Delta CWpc$). However, World Bank (2011) is somewhat confusing on this point. When it comes to calculating this measure, the largest component of CW, i.e. IC, is left out because the authors argue the focus should only be on stocks and flows that are rival in nature, i.e. tangible wealth (ibid., p. 157). To highlight this fact, we call this incomplete comprehensive wealth measure ‘change in Partial Wealth per capita’, i.e. $\Delta PWpc$.⁹ Engelbrecht (2014) explores this issue for OECD countries, analysing correlations between $\Delta PWpc$, various specifications of Adjusted Net Savings (ANS), which are widely used annual, but less comprehensive, economic sustainability indices, and $\Delta CWpc$ that includes all wealth components. The latter turns out to be only weakly correlated with the other economic sustainability indices.

2.2 Inclusive Wealth (the ‘direct approach’)

Arrow et al. (2012) are critical of the approach used in World Bank (2006, 2011) to derive CW. They argue that the assumptions implicit in deriving CW from data on consumption are unrealistic: Although the base year consumption levels are estimated to be sustainable, a constant and positive consumption growth rate is assumed. According to Arrow et al. (2012), this begs the question of sustainability and leads to unreliable CW estimates. However, Hamilton (2012) has pointed out that Arrow et al. (2012) are incorrect in suggesting that the World Bank approach implicitly assumes a positive consumption growth rate; instead it only assumes a constant rate, whether positive, negative or zero. This somewhat diminishes this particular claim of conceptual superiority of Arrow et al.’s approach.

The basic approach to wealth accounting adopted in the Inclusive Wealth Report 2014 (UNU-IHDP&UNEP 2014) is to separately estimate the major wealth components and then calculate a weighted average using shadow prices. This average is called the Inclusive Wealth index (IW). The Report summarizes this as follows (Muñoz et al. 2014, p. 19):

$$IW = P_{PC} \times PC + P_{HC} \times HC + P_{NC} \times NC$$

The P’s are shadow prices. Changes in IW (ΔIW , also called ‘inclusive investment’) are then calculated as (ibid.):

$$\Delta IW = P_{PC} \times \Delta PC + P_{HC} \times \Delta HC + P_{NC} \times \Delta NC$$

⁹ The data for $\Delta PWpc$ in 2005 are published in World Bank (2011, Table E.1) under the heading ‘Change in Wealth Per Capita (US\$)’.

The authors point out that with prices assumed constant (in most cases average prices over time are used), changes in IW are due solely to changes in the productive base of the economy. Therefore, “changes in wealth are induced only by real changes in the physical amount of the various capital forms, and not simply by price fluctuations...” (ibid.). Dividing both sides of the above equations by population, per capita estimates are obtained (i.e. IWpc and $\Delta IWpc$).

Arrow et al.’s (2012) approach crucially assumes that the shadow prices can be measured, an issue hotly denied by some (Cairns 2013), and flagged as a major area of research by others (Smulders 2012). It is notable that this ‘Achilles heel’ of the approach is not mentioned in chapter one of the Inclusive Wealth Report that first introduces the methodology (Muñoz et al., 2014), nor is it mentioned in annexes 1& 2 that explain the IW conceptual framework and the methodology in more detail. Smulders’ (2012) critique is only acknowledged in the last chapter of the report that focusses on policy evaluation (Collins et al. 2014, p. 194). In short, the (neoclassical) economic theory underpinning wealth accounting is not questioned. Instead, it is assumed that clever applied economist can derive useful proxies for what are essentially unmeasurable key parameters. Like in World Bank (2011), empirical analysis of the wealth data concentrates on growth rates and trends, not on data in levels.

Many of the novel methodological aspects introduced in the Inclusive Wealth Report 2014 go beyond the basic accounting approach described above, but they are not the focus of this paper which concentrates on an empirical comparison of the basic (i.e. core) estimates obtained from both wealth accounting approaches. Briefly, the IW estimates are adjusted for oil capital gains (or losses), carbon damages and changes in total factor productivity (TFP) to obtain a second measure of wealth, called the ‘Adjusted Inclusive Wealth Index’ (AIW and AIWpc). The argument for including oil capital gains is that in some countries, they are important for building other forms of wealth. For example, in the case of Kuwait, they increase the average growth rate of AIWpc over 2001 to 2005 by 7.7% (UNU-IHDP&UNEP 2014, Annex 3, p. 303). Carbon (i.e. climate) damages are not a capital asset, but a negative externality. The allocation of these damages to countries is by necessity tentative. It is currently based on only one study, i.e. Nordhaus and Boyer (2000).

Similar to carbon damages, it is difficult to adjust individual capital assets for any TFP changes. TFP is calculated using PC, HC and NC as inputs. The inclusion of NC distinguishes TFP in the Report from TFP as usually calculated. The TFP growth estimates represent contributions to GDP growth from any other factors. UNU-IHDP&UNEP (2014) reports only growth rates, not level data, of AIWpc (for 1991-1995, 1996-2000, and 2001-2005). Oil capital gains, carbon damages and changes in TFP are all found to have negative impacts on IW growth in most countries.¹⁰

¹⁰ Out of a total of 140 countries, 134 are negatively affected by climate change, 119 by increases in the price of oil, and 91 by negative TFP growth. Overall, the three adjustments reduce the number of countries with positive wealth per capita growth from 85 to 58, i.e. 82 countries have negative growth in AIWpc (UNU-IHDP&UNEP 2014, p. 21, 32).

Another key aspect of the Inclusive Wealth Report 2014 not emphasized in this paper is the controversial issue of health capital, to which the report devotes a whole chapter. Health capital is regarded as an important part of IW, and is likely the most important form of capital for human well-being. However, the report leaves it out of the main HC wealth estimates "... because it dominates and skews overall inclusive wealth figures ... and the methodology used for computing health values is still under debate" (Duraiappah and Jamshed 2014, p. 6). We follow the report in this respect. There are important normative issues about the role of health which have yet to be resolved (see, e.g., Arrow et al. 2012, Arrow et al. 2014, Hamilton 2012). Moreover, when it comes to comparing wealth estimates from World Bank (2011) and UNU-IHDP&UNEP (2014), it makes sense to stick as much as possible to comparing estimates for similar concepts.

2.3 Natural capital

With many efforts underway to improve estimates of NC, those reported in World Bank (2011) and UNU-IHDP&UNEP (2014) are, by necessity, work-in-progress, with the latter benefiting from more recent advances. NC estimates from both sources cover a similar list of renewable and non-renewable resources (agricultural land, forest resources, fossil fuels, and the same ten types of metals and minerals), but there are many differences in the theoretical and empirical assumptions made in their derivation.¹¹ Even where very similar approaches are used, details often still differ. One example is the estimation of the value of cropland (see *ibid.*, pp. 209/210).¹² When it comes to estimating ecosystem services, estimates differ greatly between, on the one hand, temporal and boreal forests and, on the other hand, tropical forests, and a weighted average is used in the Inclusive Wealth Report 2014. By comparison, both World Bank (2011) and Arrow et al. (2012) were not able to take differences between forest types into account.

An important difference between NC estimates from both sources, especially for oil rich countries, is that World Bank (2011) does not distinguish real from nominal changes; it reports the nominal value of NC for all years in 2005 dollars. In contrast, as noted earlier, UNU-IHDP&UNEP (2014) reports asset values in real terms, and only adjusts the reported growth rates for capital gains.

UNU-IHDP&UNEP (2014) contains two chapters exploring the state-of-the-art of major aspects of estimating NC. One chapter focusses on estimating forest wealth (Gundimeda and Atkinson 2006), the other concerns the valuation of ecosystem services (Barbier 2014). Both clearly highlight that much remains to be done. Never-the-less, we make the working assumption that the NC estimates reported in UNU-IHDP&UNEP (2014) are more accurate than those reported in World Bank (2011). One might be tempted to assume that the former estimates are also larger than the latter. This will, however, depend on how the different assumptions and estimates used to derive the value of NC vary (i.e. balance) by country. In

¹¹ The interested reader is referred to the methodological appendixes in both reports.

¹² UNU-IHDP&UNEP (2014) report that minor modifications were introduced by analysing a large number of crops (159) in order to derive a representative rental price per hectare for specific years.

short, the devil is in the detail. This should be kept in mind by anyone trying to use NC estimates for a particular country in discussions about its role in economic growth and the issue of economic and environmental sustainability. Currently, the choice of data might be based on rather ‘pragmatic’ considerations that have the potential to distort policy discussions. For example, Khan (2013) argues that¹³:

The World Bank approach is consistent with the System of National Accounts (SNA) because it only looks at consumption; whereas, the definition of Arrow et al has a broader scope ... The World Bank methodology to estimate natural capital is consistent with ONS methodology to value timber resources and oil & gas reserves. To make a quicker progress, ONS will use the World Bank approach to estimate its natural capital; however, it will further explore the IWR methodology as it has a wider scope in terms of well-being.

Khan (2013, p. 7/8)

Such statements arguably highlight the need for the type of data exploration reported in this paper.

2.4 Produced capital

PC, also sometimes called manufactured capital, measures the value of roads, buildings, machines and equipment, and urban land. Both World Bank (2011) and UNU-IHDP&UNEP (2014) use the perpetual inventory method to derive this capital stock, but again, country estimates differ. In particular, World Bank (2011) reports that initial capital stocks and long investment series were not available for all countries, and therefore approximates missing data using various methods. There are other differences, e.g. with respect to assumed depreciation rates. However, compared to other capital stock estimates, those for PC are likely to be the most similar.

2.5 Intangible capital and human capital

The biggest conceptual difference between the two approaches to wealth accounting is the treatment of IC and HC. World Bank (2006, 2011) measures the broader concept of IC as the *residual* left when the directly estimated NC and PC stocks are subtracted from the estimate of CW. In short, it captures everything else, i.e. all other forms of capital not captured by the two directly measured capital stocks, as well as errors and omissions from NC and PC. In particular, it includes not only HC, but also social capital and institutional capital (i.e. the quality of institutions), and TFP. IC is the largest form of capital across all income groups, and usually higher for more developed countries. World Bank (2011, chapter 5) reports attempts to analyse IC more closely, and finds that HC accounts for most of it. In particular,

¹³ In the quote, ‘IWR’ denotes the Inclusive Wealth Report 2012 and ‘ONS’ the U.K.’s Office for National Statistics.

in high-income OECD countries, ‘health quality adjusted schooling-based human capital’ (QadjHC)¹⁴, is found to be the only statistically significant production factor.

However, for some countries the World Bank’s approach to estimating IC is less than satisfactory as it results in a negative estimate. This often reflects the resource curse (see World Bank 2006, Box 2.1, p. 28/9). But even when positive, the IC estimates do not always seem sensible. When QadjHC is subtracted from IC to obtain the ‘residual of the residual’, it turns out to be negative for a variety of countries, including not only poor countries but also Canada and Japan (World Bank 2011, Table 5.3, p. 100). Are we really to believe that these countries have no social and institutional capital whatsoever, or that negative productivity impacts and other negative impacts are greater than these forms of capital?

In an attempt to further explore these issues, Hamilton and Liu (2014) produce improved human capital estimates for a sample of 13 mostly high-income countries. These estimates are more suitable to be combined with the wealth estimates for 2005 reported in World Bank (2011). This again enables the calculation of ‘the residual of the residual’, i.e. IC minus HC. For New Zealand this amounts to only 1% of CW (as compared to 18% across the 13 countries in their sample). This does not seem to be sensible.¹⁵ New Zealand is usually assumed to have high levels of social and institutional capital. Hamilton and Hepburn (2014, p. 8) acknowledge that the results for New Zealand are ‘simply implausible’.

Given these strange findings for some developed countries, it seems of interest to explore whether the more sophisticated HC estimates reported in the Inclusive Wealth Report 2014 provide more sensible results. The chapter by Liu and Fraumeni (2014) provides a state-of-the-art survey of the different approaches to HC measurement and makes the case for the use of direct monetary measures. Fraumeni and Liu (2014) then introduce the HC methodology used in the Inclusive Wealth Report. That methodology follows Arrow et al. (2012). Country aggregates, separated by gender, on average formal education attainment, average wage, total number of employed, total adult population and average expected remaining work years are used in the derivation of the HCpc estimates. Along the way, numerous standard neoclassical assumptions are made, e.g. that the real wage reflects the marginal productivity of HC.

However, it should be noted that if the 2005 estimates of CW in World Bank (2011) and of IW in UNU-IHDP&UNEP (2014) are roughly correct, there should not be much difference between them. This is because any intangible forms of capital not explicitly included in the IW estimates are assumed to be ‘enabling assets’, i.e. assets enabling the production and allocation of goods and services. The effectiveness of these enabling assets should be reflected in the shadow prices of the directly measured capital stocks.¹⁶ Comparing CW and

¹⁴ HC per worker is calculated as a function of years of schooling, adjusted for health status using the proxy of adult survival rates (World Bank 2011, *ibid.*, p. 97).

¹⁵ The ‘residual of the residual’ for Norway is also very low, at 4%. Hamilton and Lui (2014, p. 84) note there are no obvious explanations for the low estimates for New Zealand and Norway.

¹⁶ This ‘justification’ used in UNU-IHDP&UNEP (2014) for neglecting the direct estimation of social and institutional capital is only briefly mentioned in the Preface (p. xv) and at the end of Annex 1 (p. 203). It appears

IW estimates for 2005 might indicate whether this important assumption made in the Inclusive Wealth Report 2014 is likely to be even remotely correct.

3. COMPREHENSIVE WEALTH AND INCLUSIVE WEALTH: LEVELS, SHARES AND GROWTH RATES

3.1 Country coverage and classification

Matching CW data from World Bank (2011) with IW data from UNU-IHDP&UNEP (2014) reduces the sample period to 1995 to 2005 and the sample size to a maximum of 123 countries for 2000 and 2005.¹⁷ Countries are classified as OECD and non-OECD, and also by broad income group. The data sample includes all countries that were OECD members in 2005. Two countries in the sample, i.e. Chile and Israel, only subsequently became OECD members (in 2010).

The World Bank's 2005 income group classification is used instead of the later one employed in the Inclusive Wealth Report 2014.¹⁸ Countries are classified by income group into high-income (H), with GNI per capita in US\$>10,725; upper-middle-income (UM), with GNI per capita in US\$ 3,466-10,725; lower-middle-income (LM), with GNI per capita in US\$ 876-3,465); and low-income (L), with GNI per capita in US\$≤875.¹⁹ The maximum number of countries in each income category is as follows: H (31); UM (23); LM (37); L (32). There are 30 OECD countries in the sample, 26 are classified as H, 6 as UM. The number of countries is reduced by 18 (4 OECD, 14 non-OECD), i.e. to 105, when 1995 data are used in the analysis. See Appendix Table 2 for a detailed list of countries by income category, and the countries for which 1995 data are not available.

3.2 Some comments on data in levels

As noted previously, neither World Bank (2011) nor UNU-IHDP&UNEP (2014) encourage comparing wealth data in levels. Instead, they focus on the composition of wealth and on growth rates. Nevertheless, some comments on data in levels are of interest. Often, estimates

to be a 'pragmatic' solution to the non-availability of suitable data. Also note that 'social capital' is defined uncommonly broadly in the Inclusive Wealth Report as comprising institutions, culture, religion etc. (ibid.).

¹⁷ Cyprus, Lao PDR and Vietnam are excluded because of missing CW data for either 2000 or 2005. All wealth data are in constant 2005 U.S. dollars.

¹⁸ The Excel file of historical country income classifications is available from World Bank (2015) Data: How does the World Bank classify countries?

(<https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries>; accessed 17 February 2015).

¹⁹ In contrast to the country groupings used in UNU-IHDP&UNEP (2014, Annex 3, p. 322), Croatia, the Czech Republic, Hungary, Poland, Slovakia and Trinidad and Tobago are classified as UM instead of H. Also, fifteen countries classified in UNU-IHDP&UNEP (2014) as UM are classified as LM: Algeria, Brazil, Bulgaria, China, Columbia, Dominican Republic, Ecuador, Islamic Republic of Iran, Jamaica, Jordan, Maldives, Namibia, Peru, Thailand, and Tunisia. Twelve countries are classified as L in 2005 (instead of LM in later years): Côte d'Ivoire, Ghana, India, Lao People's Democratic Republic, Mongolia, Nigeria, Pakistan, Papua New Guinea, Senegal, Sudan, Viet Nam, Zambia.

in levels differ substantially between World Bank (2011) and UNU-IHDP&UNEP (2014). Let's first consider the case of the U.S. and the 'anomalous' case of New Zealand, both for the year 2005 (in order to minimize distortions due to the use of price deflators).

Table 1a reports data for the U.S. The value of NCpc from the Inclusive Wealth Report (i.e. NCpc^{IW}) is more than twice that reported by the World Bank (i.e. NCpc^{CW}), PCpc estimates are very similar, and the World Bank's ICpc estimate (i.e. ICpc^{CW}) is a lot larger than the HCpc estimate (HCpc^{IW}). The difference between ICpc and HCpc is so large that even if only approximately correct, it casts doubt on the interpretation of social and institutional capital as enabling assets that do not need to be measured separately. *In short, the estimates for the US seem to make sense if we assume that the shadow prices used in the Inclusive Wealth Report do not also reflect social and institutional capital:* NC is measured more comprehensively in the Inclusive Wealth Report, PC is measured in similar ways in both reports, and ICpc includes not only HC, but also social and institutional capital, as well as the 'stock equivalent of total factor productivity' (Hamilton and Liu 2014). Hence, ICpc is expected to be much larger than a direct estimate of HCpc alone (and therefore CWpc is also expected to be much larger than IWpc).

These differences affect the shares of wealth sub-categories: Although the PCpc estimates are very similar in dollar terms, the PCpc share is much larger when IW data are used. The difference is even more pronounced for the share of NCpc, i.e. its share derived from IW data is more than three times that derived from CW data. *In short, the exclusion of explicit estimates of social and institutional capital from IW seems to matter a lot for wealth shares as well.*

Table 1a: U.S. wealth per capita, 2005

	Incl. Wealth Report 2014		World Bank (2011)	
	US\$	%	US\$	%
Natural capital	29,561	6.6	13,822	1.9
Produced capital	104,169	23.1	100,075	13.6
Human capital vs. intangible capital	316,296	70.3	620,299	84.5
Inclusive vs. comprehensive wealth	450,026	100.0	734,195	100.0

Table 1b: New Zealand wealth per capita, 2005

	Incl. Wealth Report 2014		World Bank (2011)	
	US\$	%	US\$	%
Natural capital	32,335	11.9	52,979	12.8
Produced capital	79,757	29.4	76,281	18.4
Human capital vs. intangible capital	159,223	58.7	284,853	68.8
Inclusive vs. comprehensive wealth	271,315	100.0	414,113	100.0

Turning to the case of New Zealand (see Table 1b), the difference between ICpc and HCpc seems to make a lot more sense than the puzzling estimate of roughly zero reported in Hamilton and Hepburn (2014). However, somewhat surprisingly, the absolute value of NCpc reported in the Inclusive Wealth Report 2014 is smaller than that reported in World Bank (2011). A feature of both the U.S. and New Zealand is the larger share of PCpc when IW data are used, and the smaller shares of HCpc compared to ICpc.²⁰

In order to explore how representative the differences observed for the U.S. and New Zealand are for differences across all countries in our sample, we plot wealth data for 2005 against each other, explore their correlations, and investigate the percentage differences of data from the two sources. Appendix Figure 1 plots IWpc against CWpc for all 123 countries. The R^2 is high, but there are a number of large outliers. When the same is done for NCpc estimates from both data sources, the correlation is lower and a few NCpc-intensive countries seem to dominate (Appendix Figure 2). The correlation coefficients reported in Appendix Table 1 tell a similar story. Different wealth variables are highly positively correlated with each other and with GDPpc, except when correlations involve one of the NCpc's. The two NCpc's are again highly positively correlated.

Looking at the percentage deviations of data from the Inclusive Wealth Report from those reported in World Bank (2011) seems more informative, highlighting some interesting data features, in particular differences between OECD and non-OECD countries. Table 2 reports percentage deviations by broad income groups. They are derived from the country level deviations shown in Appendix Tables 2 and 3.

The expectation that IWpc is smaller than CWpc is only confirmed for the group of OECD countries. For these countries, the percentage gap between CWpc and IWpc seems to have increased over time. For all other country groupings, including non-OECD high and upper middle-income countries, IWpc exceeds CWpc, seemingly at a slowly declining rate over time. For the two poorest groups of countries, making up 56% of countries in our sample, IWpc exceeds CWpc by very large amounts (ranging from about 80% to 125%). Although social and institutional capital in non-OECD countries might be relatively small (or even negative in some cases), the magnitude of the differences suggests that they reflect low returns on capital assets in non-OECD countries.²¹ Looking at results at the country level

²⁰ The data imply that in 2005, New Zealand's CWpc (IWpc) was only 56.4% (60.3%) that of the U.S.'s. This compares to 64.6% in terms of GDPpc (GDPpc data are from UNU-IHDP&UNEP, 2014, Annex 3, p. 317, 319).

²¹ One way to explore this hypothesis is to regress GDPpc on, respectively, CWpc and IWpc in order to obtain estimates of the elasticities at means. Because CWpc is based on consumption levels, one can expect a close (i.e. unit-elastic) relationship. Testing for functional form and using preferred equations (in either linear or log-linear form), the elasticity of GDPpc with respect to both CWpc and IWpc is very close to one for both the sample of OECD and non-OECD countries. However, this masks differences for middle- and low-income countries. For the group of 32 low-income countries, the elasticity of GDPpc with respect to CWpc is still one, but the elasticity of GDPpc with respect to IWpc is only 0.33. For the group of 37 lower-middle-income countries, the elasticities are, respectively, 0.8 and 0.45. For the group of 17 other upper-middle-income countries they are, respectively, 0.67 and 0.47. All elasticity estimates are highly statistically significant. Focussing on IWpc, the elasticities suggest that poorer countries have been less able, compared to rich countries, to translate their capital assets into GDPpc.

(Appendix Table 2), this seems not just a reflection of the resource course, as suggested in World Bank (2006, p. 29), but a much broader phenomenon reflecting poor development. However, the country group averages for non-OECD countries are, to a certain extent, misleading because there are also many individual countries for which IWpc is smaller than CWpc.

Perhaps a closer look at deviations in wealth sub-categories can provide further insights? As expected, NCpc estimates by income group from the Inclusive Wealth Report 2014 are larger on average than those from World Bank (2011), for all but one small country group (the six upper-middle-income OECD countries). Across all countries, the difference is on average about 100%, and seemingly increasing over time for OECD and low-income countries. With improved and ever more comprehensive measurement of NC, its value in absolute terms is likely to increase further in future. However, the income group averages again mask substantial differences at the country level, which suggests they are strongly influenced by outliers (see Appendix Table 2).

Table 2: Percentage differences between inclusive and comprehensive wealth data, by broad income group, 2005

	Percentage difference of IWpc from CWpc			Percentage difference of NCpc ^{IW} from NCpc ^{CW}		
	1995	2000	2005	1995	2000	2005
High-income OECD countries	-18.1	-24.6	-27.2	109.9	76.6	109.4
Upper-middle-income OECD countries	-	-17.4	-27.1	-	-45.7	-28.9
All OECD countries	-	-23.1	-27.2	-	52.2	81.7
Other high-income countries	31.7	23.3	22.7	113.3	91.3	45.6
Other upper-middle-income countries	-	27.5	16.0	-	84.7	56.1
Lower-middle-income countries	-	103.5	82.5	-	115.5	91.8
Low-income countries	-	124.9	106.6	-	130.4	178.2
All non-OECD countries	-	83.5	74.1	-	113.2	111.5
All countries	-	63.1	49.4	-	98.3	104.3
	Percentage difference of PCpc ^{IW} from PCpc ^{CW}			Percentage difference of HCpc ^{IW} from ICpc ^{CW}		
	1995	2000	2005	1995	2000	2005
High-income OECD countries	1.0	5.2	8.6	-29.9	-36.5	-39.6
Upper-middle-income OECD countries	-	4.5	6.6	-	-22.5	-37.5
All OECD countries	-	5.1	8.2	-	-33.7	-39.2
Other high-income countries	-18.7	-9.6	-1.6	38.1	20.3	186.7
Other upper-middle-income countries	-	9.0	9.3	-	-444.9	-55.8
Lower-middle-income countries	-	19.3	19.9	-	-97.9	10.0
Low-income countries	-	41.4	28.3	-	-199.2	-3.0
All non-OECD countries	-	22.8	19.2	-	-187.3	6.8
All countries	-	18.5	16.5	-	-149.8	-4.4

Note: “-” indicates there are missing data for some countries.

Not unexpectedly, the smallest differences are observed for PCpc estimates from the two data sources. Apart from the group of ‘other high-income countries’, PCpc estimates used in the Inclusive Wealth Report 2014 are somewhat larger than those used in World Bank (2011). Differences are greatest for the group of low-income countries (see Table 2). Individual country results are more diverse for non-OECD countries (see Appendix Table 3).

The largest and most diverse deviations are found in the comparison between $HCpc^{IW}$ and $ICpc^{CW}$. This is not particularly surprising. World Bank (2011) reports a number of countries for which $ICpc^{CW}$ is negative. For example, Gabon is reported to have $ICpc^{CW}$ of US\$ -677 in 2000, but the Inclusive Wealth Report 2014 values $HCpc^{IW}$ for the same year at US\$ +55874, resulting in a deviation of more than 8000%. A number of such outliers affect some income group averages.²² Therefore, not much should be read into the deviations reported in Table 2, especially for non-OECD countries.

3.3 Differences in wealth shares

Much of the analysis in World Bank (2006, 2011) and UNU-IHDP&UNEP (2014) focusses on the relative contributions of the major capital assets to CW and IW. It is of interest to explore what general differences the two methodologies might imply for wealth shares. For our sample of countries, wealth shares by broad income group for 2005 derived from the two datasets, as well as the average per capita wealth data from which they are derived, are shown in Table 3.²³

First, some comments on income group data in levels. Major features of the data were already highlighted in the discussion of Table 2, in particular the differences between OECD and non-OECD countries. In addition, the NC data confirm the previously observed pattern that, apart from the group of ‘other high-income countries’ that contains many oil exporting countries, ‘high-income OECD countries’ have the largest value of NCpc, i.e. the value of NCpc generally increases with the level of development.

Turning to capital shares, Table 3 shows there are some major differences in shares derived from IW and CW data: (i) $NCpc^{IW}$ is a larger, and sometimes much larger, share of $IWpc$ compared to $NCpc^{CW}$'s share in $CWpc$. Even for ‘high-income OECD countries’, the share of $NCpc^{IW}$ is more than twice the share of $NCpc^{CW}$. *For ‘low-income countries’, NCpc accounts for an astonishingly high 60% of all IWpc, compared to 36.8% of CWpc, thereby seemingly*

²² There are also many countries with very low values of $ICpc^{CW}$, resulting in large percentage deviations of $HCpc^{IW}$ from $ICpc^{CW}$ (see, e.g., Saudi Arabia in 2005) (Appendix Table 3).

²³ The data shown in part A of Table 3 differ from similar data shown in summary tables in World Bank (2011) not only because of our different sample of countries, but also because World Bank (2011) often excludes high-income oil-exporting countries. Moreover, shares derived from World Bank (2011) data do not necessarily add to 100%. Any positive or negative differences from 100% are due to Net Foreign Assets, which are reported as a separate capital stock in World Bank (2011). In most cases, the differences are very small. They are largest for ‘other high-income countries’ (i.e. mostly oil exporters), for which the income shares add to only 89.9%. The second largest difference is for ‘low-income countries’ (104.6%). There are also some large outliers (see Appendix Table 4).

greatly increasing the role of NC for economic development in these countries. (ii) The Inclusive Wealth Report 2014 data imply a smaller share of HCpc^{IW} in IWpc compared to ICpc^{CW}'s share in CWpc. Using World Bank (2011) data, IC accounts for more than half of all wealth per capita in all country groups (and for almost 80% in OECD countries), except in the group dominated by oil exporters. Using Inclusive Wealth data, HC accounts for a considerably lower share, particularly in the two lowest income groups. (iii) For PC, the picture differs between OECD and non-OECD countries. The former have a higher PC share using Inclusive Wealth data, the latter have a lower share.

Table 3: Wealth per capita (in US\$) and wealth shares, by broad income group, 2005

a) World Bank (2011) data	Wealth per capita				Share of CW		
	CW	NC	PC	IC	NC	PC	IC
High-income OECD countries	587,094	17,796	108,684	459,022	3.0%	18.5%	78.2%
Upper-middle-income OECD countries	146,393	6,073	27,852	116,884	4.1%	19.0%	79.8%
All OECD countries	498,953	15,451	92,517	390,594	3.1%	18.5%	78.3%
Other high-income countries	272,911	74,843	54,436	116,383	27.4%	19.9%	42.6%
Other upper-middle-income countries	89,821	15,605	17,165	58,411	17.4%	19.1%	65.0%
Lower-middle-income countries	37,023	8,212	6,434	23,302	22.2%	17.4%	62.9%
Low-income countries	7,965	2,932	1,122	4,280	36.8%	14.1%	53.7%
All non-OECD countries	54,431	12,762	10,181	30,181	23.4%	18.7%	55.4%
All 123 countries	162,851	13,418	30,263	118,087	8.2%	18.6%	72.5%
b) Inclusive Wealth Report 2014 data							
	Wealth per capita				Share of IW		
	IW	NC	PC	HC	NC	PC	HC
High-income OECD countries	425,893	33,598	117,208	275,087	7.9%	27.5%	64.6%
Upper-middle-income OECD countries	108,532	4,330	30,093	74,110	4.0%	27.7%	68.3%
All OECD countries	362,421	27,744	99,785	234,892	7.7%	27.5%	64.8%
Other high-income countries	335,336	128,271	55,487	151,578	38.3%	16.5%	45.2%
Other upper-middle-income countries	96,370	24,465	18,651	53,254	25.4%	19.4%	55.3%
Lower-middle-income countries	48,033	20,096	7,663	20,274	41.8%	16.0%	42.2%
Low-income countries	15,264	9,225	1,274	4,765	60.4%	8.3%	31.2%
All non-OECD countries	67,219	25,296	11,073	30,849	37.6%	16.5%	45.9%
All 123 countries	139,219	25,893	32,710	80,616	18.6%	23.5%	57.9%
<i>Note: Shares derived from World Bank (2011) data do not necessarily add to 100 because Net Foreign Assets are not included.</i>							

The capital approach to development advocates the use of returns from NC to create other forms of capital. The generally larger values and shares of $NCpc^{IW}$ highlight that this might be even more important than suggested in World Bank (2011). The shares by country shown in Appendix Table 4 reveal there are 25 non-OECD countries for which NC accounted for the largest share of IW in 2005.²⁴

3.4 Growth rates

Table 4 reports average annual growth rates of GDPpc, CWpc, IWpc and the major wealth sub-categories for all 123 countries, and separately for OECD and non-OECD countries, for the period 2000-2005, and annual growth rates of AIWpc for 2001-2005.²⁵ GDPpc growth rates are higher than those for CWpc and IWpc, giving a more positive impression of countries' economic performances, a fact also noted in the Inclusive Wealth Report 2014. CWpc growth rates are much closer to GDPpc growth rates (basically the same in the case of OECD countries) compared to IWpc growth rates. The latter are much lower, and slightly negative for non-OECD countries even before adjusting for oil capital gains/losses, carbon damages and change in TFP to obtain AIWpc. The split between OECD and non-OECD countries is again apparent. OECD countries seem to be on an economically sustainable growth path even when judged by AIWpc, non-OECD countries are not.

Growth rates by country for GDPpc, CWpc and IWpc for both 1995-2000 and 2000-2005 are shown in Appendix Table 5. A few countries had negative GDPpc growth rates. Most of them are low-income African countries. Twenty-three countries have negative growth rates of CWpc during 2000-2005; forty-two had negative growth rates of IWpc during that period. All countries with negative growth rates of GDPpc, CWpc and IWpc are non-OECD countries. There are only three OECD countries, i.e. Austria, Germany and Mexico, for which the growth rate of IWpc is greater than that for CWpc during 2000-2005; and Germany is the only OECD country for which this applies to 1995-2000 as well. There are also seven OECD countries for which *both* the growth rates of CWpc and IWpc during 2000-2005 are *higher* than that of GDPpc (i.e. Belgium, France, Germany, Italy, the Netherlands, Portugal, Mexico). This also applies to two non-OECD countries (i.e. Israel and Malta). It applies to *none* of the middle or low-income countries. For the period 1995-2000, Germany is the *only* country in that position.

²⁴ There are also 25 countries for which $NCpc^{CW}$ accounts for the largest share of CWpc. However, for five of them the NC share is probably overstated because of the impact of negative $ICpc^{TW}$.

²⁵ The GDPpc data used to calculate GDPpc growth rates are from the Inclusive Wealth Report 2014. They are in constant 2005 U.S. dollars. The adjusted IWpc growth rates are taken directly from Annex 3 of the Report.

Table 4: Average annual growth rates, 2000-2005, 123 countries

	All countries	OECD	Non-OECD
GDPpc	2.6%	2.1%	2.7%
CWpc	2.1%	2.2%	2.1%
IWpc	0.2%	1.2%	-0.1%
AIWpc*	-1.2%	0.8%	-1.8%
NCpc ^{CW}	-2.9%	-6.3%	-1.8%
NCpc ^{IW}	-2.3%	-2.1%	-2.4%
PCpc ^{CW}	1.6%	1.9%	1.5%
PCpc ^{IW}	1.8%	2.6%	1.6%
HCpc ^{IW}	0.9%	1.0%	0.8%
ICpc ^{CW}	4.2%	2.6%	3.8%

*Note: * Annual growth rates for AIWpc are for 2001-2005.*

At the aggregate level, growth rates of both NCpc estimates are clearly negative (Table 4). Growth rates of the two PCpc's are very similar, except for OECD countries. Human capital growth rates are very similar for OECD and non-OECD countries, and much smaller than those for ICpc. To sum up, it seems the lower growth rates of IWpc compared to CWpc and GDPpc might be mostly due to the exclusion from IW of forms of IC other than HC. In the Inclusive Wealth Report 2014 (UNU-IHDP&UNEP 2014, p. 33) it is suggested that the main reason why GDPpc growth rates are much higher than IWpc growth rates is the inclusion of NCpc. The growth rates shown in Table 4 suggest this view might need to be modified and include missing forms of IC.

Growth rates of the NCpc's, PCpc's, ICpc^{CW} and HCpc^{IW} by country are shown in Appendix Tables 6 and 7. The Inclusive Wealth Report 2014 (p. 23) finds that for its sample of 140 countries, the contribution of NC to IW during the period 1990-2010 is positive for only 13 countries. Similarly, in our sample for the period 2000-2005, only 10 out of 123 countries have positive growth in NCpc^{IW} (another three countries have zero growth). In contrast, 39 countries had positive growth in NCpc^{CW} during 2000-2005. None of the countries with positive NCpc growth during that period are the same in the two data sets (see Appendix Table 6). Although many of the differences are due to the exclusion of capital gains from NCpc^{IW}, the diversity of countries involved suggests this is not the whole story.

However, the mostly negative growth of NCpc is not necessarily bad from an economic sustainability point of view. In fact, it is at the centre of the capital approach to development (NC should be transformed into other forms of capital). To substantiate that the negative growth rates for NCpc are something to be avoided, the authors of the Inclusive Wealth Report should have identified whether *critical NC* is being run down, not NC in general. Critical NC needs to be preserved. It cannot be allowed to decline because there is no substitute for it (Ekins 2003, 2014).

Even for PCpc, the signs of growth rates differ for some countries, depending on whether World Bank or Inclusive Wealth Report data are used. For the period 2000-2005, for example, it differs for 23 countries. Also, 14 countries have negative growth rates for both PCpc^{CW} and PCpc^{IW} (Appendix Table 7). Estimates of growth rates for HCpc^{IW} are the least volatile, being moderate and mostly positive (there are only six non-OECD countries with slightly negative growth rates in HCpc during 2000-2005). In contrast, growth rates for ICpc^{CW} vary widely. For the 2000-2005 period they range from more than -40% for Saudi Arabia to almost +70% for Papua New Guinea. This is after excluding countries with negative ICpc^{CW}. For OECD countries, ICpc^{CW} growth rates are much more moderate.

Table 5 reports linear correlation coefficients between the growth rates of wealth variables and GDPpc for the complete sample of countries. The highest positive correlation is between growth rates of CWpc and GDPpc, but at 0.7 it is not as high as one might have expected.²⁶ The positive correlation between the growth rates of CWpc and IWpc is below 0.5, as is that between IWpc and AIWpc. Growth rates of the two PCpc's are also positively correlated. In contrast, the correlation between growth rates of CWpc and AIWpc is negative and statistically significant, as is the correlation between the growth rates of the two NCpc's.

Interesting differences again emerge when correlations are calculated separately for OECD and non-OECD countries (Tables 6 and 7). In general, correlations observed for the sample as a whole in terms of sign, size and statistical significance of coefficients are mostly driven by non-OECD countries.

Table 5: Correlations: average annual growth rates 2000-2005, 123countries*

GDPpc	1									
CWpc	0.70^a	1								
NCpc ^{CW}	0.01	-0.10	1							
PCpc ^{CW}	0.15	0.22^b	-0.08	1						
ICpc ^{CW#}	0.46^a	0.62^a	-0.35^a	0.01	1					
IWpc	0.22^b	0.45^a	-0.12	0.26^a	0.11	1				
AIWpc	-0.62^a	-0.35^a	0.01	0.20^b	-0.38^a	0.43^a	1			
NCpc ^{IW}	0.22^b	0.38^a	-0.25^a	-0.01	0.29^a	0.33^a	0.044	1		
PCpc ^{IW}	0.27^a	0.29^a	0.03	0.57^a	0.03	0.49^a	0.43^a	0.10	1	
HCpc ^{IW}	0.11	0.10	0.09	0.02	-0.08	0.38^a	0.23^b	0.06	0.09	1
	GDPpc	CWpc	NCpc ^{CW}	PCpc ^{CW}	ICpc ^{CW}	IWpc	AIWpc	NCpc ^{IW}	PCpc ^{IW}	HCpc ^{IW}
<p><i>Notes: * Correlations involving ICpc^{CW} exclude the following countries: Gabon, Congo (Rep.), Central African Rep., Guyana, Iran, Congo (Dem. Rep.), Papua New Guinea, Kuwait, Burundi. The average annual growth rates for AIWpc are for the years 2001-2005.</i></p> <p>^a Statistically significant at the 1% level (two-sided test).</p> <p>^b Statistically significant at the 5% level (two-sided test).</p>										

²⁶ Plotting 2000-2005 growth rates of IWpc versus CWpc shows that although they are positively correlated, the correlation is far from perfect (Appendix Figure 3). When the IWpc data are modified to obtain AIWpc, the correlation becomes negative (Appendix Figure 4).

Some of the differences in terms of statistically significant versus insignificant correlations are as follows: For OECD countries, the correlation between IWpc and GDPpc is not statistically significant; neither is that between IWpc and CWpc. The opposite holds for non-OECD countries. Also, for OECD countries, NCpc^{IW} and NCpc^{CW} are not statistically significantly correlated with any of the other variables. For non-OECD countries, NCpc^{IW} is positively and statistically significantly correlated with GDPpc, CWpc, ICpc^{CW}, and IWpc. The correlation between PCpc^{CW} and GDPpc is statistically significant for OECD countries, but not for non-OECD countries. For both groups of countries, correlations between growth rates of GDPpc and AIWpc, and CWpc and AIWpc, are negative and statistically significant. In contrast, for non-OECD countries IWpc and AIWpc are significantly positively correlated.

Table 6: Correlations: average annual growth rates 2000-2005, 30 OECD countries

GDPpc	1									
CWpc	0.91^a	1								
NCpc ^{CW}	-0.13	-0.19	1							
PCpc ^{CW}	0.55^a	0.52^a	-0.00	1						
ICpc ^{CW}	0.86^a	0.93^a	-0.23	0.38^b	1					
IWpc	0.29	0.32	-0.29	0.39^b	0.19	1				
AIWpc	-0.73^a	-0.59^a	0.19	-0.04	-0.65^a	0.27	1			
NCpc ^{IW}	-0.12	0.01	-0.26	-0.09	0.02	0.10	0.20	1		
PCpc ^{IW}	0.49^a	0.48^b	0.16	0.83^a	0.34	0.27	-0.02	-0.10	1	
HCpc ^{IW}	0.13	0.03	-0.06	-0.02	0.00	0.66^a	0.18	-0.10	-0.14	1
	GDPpc	CWpc	NCpc ^{CW}	PCpc ^{CW}	ICpc ^{CW}	IWpc	AIWpc	NCpc ^{IW}	PCpc ^{IW}	HCpc ^{IW}
<p><i>Notes:</i> ^a Statistically significant at the 1% level (two-sided test). ^b Statistically significant at the 5% level (two-sided test).</p>										

Table 7: Correlations: average annual growth rates 2000-2005, 93 non-OECD countries*

GDPpc	1									
CWpc	0.71^a	1								
NCpc ^{CW}	-0.02	-0.10	1							
PCpc ^{CW}	0.16	0.23^b	-0.08	1						
ICpc ^{CW}	0.45^a	0.62^a	-0.42^a	-0.00	1					
IWpc	0.29^a	0.49^a	0.03	0.25^b	0.17	1				
AIWpc	-0.63^a	-0.36^a	0.14	0.20	-0.38^a	0.33^a	1			
NCpc ^{IW}	0.30^a	0.48^a	-0.26^b	-0.01	0.38^a	0.43^a	-0.00	1		
PCpc ^{IW}	0.27^a	0.27^a	0.08	0.55^a	0.03	0.48^a	0.42^a	0.14	1	
HCpc ^{IW}	0.08	0.07	0.17	-0.01	-0.09	0.35^a	0.23^b	0.13	0.10	1
	GDPpc	CWpc	NCpc ^{CW}	PCpc ^{CW}	ICpc ^{CW}	IWpc	AIWpc	NCpc ^{IW}	PCpc ^{IW}	HCpc ^{IW}
<p><i>Notes:</i> * Correlations involving ICpc^{CW} exclude the following ten countries: Gabon; Congo, Rep.; Central African Rep.; Guyana; Iran; Congo, Dem. Rep.; Papua New Guinea; Kuwait; Burundi. ^a Statistically significant at the 1% level (two-sided test). ^b Statistically significant at the 5% level (two-sided test).</p>										

Last but not least, the persistence of growth rates over time is explored (Table 8). As might be expected, GDPpc growth rates are much more volatile than growth rates of CWpc and IWpc, with the latter being the most persistent. However, AIWpc growth rates seem as volatile as GDPpc growth rates. Neither is statistically significantly correlated over the two periods. Growth rates for IWpc, NCpc^{IW} and PCpc^{IW} are more persistent over time than

Table 8: Correlations: 1995-2000 and 2000-2005 average annual growth rates

GDPpc	-0.05
CWpc (1)	0.39^a
NCpc ^{CW} (1)	-0.13
PCpc ^{CW} (1)	0.60^a
ICpc ^{CW} (2)	-0.39^a
IWpc	0.86^a
AIWpc	-0.03
NCpc ^{IW}	0.78^a
PCpc ^{IW}	0.72^a
HCpc ^{IW}	0.16
<p><i>Notes: For GDPpc and inclusive wealth per capita growth rates, the sample includes all 123 countries. AIWpc growth rates are for 1996-2000 and 2001-2005. World Bank (2011) data are for smaller samples: (1) Excludes Czech Republic, Poland, Slovak Republic, Turkey, Croatia, Latvia, Lithuania, Romania, Russian Federation, Albania, Armenia, Bulgaria, Maldives, Moldova Rep. of, Ukraine, Kyrgyz Republic, Liberia, Tajikistan; (2) in addition also excludes Kuwait, Gabon, Iran, Islamic Rep., Burundi, Central African Republic, Congo, Dem. Rep., Mongolia, Papua New Guinea, Sudan.</i></p> <p><i>^a Statistically significant at the 1% level (two-sided test).</i></p>	

growth rates for CWpc, NCpc^{CW} and PCpc^{CW}. Growth rates for both ICpc^{CW} and HCpc^{IW} are not significantly positively correlated over time. Interestingly, the correlation of NCpc^{CW} growth rates is not statistically significant, in contrast to that for NCpc^{IW}, which exhibits the second highest persistence. For NC, growth rates in nominal and real terms are quite different and change in different ways over time. Both should be of interest when assessing the economic and environmental sustainability of a country, i.e. both should be reported in national wealth accounts.

4. SUSTAINABILITY

Given the differences in the CW and IW data highlighted so far, one should expect them to be reflected in the sustainability indices derived from them. The ‘ideal’ index associated with the capital approach is conceptualised as non-negative change in wealth per capita over time, where wealth should be measured as comprehensively as possible (i.e. $\Delta CWpc$). Engelbrecht (2014), using wealth data from World Bank (2011) and ANS data from the World Bank Database, compares sustainability indices associated with the capital approach, but only for 26 OECD countries. ANS is a shortcut index for changes in wealth that is less

comprehensive, but available more frequently (i.e. annually).²⁷ Engelbrecht (2014) reports weak correlations between, on the one hand, the preferred economic sustainability index $\Delta CWpc$ and, on the other hand, $\Delta PWpc$ and different specifications of ANS, re-enforcing findings by Ferreira and Vincent (2005) that ANS is an unsatisfactory economic sustainability indicator for OECD countries.

In this paper, the analysis in Engelbrecht (2014) is extended by (i) including a large number of non-OECD countries (and also some additional OECD countries) and (ii) exploring whether the ‘change in wealth’ derived from CW and IW data, i.e. $\Delta CWpc$ and $\Delta IWpc$, produce similar messages. This should be of great interest as the main purpose of both indices is to provide insights about whether countries are on economically sustainability development paths. Further, the ‘change in NCpc’ derived from the two data bases is also included in the analysis. It can be interpreted as a broad environmental sustainability index associated with the capital approach. As noted earlier, it is limited because it neglects to differentiate between critical and non-critical NC. The two NCpc indices (i.e. $\Delta NCpc^{IW}$, $\Delta NCpc^{CW}$) differ greatly for natural resource rich countries, especially oil rich countries, because one focusses on nominal changes, the other on real changes. Last but not least, $\Delta PWpc$ and several specifications of ANS are included: ANS per capita (ANSpc) in 2005, taken from World Bank (2011, Table E.1), ANS (as percentage of Gross National Income) in 2005, from the World Bank’s World Indicators Database, and ΔANS as the change in ANS from 2000 to 2005. Not all ANS data are available for all countries in our sample.²⁸

Table 9 reports linear correlation coefficients between the different sustainability indices for OECD and non-OECD countries. There are clear differences between the two groups of countries. Firstly, for OECD countries, there are positive and statistically significant correlations between ANS, ANSpC, ΔANS and $\Delta PWpc$. This includes the highest, and almost perfect, positive correlation between ANSpC and $\Delta PWpc$. The second highest correlation is between ANSpC and ANS, indicating that population growth makes little difference for OECD countries, in contrast to non-OECD countries. For non-OECD countries, correlations between the three ANS-based indices are generally lower. For OECD countries it might seem superfluous to estimate both $\Delta PWpc$ and ANSpC. The much lower correlation for non-OECD countries suggests that for these countries, the indices are much less substitutable. However, even for OECD countries they sometimes provide different messages for particular countries. For example, for Greece, New Zealand and the U.S., $\Delta PWpc$ is negative while ANSpC is positive. This also applies in the case of 27 non-OECD countries (see Appendix Table 8).

²⁷ The World Bank’s World Indicators Database defines ‘Adjusted net savings, including particulate emission damage (% of GNI)’ as follows: “Adjusted net savings are equal to net national savings plus education expenditure and minus energy depletion, mineral depletion, net forest depletion, and carbon dioxide and particulate emissions damage”. ANS, excluding particulate emission damage (% of GNI) is also reported. Both exhibit very similar correlations with our other indices.

²⁸ ANS data are not available for Belgium (2000), Croatia (2000), United Arab Emirates (2000, 2005), Algeria (2000), Iran (2005), Lesotho (2000, 2005), Central African Republic (2000, 2005), Gambia (2000), Haiti (2000), Liberia (2000, 2005), Mauritania (2000, 2005), Papua New Guinea (2000, 2005), Tajikistan (2000) and Zimbabwe (2000, 2005). The availability of ANS data for 2005, but not 2000, for some countries means ΔANS is not available, although ANS is.

Secondly, for OECD countries, $\Delta IWpc$ is positively and statistically significantly correlated with all three ANS-based indices, but $\Delta CWpc$ is not. For non-OECD countries, neither $\Delta IWpc$ nor $\Delta CWpc$ are significantly correlated with the ANS-based sustainability indices.

Thirdly, $\Delta IWpc$, $\Delta CWpc$ and $\Delta PWpc$ are significantly positively correlated in both country samples. However, at the country level they again sometimes produce mixed messages. Although $\Delta IWpc$ and $\Delta CWpc$ are positive for all OECD countries, $\Delta PWpc$, as noted above, is negative for three countries. Data for non-OECD countries are much more diverse. For 42 countries, $\Delta IWpc$ is negative; $\Delta CWpc$ is negative for 24 countries. Moreover, for 32 countries, $\Delta IWpc$ and $\Delta CWpc$ have opposite signs (see Appendix Table 8).

Fourthly, there are no statistically significant correlations between the two NCpc indices and other indices in the case of OECD countries, re-confirming the disconnect between economic and environmental sustainability indices associated with the capital approach observed in Engelbrecht (2014). Major differences emerge for non-OECD countries. In all but one case, both NCpc indices are statistically significantly correlated with all the other per capita indices ($\Delta NSpc$, $\Delta PWpc$, $\Delta CWpc$, $\Delta IWpc$) and have opposite signs ($\Delta NCpc^{IW}$ and $\Delta NCpc^{CW}$ are statistically significantly inversely correlated). The more comprehensive sustainability indices $\Delta PWpc$, $\Delta CWpc$ and $\Delta IWpc$ are positively correlated with change in NCpc calculated from Inclusive Wealth Report data, but negatively with change in NCpc calculated from World Bank (2011) data. Again, the differences in NC estimation between World Bank (2011) and the Inclusive Wealth Report 2014 matter greatly; the NCpc estimates from the two data sources change very differently over time, to the extent that they might give different impressions about how NC changes during the development process. Assuming $\Delta NCpc^{IW}$ estimates are preferable, both because they are more state-of-the-art and because they are measured in real terms, the correlations suggest there is a strongly positive relationship between economic and environmental sustainability. However, this might be misleading, because changes in $\Delta IWpc$ are not included in the analysis and NC is not limited to critical NC.

Table 9: Correlations: sustainability indices, OECD and non-OECD countries, 2005 or 2000-2005 changes

OECD:								
ANS	1							
ANSpc	0.84^a	1						
Δ ANS	0.38^b	0.39^b	1					
Δ PWpc	0.83^a	0.97^a	0.58^a	1				
Δ CWpc	0.32	0.25	0.14	0.18	1			
Δ IWpc	0.62^a	0.68^a	0.37^b	0.64^a	0.55^a	1		
Δ NCpc ^{CW}	-0.01	0.04	0.18	-0.01	-0.27	-0.12	1	
Δ NCpc ^{IW}	0.17	0.14	0.06	0.29	-0.20	0.05	-0.30	1
	ANS	ANSpc	Δ ANS	Δ PWpc	Δ CWpc	Δ IWpc	Δ NCpc ^{CW}	Δ NCpc ^{IW}
Non-OECD:								
ANS	1							
ANSpc	0.40^a	1						
Δ ANS	0.49^a	0.04	1					
Δ PWpc	0.27^b	0.30^a	0.03	1				
Δ CWpc	0.13	0.14	0.04	0.72^a	1			
Δ IWpc	0.07	-0.01	0.08	0.47^a	0.46^a	1		
Δ NCpc ^{CW}	0.01	0.27^b	0.09	-0.63^a	-0.52^a	-0.17	1	
Δ NCpc ^{IW}	0.01	-0.31^a	-0.01	0.77^a	0.69^a	0.70^a	-0.66^a	1
	ANS	ANSpc	Δ ANS	Δ PWpc	Δ CWpc	Δ IWpc	Δ NCpc ^{CW}	Δ NCpc ^{IW}

Notes: Due to missing data, the reported correlation coefficients are calculated for slightly different sub-samples. ANSpc and Δ PWpc are not available for the Slovak Republic and the following five non-OECD countries: Malta, United Arab Emirates, Haiti, Liberia, Senegal. ANS (for 2005) are not available for the eight non-OECD countries Central African Republic, Iran, Lesotho, Liberia, Mauritania, Papua New Guinea, United Arab Emirates, Zimbabwe.

Correlations coefficients involving Δ ANS exclude Belgium and the following thirteen non-OECD countries: Croatia, Algeria, The Gambia, Haiti, Tajikistan, United Arab Emirates, Iran, Lesotho, Central African Republic, Liberia, Mauritania, Papua New Guinea, Zimbabwe.

This implies, e.g., that correlation coefficients between ANSpc & Δ ANS and Δ PWpc & Δ ANS are for 28 OECD countries and 78 non-OECD countries.

^a Statistically significant at the 1% level (two-sided test).

^b Statistically significant at the 5% level (two-sided test).

To sum up, although Δ CWpc and Δ NCpc^{IW} might be regarded as the preferred economic and environmental sustainability indices associated with the capital approach, given the current state of the data we agree with Gasparatos et al. (2009) who have argued that adopting many diverse indices is important for a more holistic and robust assessment of sustainability. They highlight potential trade-offs that might be informative to policy-makers.²⁹

Differences between the sustainability indices can also be explored using country rankings. This should be of particular interest when focussing on individual countries and wanting to assess their performance relative to others. Table 10 reports rankings for selected countries (three OECD countries, two oil rich countries and one poor country). Rankings of ANS-based

²⁹ This is even more the case when non-monetary composite sustainability indices are added. Such indices are based on a variety of value systems and perspectives that differ from those of the monetary wealth-based measures used in this paper. For an analysis of such indices for OECD countries, see Engelbrecht (2014).

indices for the U.S., New Zealand and Australia are somewhat mixed, with adjustment for population making the greatest difference for Australia. All three countries rank highly when economic sustainability is measured by $\Delta CWpc$ and $\Delta IWpc$; $\Delta PWpc$ rankings are quite different (i.e. much lower) for the U.S. and New Zealand, but not Australia. When it comes to environmental sustainability, the three countries rank low. New Zealand ranks marginally higher when $\Delta NCpc$ is expressed in real terms, in contrast to the U.S. and Australia (they rank appreciably lower for $\Delta NCpc^{IW}$ than for $\Delta NCpc^{CW}$).

Table 10: Rankings for selected countries

	ANS	ANSpc	ΔANS	$\Delta PWpc$	$\Delta CWpc$	$\Delta IWpc$	$\Delta NCpc^{CW}$	$\Delta NCpc^{IW}$
U.S.	51	54	87	99	6	11	49	80
New Zealand	48	30	74	95	16	26	105	96
Australia	70	16	70	18	13	20	72	101
Kuwait	33	8	48	106	106	106	1	106
Saudi Arabia	39	98	3	105	104	105	4	105
Congo, Rep.	106	105	106	101	95	96	53	97

Note: The sample covers all countries for which ΔANS could be constructed, i.e. 28 OECD countries and 78 non-OECD countries (total of 106 countries).

Kuwait ranks fairly high in terms of ANS-based indices, but bottom in terms of economic sustainability, irrespective of whether $\Delta CWpc$, $\Delta IWpc$ or $\Delta PWpc$ are used. Saudi Arabia shows a more mixed picture for ANS-based indices, with population growth resulting in a very low ranking for ANSpc. Like Kuwait, it ranks consistently low for economic sustainability. Both countries are extreme cases when it comes to differences in rankings between $\Delta NCpc^{IW}$ and $\Delta NCpc^{CW}$. This reflects the impact of changes in oil prices, and illustrates the importance of reporting NCpc indices in both nominal and real terms. There are also countries, like the Republic of Congo, that rank consistently low on most indices. The rankings in Table 10 show that relying on just one indicator of sustainability might provide a very limited picture of a countries' performance. Moreover, there are no clear patterns. For some countries, rankings differ widely across indices, for others they are more consistent.

5. CONCLUDING COMMENTS

World Bank (2011) and UNU-IHDP&UNEP (2014) are major contributions to the measurement of wealth, perceived as encompassing all capital assets. Both acknowledge the many shortcomings of their efforts to estimate wealth, but argue that the trends revealed in the data provide important information about countries' development paths and their sustainability, or otherwise. However, the extent to which the differences between both approaches matter empirically is not often appreciated. This paper has highlighted features of the data that users should be aware of.

Although the neglect of explicit estimates of social and institutional capital in UNU-IHDP&UNEP (2014) seems a pragmatic solution to a major data problem, the differences between IW and CW estimates suggest it is doubtful that social and institutional capital are enabling assets that are reflected in the currently employed shadow prices of the explicitly measured capital stocks. Future research should aim at explicitly including these major forms of capital. Alternatively, the estimation of shadow prices has to greatly improve. Kahn (2013) echoes our sentiment by arguing that more research is required on what types of capital to include in IW.

In the meantime, in the case of OECD countries it seems to make sense to combine a CW measure derived from sustainable consumption with the estimates reported in the Inclusive Wealth Report 2014, at least for 2005. For many OECD countries, the difference between CWpc and IWpc can be used as a rough proxy measure of social and institutional capital, although it is recognised that it also reflects other items. To improve comparisons over time and across countries, estimates should also be reported in a common currency using purchasing power adjusted exchange rates.

In general, the Inclusive Wealth Report data imply a much larger wealth share for NC. However, NC estimates are a ‘work-in-progress’. Improvements in measurement are ongoing. Currently, estimates still exclude fisheries, water accounts, and a number of ecosystem services (e.g. estuarine and coastal ecological systems) (UNI-IHDP&UNEP, 2014, p. 42). Their future inclusion is likely to further increase the proportion of wealth accounted for by NC. For many more currently poor countries, NC might well turn out to be the largest form of capital, and remain so into the foreseeable future. This might shift perceptions about the type of development appropriate in some countries. Furthermore, a comparison of NCpc for oil rich countries like Kuwait and Saudi Arabia indicates that NC should be estimated and reported in both nominal and real terms. In addition, it would be useful to disaggregate NC into its ‘critical’ and ‘non-critical’ components in order to better assess, within the framework of the capital approach to development, whether economic sustainability conflicts with environmental sustainability.

Although the Inclusive Wealth Report is advertised as an important contribution to the dialogue about the post-2015 global development agenda, currently neither it, nor World Bank (2011), are suitable as the definite guide to sustainable development, especially in the case of non-OECD countries. Arrow et al. (2013, p. 515), in response to criticisms of their earlier paper (i.e. Arrow et al. 2012), acknowledge that:

These are early days in the preparation of wealth accounts We should expect wealth estimates to be presented as bands, not exact figures. That people may never agree on the wealth of nations is...no reason for abandoning wealth as the object of interest in sustainability analysis.

Moreover, using the terms CW and IW interchangeably, as is done in the Inclusive Wealth Report 2014, seems highly misleading. It only adds to confusion in expert and popular discussion.

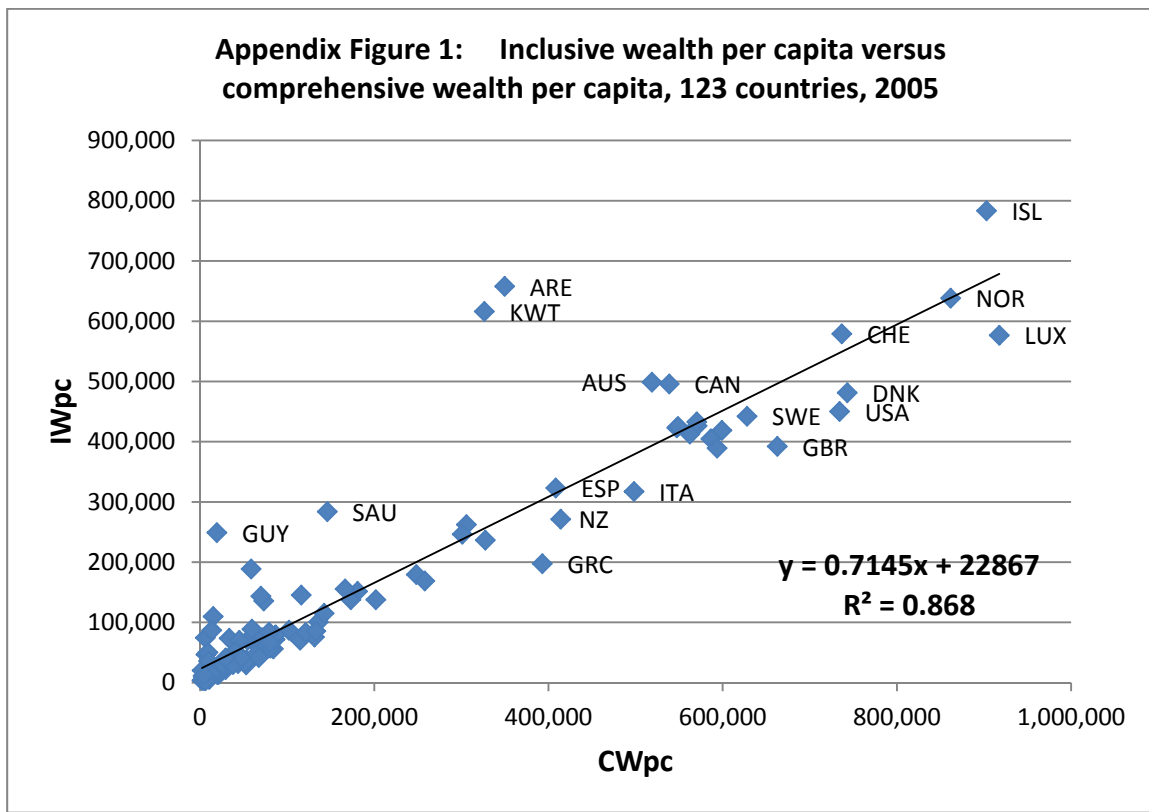
The analysis of sustainability indices derived from the capital approach to development again highlighted differences between OECD and non-OECD countries, and the importance of distinguishing between CW and IW. It is disconcerting that in the case of non-OECD countries, neither ΔIW_{pc} nor ΔCW_{pc} are statistically significantly correlated with the widely used 'shortcut' ANS-based economic sustainability indices. This issue should be explored in more detail in future research covering a longer time span. Moreover, the opposite signs of correlations involving the two ΔNC_{pc} indices and other per capita variables in the case of non-OECD countries are noteworthy. Taken at face value, they suggest that economic development might be less destructive for NC than assumed previously using less-up-to-date NC estimates. However, it should be remembered that the change in AIWpc could not be included in the analysis of sustainability indices. The 'work in progress' nature of current wealth estimates and, therefore, also of sustainability indices derived from them, should caution against use of a single index, even the conceptually preferred one.

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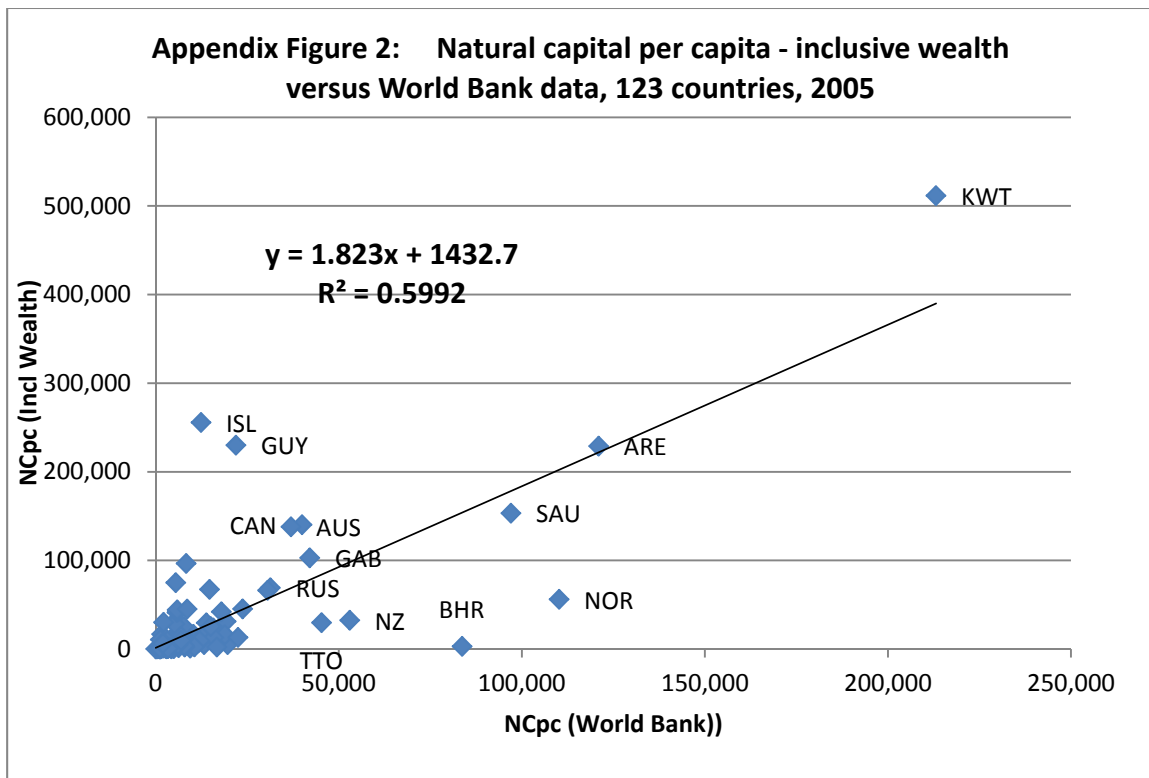
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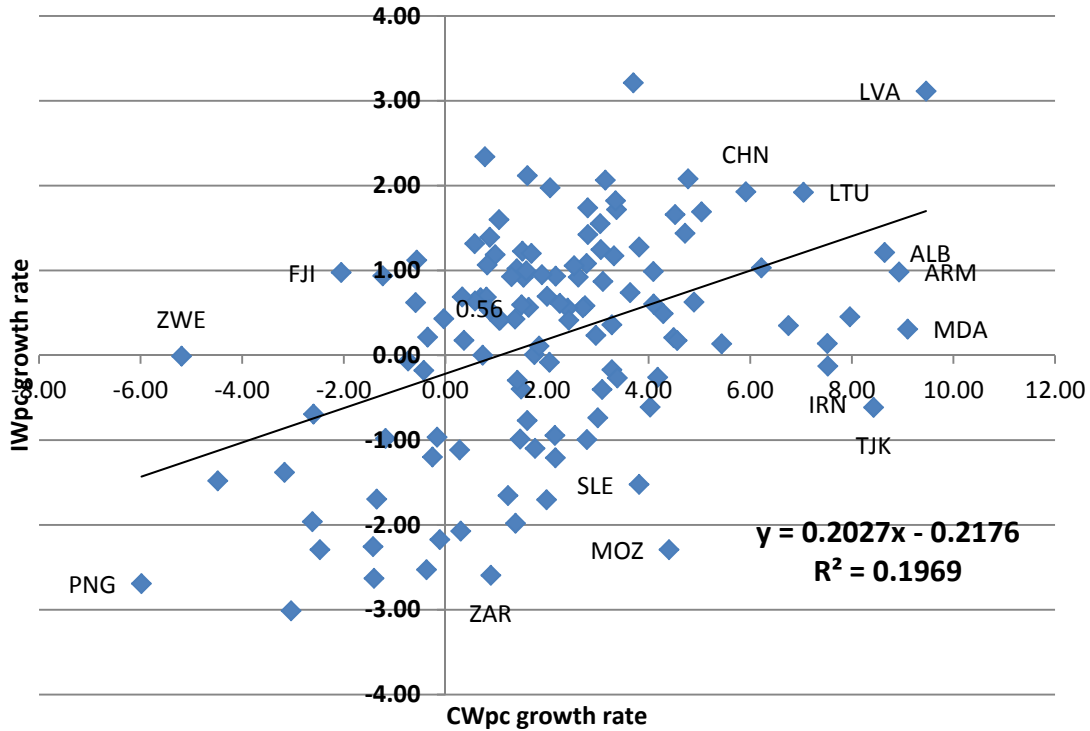
APPENDIX



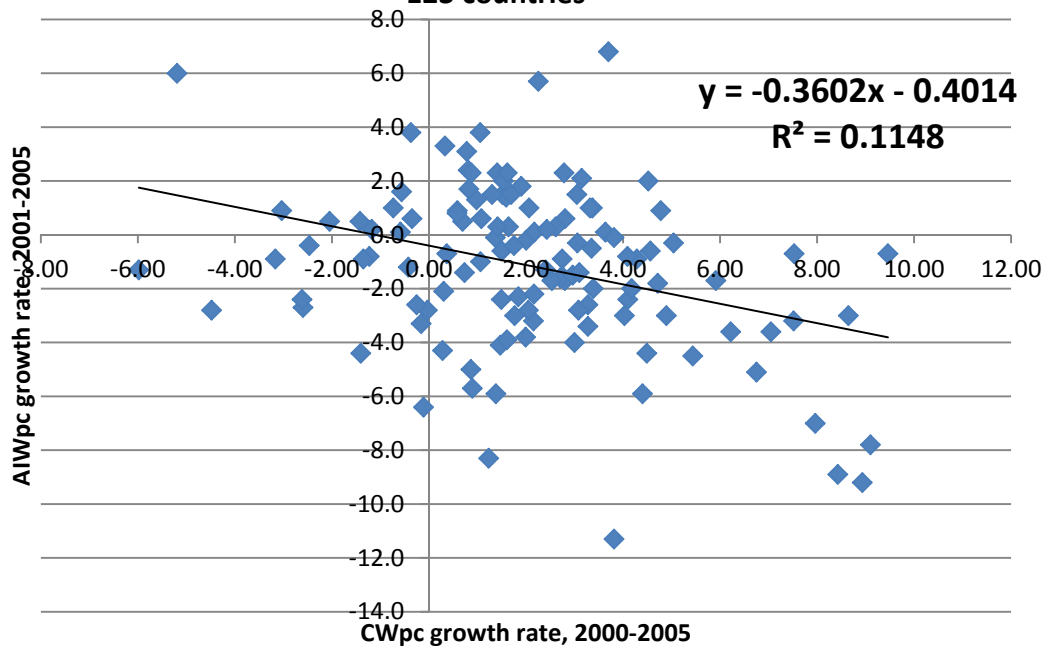
Note: The country codes are explained in Appendix Table 2.



Appendix Figure 3: Inclusive wealth per capita versus comprehensive wealth per capita - average annual growth rates, 123 countries, 2000-2005



Appendix Figure 4: Adjusted inclusive wealth per capita versus comprehensive wealth per capita - average annual growth rates, 123 countries



Appendix Table 1: Correlations - GDP and wealth variables (in per capita terms), 123 countries, 2005

GDPpc	1								
CWpc	0.98 ^a	1							
NCpc ^{CW}	0.37 ^a	0.26 ^a	1						
PCpc ^{CW}	0.98 ^a	0.98 ^a	0.27 ^a	1					
ICpc ^{CW}	0.92 ^a	0.98 ^a	0.08	0.93 ^a	1				
IWpc	0.95 ^a	0.93 ^a	0.49 ^a	0.92 ^a	0.86 ^a	1			
NCpc ^{IW}	0.28 ^a	0.20 ^b	0.77 ^a	0.19 ^b	0.08	0.51 ^a	1		
PCpc ^{IW}	0.98 ^a	0.97 ^a	0.26 ^a	0.99 ^a	0.94 ^a	0.93 ^a	0.18 ^b	1	
HCpc ^{IW}	0.96 ^a	0.98 ^a	0.25 ^a	0.96 ^a	0.95 ^a	0.94 ^a	0.18 ^b	0.97 ^a	1
	GDPpc	CWpc	NCpc ^{TW}	PCpc ^{TW}	ICpc ^{TW}	IWpc	NCpc ^{IW}	PCpc ^{IW}	HCpc ^{IW}

Notes: ^a Statistically significant at the 1% level (two-sided test). ^b Statistically significant at the 5% level (two-sided test). Superscripts: CW = World Bank's comprehensive wealth data; IW = Inclusive Wealth Report data.

Appendix Table 2: Percentage differences between inclusive and comprehensive wealth estimates (IWpc versus CWpc; NCpc^{IW} versus NCpc^{TW})

	Percentage difference of IWpc from CWpc			Percentage difference of NCpc ^{IW} from NCpc ^{CW}		
	1995	2000	2005	1995	2000	2005
High-income OECD countries:						
Australia - AUS	15.6	1.4	-3.9	455.7	262.0	250.7
Austria - AUT	-22.5	-26.1	-25.3	-29.4	-34.4	-15.9
Belgium - BEL	-21.8	-25.6	-26.6	-89.0	-94.2	-90.5
Canada - CAN	2.4	-6.2	-8.0	389.6	273.9	273.3
Denmark - DNK	-28.9	-33.2	-35.2	-52.8	-72.3	-75.0
Finland - FIN	-3.8	-17.6	-24.1	69.3	-8.1	61.7
France - FRA	-26.9	-28.9	-31.0	-48.6	-65.8	-47.3
Germany - DEU	-26.7	-28.5	-22.7	239.8	109.5	209.6
Greece - GRC	-39.8	-45.3	-49.7	115.9	53.1	55.1
Iceland - ISL	15.1	-3.4	-13.3	1536.9	1620.7	1967.7
Ireland - IRL	-16.3	-26.2	-30.1	-50.5	-54.5	-35.9
Italy - ITA	-33.3	-37.1	-36.3	-32.1	-41.3	-24.4
Japan - JPN	-16.9	-18.9	-22.5	-11.2	-31.5	45.5
Korea, Rep. - KOR	-9.7	-17.2	-27.7	173.7	167.8	213.4
Luxembourg - LUX	-30.8	-36.9	-37.1	-75.1	-75.4	-55.6
Netherlands - NLD	-26.4	-33.2	-34.4	-48.1	-58.7	-62.4
New Zealand - NZL	-24.8	-30.1	-34.5	-19.6	-38.9	-39.0
Norway - NOR	-20.1	-25.9	-25.9	46.0	-19.6	-49.1
Portugal - PRT	-7.0	-13.7	-14.2	-48.3	-54.7	-30.8
Spain - ESP	-16.1	-18.9	-20.9	-24.8	-46.7	-31.1
Sweden - SWE	-17.5	-25.1	-29.6	45.7	12.0	51.3
Switzerland - CHE	-17.5	-21.6	-21.4	-24.7	-15.9	16.6
United Kingdom - GBR	-31.0	-36.6	-40.8	-46.0	-66.5	-76.4

United States - USA	-29.1	-35.7	-38.7	165.1	119.3	113.9
Average	-18.1	-24.6	-27.2	109.9	76.6	109.4
Upper-middle-income OECD countries:						
Czech Republic - CZE	-	-9.5	-16.2	-	-69.5	-60.3
Hungary- HUN	2.1	-5.9	-20.4	-45.5	-51.7	-28.4
Mexico - MEX	-38.2	-43.8	-42.3	-9.3	5.7	22.8
Poland - POL	-	-14.4	-25.9	-	-57.1	-53.9
Slovak Republic - SVK	-	-4.8	-19.2	-	-62.8	-41.9
Turkey - TUR	-	-25.9	-38.7	-	-38.5	-11.7
Average	-	-17.4	-27.1	-	-45.7	-28.9
Other high-income countries:						
Bahrain - BHR	-40.3	-38.8	-31.8	-87.7	-91.7	-96.5
Israel - ISR	-26.5	-25.3	-27.8	-76.2	-76.1	-81.3
Kuwait - KWT	109.5	88.6	88.8	448.3	266.5	140.1
Malta - MLT	-31.4	-36.3	-34.6	-84.0	-94.1	-93.6
Saudi Arabia - SAU	112.2	102.5	94.3	162.5	159.2	58.0
Singapore - SGP	-8.1	-13.7	-18.1	216.2	287.1	303.0
United Arab Emirates - ARE	106.3	86.5	88.2	213.9	188.2	89.1
Average	31.7	23.3	22.7	113.3	91.3	45.6
Other upper-middle-income countries:						
Argentina - ARG	-4.7	-1.6	4.6	231.5	206.3	61.7
Botswana - BWA	65.8	45.6	22.3	527.3	616.2	488.9
Chile - CHL	-6.3	-17.8	-14.7	64.2	27.0	-15.7
Costa Rica - CRI	-3.2	-4.0	-11.8	-8.6	-23.9	-22.1
Croatia - HRV	-	5.9	-6.7	-	-48.4	-11.1
Gabon - GAB	240.6	195.1	222.7	342.4	158.6	144.7
Latvia - LVA	-	-5.8	-31.4	-	-16.7	24.3
Lithuania - LTU	-	-16.8	-35.6	-	-51.5	-25.3
Malaysia - MYS	43.1	44.4	15.6	172.8	80.8	9.8
Mauritius - MUS	-11.6	-22.9	-33.2	-90.0	-93.0	-90.0
Panama - PAN	3.9	-13.3	-22.1	52.7	61.8	40.0
Romania - ROM	-	-7.6	-29.1	-	-28.1	-17.4
Russian Federation - RUS	-	155.0	85.2	-	143.6	120.5
South Africa - ZAF	-4.3	-8.6	-16.6	18.0	60.5	129.9
Trinidad and Tobago - TTO	58.5	27.2	25.1	127.0	70.5	-34.3
Uruguay - URY	-11.6	-11.1	-8.6	118.7	93.1	32.7
Venezuela, RB - VEN	99.6	103.6	105.6	177.2	183.6	116.5
Average	-	27.5	16.0	-	84.7	56.1
Lower-middle-income countries:						
Albania - ALB	-	2.0	-29.7	-	31.0	86.8
Algeria - DZA	19.8	20.6	32.6	116.7	35.4	-18.7
Armenia - ARM	-	10.3	-25.9	-	-78.4	-76.2
Belize - BLZ	85.0	43.6	27.0	176.2	134.1	90.5
Bolivia - BOL	725.9	605.8	629.4	1405.3	1417.6	1061.6

Brazil - BRA	15.2	9.8	5.8	188.4	107.9	68.9
Bulgaria - BGR	-	-5.8	-27.3	-	-12.9	58.4
Cameroon - CMR	93.5	63.2	35.6	258.0	171.7	131.9
China - CHN	72.4	26.8	3.9	109.7	56.3	35.3
Colombia - COL	45.3	41.4	28.6	314.7	175.6	233.3
Congo, Rep. - COG	1055.8	1217.6	1139.5	516.8	440.5	358.1
Dominican Rep. - DOM	-18.0	-30.8	-37.8	-31.0	-20.5	-33.1
Ecuador - ECU	0.8	-6.1	-19.5	28.0	-41.7	-41.4
Egypt, Arab Rep. - EGY	-25.4	-33.5	-36.5	-37.7	-42.0	-72.5
El Salvador - SLV	-45.5	-45.4	-44.0	-71.3	-69.5	-66.8
Fiji - FJI	-6.2	-4.0	11.7	-56.5	-67.7	-39.5
Guatemala -GTM	-14.7	-20.5	-27.1	-68.6	-77.1	-86.2
Guyana - GUY	1576.8	1312.5	1196.7	1027.4	900.2	951.0
Honduras - HND	76.9	50.5	19.3	95.2	79.1	-22.7
Indonesia - IDN	37.9	33.4	12.3	191.0	37.5	61.2
Iran, Islamic Rep. - IRN	195.3	223.4	120.6	362.5	226.6	134.4
Jamaica - JAM	-7.0	-8.0	-16.8	16.4	50.0	102.9
Jordan - JOR	-10.2	-20.2	-35.6	-36.0	-23.1	-49.1
Lesotho - LSO	-22.3	-20.9	-30.9	-92.4	-93.0	-77.8
Maldives - MDV	-	39.4	36.0	-	-98.8	-98.9
Moldova, Rep of -MDA	-	36.7	-11.9	-	-82.2	-72.5
Morocco - MAR	1.6	3.9	-5.1	-4.9	-35.9	-27.3
Namibia - NAM	83.1	66.0	49.2	482.9	614.5	444.1
Nicaragua - NIC	45.3	9.0	-9.2	26.6	35.8	26.1
Peru - PER	96.7	76.2	56.4	1110.1	778.2	608.2
Philippines - PHL	-23.6	-24.6	-30.8	-44.6	-62.5	-62.5
Sri Lanka - LKA	17.6	14.4	-8.2	-67.2	-59.2	-51.2
Swaziland - SWZ	27.3	25.8	28.7	-84.1	-88.4	-76.9
Syrian Arab Rep. - SYR	15.6	13.9	9.4	-46.5	-48.7	-72.1
Thailand - THA	-0.5	-0.9	-19.9	-10.3	-57.0	-53.6
Tunisia - TUN	13.9	2.4	-12.4	-25.2	-48.6	-62.3
Ukraine - UKR	-	103.4	39.8	-	89.9	104.8
Average	-	103.5	82.5	-	115.5	91.8
Low-income countries:						
Bangladesh -BGD	-21.4	-22.4	-28.0	-69.7	-75.3	-81.0
Benin - BEN	60.1	35.3	29.1	26.0	-0.1	52.8
Burundi - BDI	52.8	73.9	72.2	-43.7	-54.9	-75.3
Central African Rep. - CAF	725.5	605.8	593.8	636.1	476.1	654.1
Congo, Dem. Rep. - ZAR	867.0	948.1	780.4	914.1	690.1	944.8
Côte d'Ivoire - CIV	12.9	10.4	14.1	82.5	-11.4	1.0
Gambia, The - GMB	14.1	11.2	2.5	175.5	60.8	32.9
Ghana - GHA	39.7	17.3	-2.7	46.5	-25.5	-3.6
Haiti - HTI	-55.6	-50.2	-49.3	-96.3	-96.1	-95.6
India - IND	42.9	20.9	8.2	-25.7	-29.8	-23.9

Kenya - KEN	2.9	-10.0	-12.8	-62.9	-67.2	-59.2
Kyrgyz Republic - KGZ	-	3.4	-28.5	-	-20.7	-5.2
Liberia - LBR	-	275.6	237.3	-	304.8	183.9
Malawi - MWI	12.0	-2.5	13.3	-14.4	-10.5	44.5
Mali - MLI	127.8	86.1	57.4	208.1	116.8	204.7
Mauritania - MRT	81.0	63.0	77.3	-0.6	-45.2	-61.2
Mongolia - MNG	921.7	619.8	549.4	597.2	957.2	1265.8
Mozambique - MOZ	380.6	239.7	143.1	622.8	580.2	750.5
Nepal - NPL	53.9	25.2	5.8	90.6	32.5	23.5
Niger - NER	38.6	27.9	19.3	-42.1	-60.3	-51.2
Nigeria - NGA	14.7	28.7	11.4	-22.5	-18.3	-17.8
Pakistan - PAK	-8.2	-9.3	-15.8	-61.0	-68.4	-66.6
Papua New Guinea - PNG	378.4	375.0	459.9	635.3	390.6	426.3
Rwanda - RWA	-22.3	-16.9	-28.2	-82.2	-87.9	-91.8
Senegal - SEN	17.9	8.8	-5.7	187.3	120.6	222.5
Sierra Leone - SLE	134.2	153.5	94.2	174.9	179.0	107.7
Sudan - SDN	78.9	47.9	22.5	23.6	46.3	37.0
Tajikistan - TJK	-	12.3	-28.5	-	-51.6	-46.8
Togo - TGO	55.0	43.0	44.8	-13.2	-15.9	-9.6
Uganda - UGA	-19.4	-34.2	-44.7	-68.9	-85.2	-85.1
Zambia - ZMB	370.4	313.8	267.5	1040.1	795.7	1302.1
Zimbabwe - ZWE	111.2	95.0	152.7	390.5	247.2	222.6
Average	-	124.9	106.6	-	130.4	178.2
OECD average	-	-23.1	-27.2	-	52.2	81.7
Non-OECD average	-	83.5	74.1	-	113.2	111.5
Overall average	-	63.1	49.4	-	98.3	104.3

Appendix Table 3: Percentage differences between inclusive and comprehensive wealth estimates (PCpc^{IW} versus PCpc^{CW}; HCpc^{IW} versus ICpc^{CW})

	Percentage difference of PCpc ^{IW} from PCpc ^{CW}			Percentage difference of HCpc ^{IW} from ICpc ^{CW}		
	1995	2000	2005	1995	2000	2005
High-income OECD countries:						
Australia	-6.3	-0.3	4.7	-25.4	-33.9	-37.5
Austria	13.6	17.5	20.4	-32.1	-37.8	-38.1
Belgium	9.1	14.7	16.3	-27.2	-29.6	-33.6
Canada	-4.1	0.5	4.1	-34.7	-37.6	-36.3
Denmark	-5.1	0.2	3.8	-34.5	-39.4	-42.4
Finland	10.7	19.0	24.8	-15.7	-36.8	-38.9
France	5.6	11.1	13.5	-33.4	-35.3	-38.9
Germany	1.8	5.6	12.5	-37.0	-39.1	-32.5
Greece	-18.7	-15.8	-12.4	-52.7	-58.5	-63.2
Iceland	3.0	6.9	9.0	-35.1	-46.9	-52.7
Ireland	44.1	30.5	15.7	-27.3	-36.8	-42.0
Italy	4.4	11.1	15.9	-42.7	-48.2	-48.8
Japan	2.6	8.4	15.3	-23.1	-27.1	-33.4
Korea, Rep.	-10.8	-2.1	1.8	-14.3	-26.1	-41.4
Luxembourg	-5.4	-7.3	-5.4	-36.0	-38.3	-37.8
Netherlands	2.9	5.4	8.5	-33.3	-42.1	-43.8
New Zealand	-5.7	-0.3	4.6	-38.3	-40.7	-48.0
Norway	-7.1	-5.4	-0.9	-31.3	-31.6	-24.7
Portugal	-5.4	0.4	8.3	-7.2	-18.6	-23.4
Spain	13.6	16.8	13.0	-24.0	-27.7	-32.0
Sweden	8.0	15.6	21.3	-27.6	-36.4	-42.0
Switzerland	-14.7	-7.5	1.2	-11.7	-18.3	-20.9
United Kingdom	-4.9	2.2	5.8	-35.3	-42.5	-48.0
United States	-7.5	-2.6	4.1	-38.0	-45.6	-49.6
Average	1.0	5.2	8.6	-29.9	-36.5	-39.6
Upper-middle-income OECD countries:						
Czech Republic	-	16.7	15.8	-	-15.6	-27.2
Hungary	-3.5	1.9	5.6	4.0	-10.0	-31.8
Mexico	-5.7	-5.8	-0.2	-51.7	-57.4	-56.5
Poland	-	-9.5	-5.2	-	-12.3	-29.9
Slovak Republic	-	12.7	12.7	-	-7.2	-30.9
Turkey	-	10.9	11.2	-	-32.7	-48.7
Average	-	4.5	6.6	-	-22.5	-37.5
Other high-income countries:						
Bahrain	-28.2	-10.0	-4.1	-6.7	-11.4	57.1
Israel	6.0	10.1	14.2	-32.1	-32.8	-34.8
Kuwait	-45.4	-33.0	-25.2	-61.2	-41.6	-926.7*
Malta	-38.6	-30.2	-16.3	-27.7	-36.4	-36.3
Saudi Arabia	-41.2	-30.0	-24.2	205.3	134.6	2049.8

Singapore	-22.7	-14.5	0.6	9.8	6.9	-0.2
United Arab Emirates	38.9	40.8	43.9	179.4	122.9	197.7
Average	-18.7	-9.6	-1.6	38.1	20.3	186.7
Other upper-middle-income countries:						
Argentina	31.5	42.1	43.2	-36.2	-32.5	-15.8
Botswana	-11.7	-14.9	-28.8	-12.5	-17.4	-10.0
Chile	-29.2	-28.5	-24.4	-17.2	-26.2	-14.2
Costa Rica	-1.9	8.5	-0.3	-4.3	-4.5	-14.5
Croatia	-	42.2	16.7	-	3.12	-14.3
Gabon	3.1	10.6	14.6	451.9	-8345.0*	-944.2*
Latvia	-	-27.6	-17.3	-	3.0	-42.1
Lithuania	-	6.2	9.5	-	-20.9	-46.8
Malaysia	-25.8	-22.7	-16.7	31.8	62.0	30.4
Mauritius	-12.5	-10.6	-6.6	13.3	-1.6	-30.4
Panama	-14.6	-15.3	-9.5	-11.0	-30.7	-38.3
Romania	-	-2.5	3.6	-	-5.2	-40.5
Russian Federation	-	15.8	21.6	-	845.9	84.3
South Africa	-12.8	1.0	8.9	-9.7	-22.1	-33.6
Trinidad and Tobago	79.5	66.5	63.3	10.4	-9.1	47.9
Uruguay	31.5	44.7	51.1	-28.1	-27.4	-23.0
Venezuela, RB	43.5	37.8	29.1	52.5	64.9	157.0
Average	-	9.0	9.3	-	-444.9	-55.8
Lower-middle-income countries:						
Albania	-	107.1	91.4	-	-37.6	-64.9
Algeria	-5.4	2.0	-0.8	-20.3	17.5	622.7
Armenia	-	34.7	30.8	-	24.7	-31.1
Belize	9.4	10.9	13.3	7.4	-22.6	-26.8
Bolivia	2.1	8.5	14.0	40.4	15.9	98.5
Brazil	8.0	16.4	18.9	-21.1	-19.7	-17.6
Bulgaria	-	9.2	21.7	-	-11.8	-49.2
Cameroon	-13.3	-4.0	3.2	10.2	2.9	-11.9
China	-20.9	-17.7	-16.2	97.8	36.2	6.6
Colombia	38.0	38.5	37.1	-12.4	-1.4	-13.8
Congo, Rep.	22.0	23.9	34.9	-114.0*	-110.0*	-109.6*
Dominican Republic	-18.2	-5.5	-4.8	-18.3	-37.3	-44.4
Ecuador	27.5	22.8	12.7	-37.1	54.5	-13.3
Egypt, Arab Rep.	-41.6	-28.9	-16.3	-20.1	-33.8	-28.9
El Salvador	1.9	19.1	25.1	-49.0	-51.5	-51.4
Fiji	-13.1	-13.0	-6.7	28.6	68.4	34.9
Guatemala	7.5	13.1	2.8	6.9	2.0	9.5
Guyana	38.3	58.8	72.5	-272.7*	-262.4*	-352.4*
Honduras	7.8	8.0	8.2	63.4	40.9	68.2
Indonesia	-28.9	-17.6	-12.7	-1.3	39.8	-5.4
Iran, Islamic Rep.	10.4	-5.6	-13.4	120.2	-3978.1*	456.9

Jamaica	38.9	29.1	21.3	-26.5	-28.8	-39.6
Jordan	10.5	19.1	24.0	-17.9	-31.2	-48.5
Lesotho	-16.4	-19.5	-24.3	-20.6	-24.2	-37.3
Maldives	-	9.4	29.5	-	55.1	40.4
Moldova, Rep of	-	70.8	85.8	-	251.7	-27.8
Morocco	6.0	9.9	6.1	-2.5	4.8	-7.2
Namibia	68.7	46.1	22.0	22.2	14.4	11.7
Nicaragua	66.9	43.3	32.3	3.7	-29.0	-38.5
Peru	3.6	9.6	16.7	-33.4	-32.6	-37.6
Philippines	4.1	15.4	26.8	-28.7	-26.1	-37.2
Sri Lanka	-1.4	-3.5	-5.0	47.4	29.4	-6.1
Swaziland	121.0	126.8	98.5	103.3	187.9	64.2
Syrian Arab Republic	-5.9	-2.6	3.6	52.8	49.2	99.8
Thailand	13.7	15.3	9.9	-11.3	21.5	-24.6
Tunisia	30.3	25.8	24.1	4.6	-5.7	-21.5
Ukraine	-	37.6	48.0	-	203.9	4.1
Average	-	19.3	19.9	-	-97.9	10.0
Low-income countries:						
Bangladesh	-7.2	-10.3	-8.4	-12.7	-11.9	-18.8
Benin	50.3	37.8	30.8	97.5	68.3	14.3
Burundi	116.8	156.4	206.7	191.2	504.7	-593.2*
Central African Rep.	46.2	39.4	47.2	-264.6*	-201.8*	178.1
Congo, Dem. Rep.	25.8	42.9	58.9	573.2	-1656.0*	367.9
Côte d'Ivoire	-3.2	10.9	22.4	-12.4	7.3	11.2
Gambia, The	-50.8	-50.2	-23.9	-10.4	-3.2	-14.4
Ghana	255.2	135.7	75.2	-3.4	18.9	-23.1
Haiti	-46.2	-50.9	-49.7	-47.0	-40.4	-42.7
India	-0.5	-0.5	-3.8	134.5	62.4	24.8
Kenya	-15.8	-7.6	-3.4	68.6	31.6	3.1
Kyrgyz Republic	-	36.3	45.9	-	-1.4	-56.0
Liberia	-	581.8	243.2	-	-40.1	-7.9
Malawi	45.7	50.0	27.2	23.3	-23.6	-22.1
Mali	-4.4	-7.2	-17.1	62.7	54.7	-0.2
Mauritania	21.8	44.4	35.0	98.6	85.5	139.9
Mongolia	2.5	31.9	40.9	-179.8*	230.5	44.6
Mozambique	9.6	-1.3	-9.7	30.3	-13.6	-46.1
Nepal	-3.7	-8.1	-9.1	15.1	22.1	-9.2
Niger	155.6	175.2	128.2	76.6	76.7	33.9
Nigeria	26.8	9.5	-20.1	91.5	181.5	79.6
Pakistan	29.0	25.1	23.0	15.8	21.7	-3.0
Papua New Guinea	-31.4	-30.8	-28.1	-9.4	-6698.1*	-314.5*
Rwanda	-3.0	1.5	-1.4	15.9	46.5	55.0
Senegal	59.6	60.3	42.3	-41.2	-39.4	-49.3
Sierra Leone	-28.5	-5.5	-4.5	110.8	126.1	74.7

Sudan	-67.3	-56.0	-36.9	-817.5*	42.2	-3.6
Tajikistan	-	30.5	48.5	-	70.1	-45.3
Togo	74.2	81.8	63.7	74.2	45.5	44.1
Uganda	78.9	36.8	16.7	56.1	653.4	-2.7
Zambia	6.6	26.6	18.2	-37.5	-38.8	-45.7
Zimbabwe	-60.9	-62.7	-52.1	26.7	43.3	131.4
Average	-	41.4	28.3	-	-199.2	-3.0
OECD average	-	5.1	8.2	-	-33.7	-39.2
Non-OECD average	-	22.8	19.2	-	-187.3	6.8
Overall average	-	18.5	16.5	-	-149.8	-4.4
Note: * Indicates the country had negative ICpc.						

Appendix Table 4: Wealth shares, 2005

	World Bank (2011)			Inclusive Wealth Report		
	NC/CW	PC/CW	IC/CW	NC/IW	PC/IW	HC/IW
High-income OECD countries:						
Australia	0.077	0.215	0.745	0.281	0.235	0.484
Austria	0.016	0.198	0.801	0.018	0.319	0.664
Belgium	0.009	0.176	0.796	0.001	0.278	0.720
Canada	0.069	0.167	0.770	0.278	0.189	0.533
Denmark	0.026	0.176	0.796	0.010	0.282	0.708
Finland	0.034	0.169	0.807	0.072	0.278	0.650
France	0.015	0.160	0.821	0.011	0.262	0.726
Germany	0.010	0.180	0.799	0.042	0.261	0.697
Greece	0.020	0.189	0.831	0.063	0.329	0.608
Iceland	0.014	0.152	0.885	0.326	0.191	0.482
Ireland	0.019	0.188	0.811	0.017	0.310	0.672
Italy	0.015	0.180	0.814	0.018	0.328	0.654
Japan	0.004	0.245	0.727	0.007	0.368	0.625
Korea, Rep.	0.011	0.236	0.766	0.046	0.333	0.621
Luxembourg	0.007	0.233	0.652	0.005	0.350	0.645
Netherlands	0.022	0.185	0.796	0.013	0.306	0.682
New Zealand	0.128	0.184	0.739	0.119	0.294	0.587
Norway	0.128	0.212	0.617	0.088	0.284	0.628
Portugal	0.014	0.196	0.831	0.011	0.247	0.741
Spain	0.018	0.201	0.810	0.016	0.287	0.697
Sweden	0.025	0.147	0.841	0.054	0.254	0.693
Switzerland	0.013	0.225	0.688	0.019	0.289	0.692
United Kingdom	0.010	0.128	0.873	0.004	0.229	0.767
United States	0.019	0.136	0.854	0.066	0.231	0.703
Upper-middle-income OECD countries:						
Czech Republic	0.025	0.245	0.748	0.012	0.338	0.650
Hungary	0.035	0.203	0.817	0.031	0.270	0.699
Mexico	0.051	0.162	0.811	0.108	0.281	0.612
Poland	0.065	0.151	0.809	0.041	0.193	0.766
Slovak Republic	0.035	0.224	0.774	0.025	0.313	0.662
Turkey	0.047	0.121	0.853	0.067	0.219	0.713
Other high-income countries:						
Bahrain	0.414	0.215	0.294	0.021	0.302	0.677
Israel	0.015	0.144	0.852	0.004	0.228	0.768
Kuwait	0.654	0.178	-0.023	0.830	0.071	0.099
Malta	0.017	0.175	0.800	0.002	0.223	0.775
Saudi Arabia	0.664	0.226	0.034	0.541	0.088	0.372
Singapore	0.000	0.270	0.548	0.000	0.332	0.668
United Arab Emirates	0.346	0.208	0.311	0.348	0.159	0.493
Other upper-middle-income countries:						
Argentina	0.144	0.152	0.707	0.223	0.208	0.569

Botswana	0.092	0.356	0.475	0.443	0.207	0.349
Chile	0.185	0.189	0.645	0.183	0.168	0.649
Costa Rica	0.120	0.136	0.764	0.106	0.154	0.740
Croatia	0.033	0.152	0.848	0.032	0.190	0.779
Gabon	0.719	0.400	-0.120	0.545	0.142	0.313
Latvia	0.061	0.192	0.781	0.110	0.231	0.659
Lithuania	0.045	0.160	0.818	0.053	0.272	0.675
Malaysia	0.197	0.260	0.555	0.187	0.187	0.626
Mauritius	0.111	0.176	0.707	0.017	0.246	0.737
Panama	0.106	0.155	0.796	0.190	0.180	0.630
Romania	0.112	0.177	0.729	0.130	0.258	0.611
Russian Federation	0.428	0.242	0.333	0.510	0.159	0.331
South Africa	0.066	0.129	0.814	0.183	0.168	0.649
Trinidad and Tobago	0.390	0.214	0.437	0.205	0.279	0.516
Uruguay	0.096	0.112	0.802	0.139	0.186	0.675
Venezuela, RB	0.438	0.227	0.317	0.461	0.143	0.396
Lower-middle-income countries:						
Albania	0.100	0.131	0.780	0.254	0.357	0.389
Algeria	0.523	0.365	0.075	0.321	0.273	0.406
Armenia	0.108	0.143	0.766	0.035	0.253	0.712
Belize	0.368	0.144	0.557	0.551	0.128	0.321
Bolivia	0.551	0.133	0.373	0.878	0.021	0.101
Brazil	0.189	0.143	0.690	0.302	0.161	0.537
Bulgaria	0.087	0.158	0.781	0.189	0.264	0.547
Cameroon	0.302	0.136	0.586	0.516	0.103	0.381
China	0.209	0.313	0.464	0.272	0.252	0.476
Colombia	0.140	0.131	0.746	0.361	0.139	0.500
Congo, Rep.	2.440	0.771	-1.873	0.902	0.084	0.015
Dominican Republic	0.071	0.119	0.829	0.076	0.183	0.741
Ecuador	0.515	0.174	0.353	0.375	0.244	0.381
Egypt, Arab Rep.	0.219	0.134	0.650	0.095	0.177	0.728
El Salvador	0.074	0.098	0.849	0.044	0.219	0.736
Fiji	0.270	0.202	0.566	0.146	0.169	0.685
Guatemala	0.384	0.123	0.501	0.073	0.174	0.753
Guyana	1.139	0.214	-0.248	0.923	0.028	0.048
Honduras	0.473	0.163	0.387	0.307	0.148	0.545
Indonesia	0.249	0.201	0.577	0.358	0.156	0.486
Iran, Islamic Rep.	0.536	0.315	0.121	0.570	0.124	0.306
Jamaica	0.067	0.181	0.787	0.164	0.264	0.572
Jordan	0.052	0.127	0.893	0.041	0.245	0.714
Lesotho	0.016	0.230	0.817	0.005	0.252	0.742
Maldives	0.037	0.279	0.712	0.000	0.265	0.734
Moldova, Rep of	0.238	0.218	0.569	0.074	0.459	0.466
Morocco	0.077	0.189	0.746	0.059	0.211	0.729

Namibia	0.087	0.139	0.760	0.318	0.114	0.569
Nicaragua	0.241	0.160	0.638	0.335	0.233	0.432
Peru	0.130	0.159	0.739	0.586	0.119	0.295
Philippines	0.176	0.139	0.715	0.095	0.256	0.649
Sri Lanka	0.096	0.156	0.770	0.051	0.161	0.788
Swaziland	0.262	0.146	0.571	0.047	0.225	0.728
Syrian Arab Rep	0.388	0.182	0.399	0.099	0.173	0.729
Thailand	0.207	0.257	0.560	0.120	0.353	0.527
Tunisia	0.093	0.178	0.791	0.040	0.252	0.708
Ukraine	0.235	0.247	0.528	0.345	0.262	0.393
Low-income countries:						
Bangladesh	0.196	0.142	0.681	0.052	0.180	0.768
Benin	0.276	0.110	0.634	0.326	0.112	0.562
Burundi	1.231	0.076	-0.240	0.177	0.135	0.689
Central African Rep.	0.874	0.077	0.084	0.950	0.016	0.034
Congo, Dem. Rep.	0.697	0.087	0.295	0.827	0.016	0.157
Côte d'Ivoire	0.276	0.102	0.664	0.244	0.109	0.647
Gambia, The	0.211	0.130	0.754	0.274	0.097	0.630
Ghana	0.280	0.131	0.616	0.278	0.235	0.487
Haiti	0.120	0.168	0.728	0.010	0.166	0.823
India	0.257	0.188	0.566	0.180	0.167	0.652
Kenya	0.256	0.122	0.630	0.120	0.135	0.745
Kyrgyz Republic	0.283	0.115	0.634	0.376	0.234	0.390
Liberia	0.950	0.064	0.493	0.800	0.066	0.135
Malawi	0.337	0.152	0.581	0.430	0.171	0.400
Mali	0.276	0.143	0.616	0.534	0.075	0.391
Mauritania	0.365	0.154	0.593	0.080	0.118	0.803
Mongolia	0.409	0.275	0.357	0.861	0.060	0.079
Mozambique	0.228	0.129	0.699	0.797	0.048	0.155
Nepal	0.441	0.148	0.416	0.515	0.127	0.358
Niger	0.316	0.085	0.631	0.129	0.163	0.708
Nigeria	0.550	0.155	0.300	0.406	0.111	0.483
Pakistan	0.275	0.119	0.623	0.109	0.174	0.717
Papua New Guinea	0.953	0.283	-0.176	0.896	0.036	0.068
Rwanda	0.553	0.092	0.376	0.063	0.126	0.811
Senegal	0.119	0.111	0.793	0.406	0.168	0.426
Sierra Leone	0.339	0.062	0.675	0.362	0.031	0.607
Sudan	0.569	0.123	0.381	0.637	0.063	0.300
Tajikistan	0.263	0.163	0.606	0.196	0.340	0.464
Togo	0.168	0.120	0.763	0.105	0.136	0.760
Uganda	0.566	0.098	0.363	0.153	0.207	0.640
Zambia	0.221	0.153	0.719	0.844	0.049	0.106
Zimbabwe	0.394	0.166	0.509	0.503	0.031	0.466

Appendix Table 5: Average annual growth rates (in%), GDPpc, TWpc and IWpc, 1995-2005 and 2000-2005

	Inclusive Wealth Report 2014		World Bank (2011)		Incl. Wealth Report 2014	
	GDPpc		CWpc		IWpc	
	1995-2005	2000-2005	1995-2005	2000-2005	1995-2005	2000-2005
High-income OECD countries:						
Australia	2.5	2.2	2.2	1.6	0.4	0.6
Austria	2.0	1.1	1.4	1.0	1.0	1.2
Belgium	1.9	1.1	1.8	1.5	1.2	1.2
Canada	2.3	1.5	1.7	1.4	0.6	1.0
Denmark	1.7	0.9	1.6	1.5	0.6	0.9
Finland	3.4	2.3	3.1	3.4	0.8	1.7
France	1.6	0.9	1.7	1.6	1.1	1.0
Germany	1.1	0.5	1.3	0.8	1.8	2.3
Greece	3.2	3.6	2.6	2.8	0.8	1.1
Iceland	3.4	3.1	3.2	2.7	0.4	0.6
Ireland	5.4	3.0	4.0	3.1	2.2	2.1
Italy	1.1	0.3	1.4	0.8	1.0	1.1
Japan	1.0	1.2	1.5	1.5	0.8	0.6
Korea, Rep.	4.2	3.9	4.5	4.8	2.2	2.1
Luxembourg	3.6	2.6	2.7	2.1	1.8	2.0
Netherlands	2.1	0.8	2.1	1.3	0.9	0.9
New Zealand	2.1	2.4	2.1	2.0	0.7	0.7
Norway	2.3	1.6	1.2	0.7	0.4	0.7
Portugal	2.1	0.4	1.9	0.8	1.1	0.7
Spain	2.7	1.7	2.3	1.7	1.7	1.2
Sweden	2.8	2.3	2.4	2.2	0.8	0.9
Switzerland	1.1	0.6	0.9	0.6	0.5	0.6
United Kingdom	2.8	2.4	2.8	2.8	1.2	1.4
United States	2.2	1.4	2.3	1.9	0.8	1.0
Average	2.4	1.7	2.2	1.9	1.0	1.1
Upper-middle-income OECD countries:						
Czech Republic	3.0	4.1	-	3.3	1.4	1.8
Hungary	3.7	4.3	3.9	5.0	1.4	1.7
Mexico	2.2	0.6	1.7	0.9	1.0	1.4
Poland	4.2	3.1	-	3.6	1.0	0.7
Slovak Republic	4.1	4.7	-	4.7	1.2	1.4
Turkey	2.8	3.1	-	4.3	0.5	0.5
Average	3.3	3.3	-	3.7	1.1	1.3
All OECD average	2.6	2.1	-	2.2	1.0	1.2
Other high-income countries:						
Bahrain	2.3	3.3	-0.7	-1.2	0.7	0.9

Israel	1.4	0.2	0.9	1.1	0.7	0.4
Kuwait	1.2	4.7	-2.3	-3.0	-3.3	-3.0
Malta	2.4	0.3	2.4	1.1	1.9	1.6
Saudi Arabia	0.5	0.1	-0.8	-1.4	-1.7	-2.3
Singapore	3.1	3.0	3.2	2.8	2.1	1.7
United Arab Emirates	0.3	-0.7	-1.5	-2.5	-2.4	-2.3
Average	1.6	1.6	0.2	-0.5	-0.2	-0.4
Other upper-middle-income countries:						
Argentina	1.2	1.0	-0.5	-0.6	0.4	0.6
Botswana	4.7	3.8	3.0	4.1	0.0	0.6
Chile	2.9	3.0	2.1	0.6	1.1	1.3
Costa Rica	2.2	2.1	1.9	2.6	1.0	0.9
Croatia	4.3	4.6	-	3.8	1.0	1.3
Gabon	-1.5	-0.4	-1.1	-3.2	-1.7	-1.4
Latvia	7.3	8.6	-	9.5	2.2	3.1
Lithuania	6.5	8.0	-	7.0	1.4	1.9
Malaysia	2.3	2.5	2.2	4.2	0.1	-0.3
Mauritius	3.3	2.3	4.1	4.5	1.3	1.7
Panama	2.5	2.4	3.2	2.7	0.3	0.6
Romania	3.0	5.9	-	5.4	0.6	0.1
Russian Federation	4.1	6.4	-	6.8	0.3	0.4
South Africa	1.8	2.5	1.3	2.4	-0.1	0.6
Trinidad and Tobago	7.1	7.4	2.8	0.9	0.4	0.5
Uruguay	0.9	0.2	0.3	-0.4	0.7	0.2
Venezuela, RB	-0.3	0.7	-1.4	-1.2	-1.1	-1.0
Average	3.1	3.6	-	2.9	0.5	0.7
Lower-middle-income countries:						
Albania	5.3	5.2	-	8.6	0.7	1.2
Algeria	2.4	3.3	-1.7	-2.6	-0.7	-0.7
Armenia	8.8	11.6	-	8.9	0.8	1.0
Belize	3.1	3.0	2.5	1.5	-1.2	-1.0
Bolivia	1.2	1.1	-0.8	-2.6	-2.0	-2.0
Brazil	1.0	1.5	0.9	0.7	0.1	0.0
Bulgaria	3.1	6.0	-	6.2	0.7	1.0
Cameroon	1.8	1.4	1.8	2.0	-1.7	-1.7
China	8.0	8.7	6.7	5.9	1.6	1.9
Colombia	0.6	2.0	0.9	1.5	-0.3	-0.4
Congo, Rep.	0.6	1.6	-3.5	-1.4	-2.8	-2.6
Dominican Republic	3.5	2.0	3.7	3.3	1.0	1.2
Ecuador	1.6	3.4	1.2	2.2	-1.1	-0.9
Egypt, Arab Rep.	2.6	1.8	2.2	1.4	0.6	0.4
El Salvador	2.1	2.0	1.5	1.6	1.8	2.1
Fiji	2.0	1.6	-1.3	-2.1	0.4	1.0
Guatemala	1.0	0.5	1.7	1.8	0.2	0.0

Guyana	1.5	0.4	2.4	1.4	-0.2	-0.3
Honduras	1.7	2.5	3.3	4.0	-0.6	-0.6
Indonesia	1.4	3.4	2.0	3.3	0.0	-0.2
Iran, Islamic Rep.	3.3	4.3	2.4	7.5	-0.5	-0.1
Jamaica	-0.2	0.7	1.5	2.4	0.4	0.4
Jordan	2.7	4.2	3.6	4.5	0.3	0.2
Lesotho	1.9	1.8	1.9	3.0	0.7	0.2
Maldives	4.6	3.2	-	3.7	3.2	3.2
Moldova, Rep of	3.6	8.6	-	9.1	0.1	0.3
Morocco	3.1	3.8	1.6	3.1	1.0	1.2
Namibia	1.5	3.0	1.2	2.0	-0.8	-0.1
Nicaragua	2.4	1.8	4.5	3.4	-0.2	-0.3
Peru	1.8	2.8	1.6	1.6	-0.7	-0.8
Philippines	1.9	2.5	1.4	1.8	0.4	0.1
Sri Lanka	3.6	2.8	3.6	4.6	1.1	0.2
Swaziland	1.3	1.5	0.2	0.0	0.3	0.4
Syrian Arab Rep	1.6	2.0	0.0	-0.2	-0.6	-1.0
Thailand	1.6	3.9	2.9	4.9	0.7	0.6
Tunisia	3.8	3.3	3.7	4.1	1.1	1.0
Ukraine	3.6	8.3	-	8.0	0.2	0.5
Average	2.6	3.3	-	2.9	0.1	0.2
Low-income countries:						
Bangladesh	3.4	3.7	2.5	3.0	1.7	1.6
Benin	1.4	0.9	0.9	-0.3	-1.2	-1.2
Burundi	-1.3	-0.5	-1.4	0.4	-0.2	0.2
Central African Rep.	-1.7	-2.1	-0.2	-1.4	-1.9	-1.7
Congo, Dem. Rep.	-2.5	1.3	-1.5	0.9	-2.4	-2.6
Côte d'Ivoire	-0.4	-1.6	-0.5	-0.7	-0.4	-0.1
Gambia, The	0.8	0.3	0.9	2.3	-0.2	0.6
Ghana	2.3	2.7	2.7	3.0	-0.9	-0.7
Haiti	-0.9	-2.1	-0.5	0.3	0.9	0.7
India	4.5	5.2	3.5	3.1	0.8	0.9
Kenya	0.3	1.1	1.7	1.1	0.0	0.4
Kyrgyz Republic	3.6	3.4	-	7.5	-0.3	0.1
Liberia	8.6	-6.8	-	-0.4	-4.3	-2.5
Malawi	0.4	-0.3	-1.8	-4.5	-1.7	-1.5
Mali	1.9	3.1	1.9	1.4	-1.8	-2.0
Mauritania	0.9	1.7	0.5	-0.6	0.3	1.1
Mongolia	3.5	5.2	3.3	-0.1	-1.2	-2.2
Mozambique	6.1	5.8	4.4	4.4	-2.4	-2.3
Nepal	1.7	1.2	2.1	2.2	-1.7	-1.2
Niger	0.3	0.9	0.2	0.3	-1.3	-1.1
Nigeria	4.2	7.6	-1.6	1.2	-1.9	-1.7
Pakistan	1.8	3.0	1.5	2.5	0.7	1.1

Papua New Guinea	-1.1	-0.4	-4.4	-6.0	-2.8	-2.7
Rwanda	3.6	4.9	0.8	3.3	0.0	0.4
Senegal	2.0	1.9	1.2	1.8	-1.0	-1.1
Sierra Leone	-2.1	7.7	0.7	3.8	-1.2	-1.5
Sudan	4.3	4.3	2.3	2.8	-1.5	-1.0
Tajikistan	3.5	8.3	-	8.4	-1.1	-0.6
Togo	-1.2	-1.2	0.2	-0.4	-0.4	-0.2
Uganda	3.2	3.2	3.3	3.1	-0.4	-0.4
Zambia	1.2	2.3	0.1	0.3	-2.3	-2.1
Zimbabwe	-3.0	-4.5	-2.5	-5.2	-0.8	0.0
Average	1.5	1.9	-	1.2	-1.0	-0.7
Non-OECD average	2.2	2.7	-	2.1	-0.2	-0.1
Overall average	2.3	2.6	-	2.1	0.1	0.2

Appendix Table 6: Average annual growth rates (in %), NCpc's, 1995-05, 2000-05

	World Bank (2011)		Inclusive Wealth Report	
	NCpc ^{CW}	NCpc ^{CW}	NCpc ^{IW}	NCpc ^{IW}
	1995-2005	2000-2005	1995-2005	2000-2005
High-income OECD countries:				
Australia	3.0	-1.1	-1.6	-1.7
Austria	-1.9	-5.4	-0.2	-0.5
Belgium	3.3	-8.6	1.9	1.4
Canada	1.3	-1.5	-1.4	-1.5
Denmark	1.8	-3.4	-4.5	-5.4
Finland	0.0	-12.2	-0.4	-1.0
France	-0.5	-8.8	-0.2	-0.2
Germany	0.3	-8.4	-0.6	-0.6
Greece	-2.0	-9.1	-5.3	-8.8
Iceland	-3.5	-4.8	-1.1	-1.1
Ireland	-4.4	-9.3	-1.8	-2.5
Italy	-0.9	-5.6	0.1	-0.5
Japan	-5.4	-15.9	-0.5	-0.8
Korea, Rep.	-0.7	-2.4	0.6	0.7
Luxembourg	-6.0	-12.8	-0.2	-1.0
Netherlands	-0.3	-1.8	-3.5	-3.6
New Zealand	-0.3	-5.2	-3.0	-5.2
Norway	5.8	4.0	-4.7	-5.2
Portugal	-3.4	-9.2	-0.5	-0.7
Spain	0.0	-7.0	-0.9	-1.8
Sweden	-0.3	-5.5	0.1	0.5
Switzerland	-5.1	-7.2	-0.7	-0.7
United Kingdom	-0.8	-3.3	-9.1	-10.3
United States	0.6	-0.8	-1.5	-1.3
Average	-0.8	-6.1	-1.6	-2.2
Upper-middle-income OECD countries:				
Czech Republic	-	-9.6	-4.0	-4.4
Hungary	-3.4	-8.2	-0.7	-0.3
Mexico	-5.6	-5.5	-2.6	-2.5
Poland	-	-3.8	-2.1	-2.4
Slovak Republic	-	-9.0	-0.1	0.0
Turkey	-	-9.0	-1.7	-1.7
Average	-	-7.5	-1.9	-1.9
All OECD average	-	-6.3	-1.7	-2.1
Other high-income countries:				
Bahrain	3.8	7.5	-8.7	-9.5
Israel	-0.7	1.6	-3.1	-3.4
Kuwait	4.2	4.6	-4.0	-3.8
Malta	6.8	-1.9	-2.3	0.1
Saudi Arabia	1.5	5.3	-3.5	-4.6

Singapore	-4.7	-3.2	-2.2	-2.4
United Arab Emirates	-1.3	1.6	-6.4	-6.8
Average	1.4	2.2	-4.3	-4.3
Other upper-middle-income countries:				
Argentina	5.6	11.6	-1.6	-1.2
Botswana	-1.9	1.7	-2.5	-2.2
Chile	5.2	7.1	-1.5	-1.1
Costa Rica	-1.3	-2.3	-2.9	-1.8
Croatia	-	-10.2	0.9	0.7
Gabon	2.9	-1.6	-3.0	-2.7
Latvia	-	-6.5	1.7	1.5
Lithuania	-	-7.5	1.1	1.1
Malaysia	5.3	6.1	-3.8	-3.9
Mauritius	-1.9	-9.2	-1.9	-2.2
Panama	-1.6	0.8	-2.4	-2.1
Romania	-	-3.5	-0.5	-0.7
Russian Federation	-	1.9	-0.1	-0.1
South Africa	-8.8	-9.2	-2.1	-2.1
Trinidad and Tobago	9.3	15.3	-3.1	-3.8
Uruguay	4.7	7.2	-0.3	-0.3
Venezuela, RB	-0.2	2.8	-2.7	-2.6
Average	-	0.3	-1.5	-1.4
Lower-middle-income countries:				
Albania	-	-8.0	-0.2	-0.9
Algeria	6.5	6.7	-3.3	-3.5
Armenia	-	-3.3	-0.9	-1.3
Belize	0.7	1.2	-3.0	-2.9
Bolivia	0.1	3.0	-2.5	-2.4
Brazil	3.4	2.4	-1.9	-1.8
Bulgaria	-	-11.3	0.5	0.7
Cameroon	1.0	-0.2	-3.4	-3.3
China	2.8	1.3	-1.6	-1.6
Colombia	0.0	-6.0	-2.2	-2.2
Congo, Rep.	0.0	0.5	-3.0	-2.8
Dominican Republic	-1.6	1.7	-1.9	-1.8
Ecuador	4.4	-3.7	-3.4	-3.6
Egypt, Arab Rep.	3.4	10.0	-4.8	-4.9
El Salvador	-1.8	-1.8	-0.4	-0.1
Fiji	-4.1	-12.9	-0.8	-0.4
Guatemala	4.3	6.1	-3.9	-4.0
Guyana	0.5	-1.3	-0.3	-0.4
Honduras	5.1	13.2	-4.2	-3.5
Indonesia	3.7	-5.2	-2.2	-2.0
Iran, Islamic Rep.	4.6	4.6	-2.2	-2.1

Jamaica	-7.0	-7.3	-1.4	-1.3
Jordan	-0.3	5.5	-2.6	-2.8
Lesotho	-12.1	-24.3	-1.4	-1.1
Maldives	-	0.4	-1.7	-1.7
Moldova, Rep of	-	-5.5	2.7	3.2
Morocco	1.4	-3.8	-1.3	-1.2
Namibia	-2.1	3.1	-2.8	-2.4
Nicaragua	-2.4	-1.0	-2.4	-2.4
Peru	3.7	2.8	-1.7	-1.5
Philippines	2.2	-1.7	-1.7	-1.7
Sri Lanka	-5.0	-4.6	-1.0	-1.0
Swaziland	-4.3	-13.9	-0.6	0.0
Syrian Arab Republic	0.4	5.7	-6.1	-6.5
Thailand	4.3	-3.8	-2.3	-2.2
Tunisia	3.8	3.2	-3.1	-3.0
Ukraine	-	-1.0	0.6	0.6
Average	-	-1.3	-2.0	-1.9
Low-income countries:				
Bangladesh	2.5	3.1	-2.2	-2.1
Benin	-6.1	-12.7	-4.2	-4.2
Burundi	5.9	9.3	-2.3	-2.7
Central African Republic	-2.3	-7.2	-2.0	-1.8
Congo, Dem. Rep.	-3.2	-8.7	-2.9	-3.1
Côte d'Ivoire	3.8	-4.2	-2.1	-1.6
Gambia, The	4.8	1.2	-2.5	-2.6
Ghana	0.9	-8.7	-3.3	-3.5
Haiti	-5.1	-5.9	-3.4	-3.3
India	-2.3	-3.7	-2.1	-2.1
Kenya	-3.9	-7.2	-3.0	-2.8
Kyrgyz Republic	-	-3.6	-0.6	0.0
Liberia	-	4.2	-4.8	-2.9
Malawi	-8.3	-12.8	-3.0	-3.2
Mali	-3.1	-10.3	-3.2	-3.5
Mauritania	5.0	2.5	-4.4	-4.5
Mongolia	-8.2	-7.7	-1.5	-2.6
Mozambique	-4.7	-7.5	-3.1	-3.0
Nepal	0.4	-2.1	-3.9	-3.5
Niger	-3.5	-8.0	-5.3	-3.9
Nigeria	-4.2	-3.7	-3.6	-3.5
Pakistan	-1.6	-4.1	-3.1	-2.9
Papua New Guinea	0.2	-4.4	-3.1	-3.0
Rwanda	4.1	6.7	-3.6	-1.1
Senegal	-4.4	-11.0	-3.2	-3.4
Sierra Leone	-0.8	0.7	-3.6	-5.2

Sudan	-4.0	-1.4	-3.0	-2.7
Tajikistan	-	-2.8	-1.2	-0.9
Togo	-6.5	-8.0	-6.1	-6.5
Uganda	1.9	-5.8	-5.4	-5.6
Zambia	-4.9	-11.6	-2.8	-2.6
Zimbabwe	1.8	-0.3	-2.4	-1.8
<i>Average</i>	-	-4.2	-3.2	-3.0
<i>Non-OECD average</i>	-	-1.8	-2.5	-2.4
<i>Overall average</i>	-	-2.9	-2.3	-2.3

Appendix Table 7: Average annual growth rates (in%) - both produced capital per capita, intangible capital per capita and human capital per capita

	World Bank (2011)		Inclusive Wealth Report 2014		World Bank (2011)		Inclusive Wealth Report 2014	
	PCpc ^{CW}		PCpc ^{IW}		ICpc ^{CW}		HCpc ^{IW}	
	1995-2005	2000-2005	1995-2005	2000-2005	1995-2005	2000-2005	1995-2005	2000-2005
High-income OECD countries:								
Australia	2.1	2.5	3.2	3.5	2.2	1.8	0.4	0.7
Austria	1.6	1.2	2.2	1.7	1.5	1.1	0.6	1.0
Belgium	1.5	1.7	2.2	1.9	1.7	2.1	0.8	1.0
Canada	1.6	2.0	2.5	2.7	1.5	1.5	1.3	1.9
Denmark	2.0	2.0	2.9	2.8	1.2	1.3	0.0	0.3
Finland	0.6	1.0	1.8	2.0	3.7	2.6	0.5	1.9
France	1.1	1.4	1.8	1.8	1.8	1.9	0.9	0.7
Germany	0.9	0.2	1.8	1.5	1.3	0.8	2.0	2.9
Greece	1.5	2.3	2.3	3.1	3.5	3.8	1.0	1.4
Iceland	2.1	2.6	2.7	3.0	3.8	3.2	0.6	0.9
Ireland	6.2	6.3	4.0	3.9	3.8	3.1	1.5	1.4
Italy	0.9	0.9	1.9	1.8	1.7	1.0	0.5	0.8
Japan	0.6	0.1	1.8	1.4	1.8	2.0	0.3	0.2
Korea, Rep.	4.6	4.3	5.9	5.0	4.6	5.4	0.8	0.8
Luxembourg	3.7	3.7	3.7	4.1	1.2	0.8	0.9	0.9
Netherlands	1.9	1.5	2.5	2.1	2.1	1.1	0.4	0.5
New Zealand	1.3	1.7	2.3	2.6	2.5	3.8	0.8	1.2
Norway	1.1	0.7	1.8	1.6	-0.1	-0.7	0.8	1.2
Portugal	2.1	1.4	3.5	2.9	2.3	1.2	0.4	0.0
Spain	3.0	3.5	2.9	2.8	2.4	1.9	1.3	0.6
Sweden	0.8	1.0	1.9	2.0	2.7	2.4	0.5	0.6
Switzerland	-0.2	-0.4	1.5	1.4	1.2	1.0	0.1	0.4
United Kingdom	1.8	2.1	2.8	2.8	3.1	3.1	0.9	1.1
United States	2.1	1.8	3.3	3.2	2.4	2.0	0.3	0.5
Average	1.9	1.9	2.6	2.6	2.2	2.0	0.7	1.0
Upper-middle-income OECD countries:								
Czech Republic	-	2.6	2.5	2.4	-	4.6	1.0	1.6
Hungary	1.4	2.1	2.3	2.8	5.4	6.9	1.2	1.4
Mexico	1.5	1.1	2.1	2.3	2.3	1.3	1.3	1.8
Poland	-	2.8	4.6	3.7	-	4.7	0.5	0.2
Slovak Republic	-	1.9	2.1	1.9	-	7.2	0.9	1.3
Turkey	-	2.4	3.1	2.4	-	5.6	0.0	0.1
Average	-	2.2	2.8	2.6	-	5.1	0.8	1.1
All OECD average	-	1.9	2.7	2.6	-	2.6	0.8	1.0

Other high-income countries:								
Bahrain	-1.9	1.2	1.0	2.5	-4.2	-10.8	1.0	0.7
Israel	1.0	0.1	1.7	0.8	0.9	0.9	0.5	0.3
Kuwait	-1.3	1.0	1.8	3.2	!	!	0.4	0.6
Malta	1.4	-0.3	4.5	3.4	2.5	1.1	1.3	1.1
Saudi Arabia	-1.7	-1.3	0.8	0.3	-18.5	-43.2	1.0	1.1
Singapore	1.5	-0.6	4.2	2.7	2.1	2.7	1.1	1.3
United Arab Emirates	-2.9	-3.1	-2.5	-2.6	1.2	-4.0	1.8	1.8
Average	-0.6	-0.4	1.6	1.5	-	-	1.0	1.0
Other upper-middle-income countries:								
Argentina	-0.2	-0.2	0.6	-0.1	-1.5	-2.8	1.2	1.7
Botswana	7.5	8.8	5.3	5.3	1.0	0.3	1.3	2.0
Chile	4.5	3.4	5.2	4.5	0.7	-1.7	1.1	1.3
Costa Rica	2.4	4.4	2.6	2.7	2.4	3.2	1.3	1.0
Croatia	-	8.2	3.9	4.3	-	4.3	0.4	0.6
Gabon	-2.3	-2.1	-1.3	-1.4	-	46.7	1.0	1.1
Latvia	-	3.3	4.2	5.9	-	14.0	1.7	2.5
Lithuania	-	2.4	2.2	3.0	-	9.5	1.1	1.6
Malaysia	2.2	0.3	3.3	1.9	0.8	4.7	0.7	0.3
Mauritius	3.6	2.9	4.2	3.8	5.4	8.0	0.5	1.1
Panama	1.8	-0.1	2.4	1.2	4.4	3.6	0.8	1.3
Romania	-	1.5	2.0	2.7	-	8.6	0.4	-0.7
Russian Federation	-	-1.0	-0.7	0.0	-	34.0	1.6	1.3
South Africa	-1.6	-0.4	0.6	1.1	3.4	4.4	0.3	1.2
Trinidad and Tobago	1.8	2.3	0.9	1.9	-0.9	-8.0	2.0	1.8
Uruguay	0.6	0.2	2.0	1.1	-0.1	-1.1	0.6	0.1
Venezuela, RB	-0.4	-0.2	-1.4	-1.5	-3.8	-7.6	1.4	1.3
Average	-	2.0	2.2	2.1	-	7.1	1.0	1.1
Lower-middle-income countries:								
Albania	-	4.1	1.2	2.5	-	13.1	1.0	1.5
Algeria	-0.5	1.0	0.0	0.4	-20.7	-35.3	1.3	1.1
Armenia	-	2.9	1.1	2.3	-	12.5	0.8	0.6
Belize	1.7	1.4	2.0	1.9	5.2	2.7	1.3	1.6
Bolivia	0.4	-0.8	1.5	0.2	-2.0	-9.2	1.5	1.5
Brazil	-0.4	-0.1	0.5	0.3	0.8	0.5	1.2	1.0
Bulgaria	-	0.5	1.2	2.7	-	11.4	0.5	0.4
Cameroon	-1.8	-0.5	0.0	0.9	2.8	3.1	0.5	0.0
China	8.7	9.2	9.3	9.6	7.2	5.7	1.0	0.8
Colombia	0.6	0.5	0.5	0.3	1.2	3.5	1.1	0.9
Congo, Rep.	-2.4	-2.9	-1.4	-1.2	4.1	1.2	0.3	0.3
Dominican Republic	2.7	3.0	4.2	3.2	4.5	3.4	0.6	1.0
Ecuador	1.6	2.7	0.4	1.0	-2.6	12.3	0.7	0.7
Egypt, Arab Rep.	0.2	-0.1	3.8	3.2	2.0	-0.8	0.8	0.6
El Salvador	0.8	1.9	2.9	2.9	2.1	2.0	1.6	2.0

Fiji	1.2	1.2	1.9	2.6	-0.1	5.3	0.4	0.9
Guatemala	1.9	3.0	1.4	1.1	0.1	-1.2	0.4	0.2
Guyana	0.1	-0.3	2.3	1.4	-3.7	-8.9	0.1	-0.1
Honduras	2.3	1.7	2.3	1.8	1.0	-2.9	1.3	0.6
Indonesia	1.8	1.7	3.8	2.9	1.2	8.2	0.8	0.4
Iran, Islamic Rep.	3.5	4.2	1.1	2.4	-6.4	!	2.9	2.9
Jamaica	2.9	3.1	1.6	1.8	2.4	3.6	0.5	0.3
Jordan	-0.5	-0.1	0.6	0.7	5.0	6.0	0.3	0.2
Lesotho	2.7	1.6	1.7	0.3	2.7	4.0	0.4	0.2
Maldives	-	4.2	7.1	7.5	-	3.8	2.2	1.9
Moldova, Rep of	-	-1.9	-0.8	-0.2	-	32.0	0.7	0.4
Morocco	2.6	3.9	2.7	3.2	1.2	3.4	0.7	0.9
Namibia	3.2	4.4	-0.1	0.8	1.3	1.6	0.4	1.2
Nicaragua	2.8	2.1	0.4	0.5	6.7	4.0	1.5	1.1
Peru	-0.3	-0.8	0.9	0.4	1.7	1.7	1.0	0.2
Philippines	-0.7	-0.9	1.3	1.0	1.7	3.3	0.4	0.0
Sri Lanka	3.6	3.3	3.3	2.9	5.4	6.1	0.9	-0.3
Swaziland	-0.1	0.5	-1.2	-2.2	3.0	12.6	0.8	1.4
Syrian Arab Republic	-0.1	0.1	0.9	1.3	-2.6	-6.5	0.1	-0.6
Thailand	2.4	2.2	2.0	1.2	2.3	10.5	0.7	1.0
Tunisia	2.5	2.5	2.0	2.2	3.9	4.5	1.1	0.8
Ukraine	-	-1.7	-0.8	-0.2	-	22.2	0.5	0.8
Average	-	1.5	1.7	1.7	-	-	0.9	0.8
Low-income countries:								
Bangladesh	5.0	5.0	4.9	5.4	2.0	2.6	1.3	1.0
Benin	2.1	2.1	0.7	1.1	6.1	8.0	0.6	0.3
Burundi	-4.6	-4.9	-1.1	-1.3	!	!	0.6	1.3
Central African Republic	-2.1	-3.0	-2.1	-1.9	!	!	0.5	0.6
Congo, Dem. Rep.	-5.7	-4.3	-3.4	-2.2	4.0	!	0.4	0.4
Côte d'Ivoire	-3.3	-2.7	-1.0	-0.7	-2.0	-0.1	0.4	0.7
Gambia, The	0.6	2.2	4.9	10.6	0.8	3.4	0.3	0.9
Ghana	6.8	6.3	-0.3	0.4	2.7	9.2	0.4	0.5
Haiti	1.6	1.1	1.0	1.5	0.1	1.4	0.9	0.6
India	5.3	6.3	5.0	5.6	7.1	5.9	0.8	0.7
Kenya	-1.1	-0.4	0.3	0.5	5.4	5.8	0.5	1.0
Kyrgyz Republic	-	-1.5	-1.1	-0.2	-	16.6	0.6	0.5
Liberia	-	9.9	-6.2	-3.8	-	-8.1	1.0	0.5
Malawi	-1.3	1.1	-2.6	-2.2	5.1	0.5	0.6	0.9
Mali	2.1	2.9	0.6	0.6	4.9	8.6	0.0	-0.2
Mauritania	-0.3	5.5	0.7	4.1	-1.1	-3.8	0.8	1.4
Mongolia	-2.9	-1.4	0.3	-0.1	!	17.9	1.3	1.4
Mozambique	5.3	5.3	3.4	3.6	9.1	9.6	0.2	0.2
Nepal	3.3	2.7	2.7	2.5	3.4	7.1	1.0	1.2
Niger	-1.9	1.5	-3.1	-2.3	3.0	5.3	0.2	-0.3

Nigeria	1.4	3.3	-3.3	-3.0	0.9	9.4	0.3	0.4
Pakistan	1.3	1.2	0.9	0.8	3.1	6.3	1.3	1.8
Papua New Guinea	0.3	0.7	0.8	1.5	!	68.7	0.2	0.2
Rwanda	-2.2	2.2	-2.0	1.6	-2.2	-0.8	0.7	0.3
Senegal	3.0	4.4	1.8	2.0	2.0	3.7	0.5	0.1
Sierra Leone	-5.0	-1.5	-2.1	-1.3	2.6	6.2	0.7	1.0
Sudan	4.3	6.2	10.9	13.4	!	8.4	0.7	0.6
Tajikistan	-	-5.5	-3.3	-2.9	-	24.1	0.9	1.4
Togo	-2.1	0.3	-2.8	-1.8	3.1	1.4	1.2	1.2
Uganda	6.9	5.9	2.6	2.7	5.0	41.0	0.3	0.1
Zambia	0.8	4.4	1.8	3.1	1.6	3.0	0.2	0.6
Zimbabwe	-0.6	-2.8	1.4	2.2	-4.8	-7.6	1.2	2.0
Average	-	1.6	0.3	1.2	-	-	0.6	0.7
Non-OECD average	-	1.5	1.3	1.6	-	-	0.8	0.8
Overall average	-	1.6	1.6	1.8	-	-	0.8	0.9
<i>Note: “-“: data not available; “!”= one of the intangible capital per capita values are negative.</i>								

Appendix Table 8: Sustainability indices

	ANS (% GNI)	ANSpc	ΔANS	ΔPWpc	ΔCWpc	ΔIWpc	ΔNCpc ^{CW}	ΔNCpc ^{IW}
High-income OECD countries:								
Australia	6.07	2217	-1.34	655	40793	13883	-2214	-12548
Austria	14.14	3100	0.44	2284	27311	24523	-2817	-177
Belgium	13.90	2917	n/a	2283	41034	24543	-2651	31
Canada	11.70	2081	-1.38	881	36556	24646	-2841	-10834
Denmark	13.83	2891	1.33	2475	54995	21613	-3588	-1517
Finland	15.42	3586	-2.95	3207	88386	35631	-16223	-1513
France	11.64	2083	-2.28	1473	44854	19657	-4788	-39
Germany	10.98	2808	2.04	2871	20873	46726	-2985	-527
Greece	1.97	217	-2.11	-35	50955	10402	-4597	-6879
Iceland	7.39	-1091	0.7	-2745	115847	22529	-3372	-15125
Ireland	22.2	6847	1.69	4327	87249	41073	-6629	-936
Italy	7.8	1241	-1.36	552	20024	16448	-2422	-157
Japan	8.53	2265	-1.79	2252	39638	12460	-2538	-123
Korea, Rep.	22.9	3300	0.44	3045	52732	17728	-337	303
Luxembourg	26.1	13885	4.89	11484	89869	54226	-5463	-135
Netherlands	14.53	3825	-1.54	3541	37371	17620	-1218	-991
New Zealand	9.29	496	-1.54	-501	39436	9274	-15709	-9629
Norway	15.76	5504	3.18	3254	29319	21277	20010	-16481
Portugal	1.36	-577	-4.96	-811	12089	8831	-2446	-102
Spain	11.59	1869	-1.29	584	33142	18814	-3108	-490
Sweden	18.83	4540	1.21	4184	64599	20140	-5004	556
Switzerland	19.3	8291	1.15	6811	21186	18227	-4098	-382
United Kingdom	6.92	1162	0.95	613	86646	26932	-1132	-996
United States	9.15	182	-3.16	-821	66569	20884	-577	-2009
Upper-middle-income OECD countries:								
Czech Republic	9.24	703	2.03	582	27878	13186	-2845	-445
Hungary	5.45	329	2.53	392	38552	11161	-3031	-74
Mexico	10.34	418	-2.53	164	5597	5089	-2111	-1095
Poland	6.99	317	-0.75	329	22591	3650	-1860	-513
Slovak Republic	4.31	n/a	0.43	n/a	29901	7990	-2818	-4
Turkey	9.16	288	-2.39	71	22153	1710	-3031	-426
Other high-income countries:								
Bahrain	9.95	1193	8.57	-957	-12831	137648	26249	-1786
Israel	13.2	1763	2.15	905	17205	4885	362	-168
Kuwait	12.48	3733	1.63	-6566	-53522	100153	43962	-108355
Malta	0.85	n/a	-2.53	n/a	13266	12973	-415	1
Saudi Arabia	11.4	-54	14.26	-3750	-10781	-33875	22557	-39669
Singapore	33.49	8265	-0.09	5007	39312	20503	-0.3	-1
United Arab Emirates	n/a	n/a	n/a	n/a	-45962	137648	9527	-92405
Other upper-middle-income countries:								
Argentina	3.92	164	5.46	-40	-2121	2281	4517	-1009

Botswana	37.73	2269	3.36	2342	10911	2141	449	-3687
Chile	2.06	255	-0.09	-129	2897	5533	5639	-901
Costa Rica	15.99	460	4.87	136	9630	3125	-1169	-711
Croatia	8.24	738	n/a	735	28900	9602	-3684	174
Gabon	-1.31	393	10.01	-641	-10043	-13491	-3429	-14724
Latvia	7.07	282	8.58	423	45709	11993	-2827	654
Lithuania	8.55	269	-3.72	419	39478	7838	-2757	236
Malaysia	16.09	586	-8.3	62	12210	-981	3338	-3014
Mauritius	9.46	334	-3.75	137	17036	4479	-5502	-108
Panama	15.98	587	2.86	315	9524	1623	294	-1254
Romania	-5.89	91	2.43	142	19263	387	-1719	-266
Russian Federation	1.14	-13	-1.62	236	20959	2354	2802	-426
South Africa	3.65	-63	2.83	-245	9772	1969	-3363	-1427
Trinidad and Tobago	-4.8	-61	7.49	-258	4911	3829	24213	-6187
Uruguay	7.5	345	-5.78	324	-1535	842	2517	-143
Venezuela, RB	8.38	208	5.46	-613	-4238	-7216	4015	-9116
Lower-middle-income countries:								
Albania	7.16	158	-6.79	91	18633	2195	-2491	-436
Algeria	n/a	361	n/a	-69	-4194	-1415	4480	-2488
Armenia	17.27	262	27.22	284	10513	1037	-564	-52
Belize	15.67	-211	3.37	-1142	4571	-4146	1408	-7066
Bolivia	-11.28	39	-9.64	-142	-2107	-11319	1146	-12167
Brazil	4.78	170	3.06	-163	2848	7	1661	-2384
Bulgaria	2.11	17	2.51	90	17101	2335	-4209	303
Cameroon	-1.71	29	-0.97	-98	1634	-2078	-39	-2173
China	32.93	636	8.98	570	4924	1835	250	-453
Colombia	2.68	-17	4.16	-214	3920	-1411	-2688	-3017
Congo, Rep.	-63.9	-611	-23.86	-1128	-438	-10477	370	-10100
Dominican Republic	2.22	75	-5.04	-104	10295	2383	380	-297
Ecuador	-2.85	-15	-2.23	-423	4455	-1696	-4574	-2584
Egypt, Arab Rep.	-0.15	-12	-7.94	-155	1412	286	1839	-358
El Salvador	9.4	27	-0.67	-113	4104	2978	-367	-8
Fiji	13.53	-12	2.26	-165	-4643	2285	-10535	-126
Guatemala	3.8	98	3.56	-439	3644	13	4406	-509
Guyana	2.45	32	1.28	1	1312	-3717	-1525	-4143
Honduras	18.8	242	1.28	-104	4632	-938	5817	-1804
Indonesia	12	0	1.1	-114	2987	-190	-1462	-843
Iran, Islamic Rep.	n/a	-31	n/a	-440	10487	-470	3658	-4578
Jamaica	9.98	221	-1.94	141	9117	1362	-2367	-706
Jordan	8.79	156	-5.69	30	10350	342	647	-202
Lesotho	n/a	59	n/a	65	2812	165	-768	-4
Maldives	6.02	566	-21.71	375	4486	5361	19	-1
Moldova, Rep of	15	103	4.59	196	6369	235	-1319	168
Morocco	24.84	423	6.95	341	4492	1816	-507	-113
Namibia	22.52	545	0.81	389	5798	-370	737	-3577
Nicaragua	13.15	62	1.98	25	3051	-239	-235	-774

Peru	8.83	176	-0.1	3	3470	-2751	769	-3139
Philippines	32.92	208	4.07	109	1733	73	-303	-114
Sri Lanka	20.59	230	2.55	189	4414	172	-533	-52
Swaziland	15.47	280	9.7	108	-67	1110	-10570	-2
Syrian Arab Republic	-7.05	-181	-3.07	-485	-167	-1101	1972	-842
Thailand	11.25	363	-1.96	222	8194	934	-1624	-426
Tunisia	5.67	215	-0.99	118	8768	1999	648	-272
Ukraine	8.33	154	12.54	261	9629	919	-336	392
Low-income countries:								
Bangladesh	18.19	86	2.64	43	1005	382	202	-29
Benin	7.25	8	-3.3	-104	-123	-760	-2325	-933
Burundi	-16.79	-13	3.44	-112	40	33	1006	-95
Central African Republic	n/a	-15	n/a	-95	-469	-4116	-2521	-4091
Congo, Dem. Rep.	-11.26	-4	-10.78	-1128	100	-2795	-873	-2824
Côte d'Ivoire	3.54	-23	-1.31	-100	-542	-56	-943	-342
Gambia, The	2.40	7	n/a	-31	621	180	72	-227
Ghana	7.4	48	5.21	-27	1319	-346	-1438	-489
Haiti	21.98	n/a	n/a	n/a	172	180	-430	-10
India	20.96	147	7.05	84	1513	486	-548	-227
Kenya	10.77	34	5.21	-59	552	190	-1191	-171
Kyrgyz Republic	1.37	6	1.35	-33	3309	52	-594	-6
Liberia	n/a	n/a	n/a	n/a	-63	-1530	608	-1410
Malawi	-7.18	-6	-6.27	-37	-872	-302	-1045	-293
Mali	8.03	16	-5.73	-64	461	-1133	-1287	-1117
Mauritania	n/a	-186	n/a	-319	-315	1063	463	-391
Mongolia	19.35	214	11.95	79	-75	-9973	-2583	-10404
Mozambique	-5.4	-14	-6.77	-45	1082	-1616	-568	-1739
Nepal	24.49	65	9.66	-1	573	-368	-269	-576
Niger	6.39	37	11.64	-19	63	-310	-707	-150
Nigeria	-13.63	-94	-10.38	-280	656	-1055	-1217	-961
Pakistan	12.03	88	3.26	-24	1451	528	-756	-177
Papua New Guinea	n/a	-2	n/a	-213	-3134	-7251	-2135	-7411
Rwanda	6.21	28	9.46	-30	805	68	841	-14
Senegal	6.53	n/a	3.50	n/a	1152	-726	-1185	-962
Sierra Leone	-4.85	4	16.48	-42	699	-618	47	-841
Sudan	-10.87	-62	-14.17	-212	1578	-758	-485	-1353
Tajikistan	-16.94	-11	n/a	-45	2299	-149	-268	-45
Togo	-5.5	-4	6.53	-45	-142	-86	-544	-388
Uganda	4.98	28	9.02	-107	851	-67	-1143	-163
Zambia	-1.17	19	16.48	-26	145	-3884	-1684	-4241
Zimbabwe	n/a	-31	n/a	-45	-1479	-7	-33	-599
<i>Note: Data are for the year 2005, or changes from 2000 to 2005.</i>								