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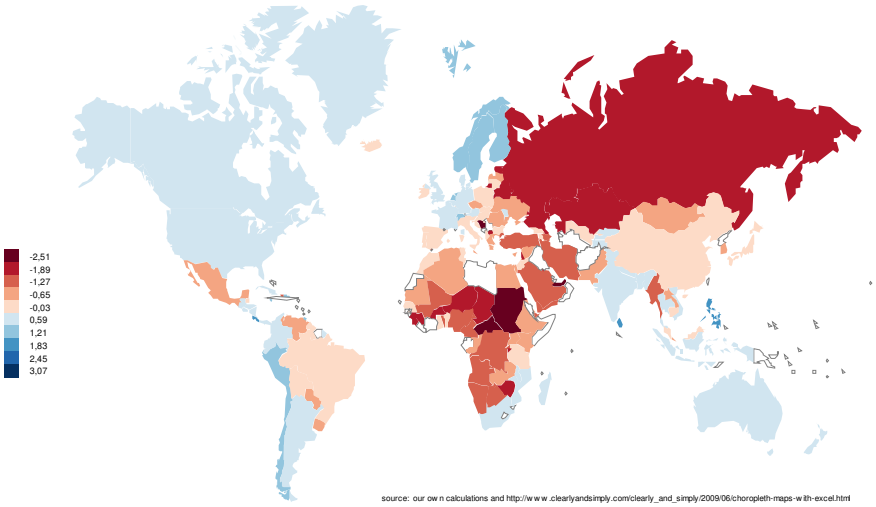

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ABSTRACT

In this book, we present a first empirical reflection on 'smart development', its measurement and its possible 'drivers' and 'bottlenecks'. The very idea of 'smart development' was first proposed by Meadows (1992) and has not been really followed up to now in social science ever since. We first provide cross-national data, how much ecological footprint is used in the nations of the world system to 'deliver' a given amount of democracy, economic growth, gender equality, human development, research and development, and social cohesion. To this end, we first developed UNDP-type performance indicators from current standard international comparative, cross-national social science data on these six main dimensions of development and on the combined performance on the six dimensions (a UNDP type 'human development index plus'). We then show the non-linear standard OLS regression trade-offs between ecological footprints per capita and their square on these six components of development and the overall super-UNDP development performance index, derived from them. The residuals from these regressions are our new measures of smart development: a country experiences smart development, if it achieves a maximum of democracy, economic growth, gender equality, human development, research and development, and social cohesion, and the combination of them with a minimum of ecological footprint.

We then look at the cross-national drivers and bottlenecks of this 'smart development', using standard comparative cross-national data, which operationalize standard economic, sociological and political science knowledge in international development accounting. We compare the predictive power of these standard predictors, using standard OLS stepwise regression procedures, based on IBM SPSS XXII. Apart from important variables and indicators, derived from sociological dependency and world systems theories, we also test the predictive power of other predictors as well, ranging from geography and achieved development levels to the clash of civilization models, feminist theories, migration theories, and the 'small is beautiful paradigm' in the tradition of Schumacher. Our estimates underline the enormous importance of the transfer of resources from the centre to the periphery, brought about by migration, with huge statistical observed positive effects of received worker remittances on smart human development, Happy Life Years, smart gender justice, smart R&D, and both formulations of the smart development index.

Finally, we take up an issue, which has been very prominent in recent global public health debate. Following the path-breaking articles by Wilkinson and associates, income inequality has a very detrimental effect on life quality. But life quality also depends in a non-linear fashion from environmental data. Thus, the Wilkinson research agenda finds its proper place also in debates about 'smart development', but certainly, the weight of other variables, such as

- *Membership in the Islamic Conference*
- *military expenditures per GDP*
- *Muslim population share per total population*
- *public education expenditure per GNP*
- *UNDP education index*
- *worker remittance inflows as % of GDP*

also has to be properly taken into account.

JEL classification:

C43 - Index Numbers and Aggregation
Q56 - Environment and Development; Environment and Trade; Sustainability; Environmental Accounts and Accounting; Environmental Equity; Population Growth
F22 - International Migration
F-24 – Remittances

1. Introduction

In this book, we present a first empirical reflection on *'smart development',* and its measurement and its possible 'drivers' and 'bottlenecks'. **The very idea of *'smart development'* was first proposed by Meadows (1992) and has not been really followed up to now in social science ever since.** In the face of the huge usage of this term in the international media, such a statement is perhaps surprising, but our verdict corresponds to the clear bibliographical evidence on the base of such indices as *'ISI Web of Knowledge'* or *'Cambridge Scientific Abstracts (nowadays taken over by PROQUEST)'.*

The basic idea, proposed by Meadows two decades ago in his single pioneering article on the issue was that we should relate our whole concept of development, and not just economic growth, to the natural resources needed to sustain it. In a similar vein, the Happy Planet Organization presented the so-called 'Happy Planet Index' (HPI), which is, as it is perhaps known to the readership of this publication, an index of measuring the trade-off between ecological footprint data and life quality (Happy Life Years, HLYE). Arguably, ecological footprint today is the best single international yardstick for environmental destruction in a nation (see also York, Rosa, and Dietz, 2003).

Economic theory, for sure, is conscious about the non-linearity of the trade-off between income and happiness, with rising income levels not necessarily increasing the happiness of all. This phenomenon has become widely known in the economic research literature as the *'Easterlin paradoxon'* (Easterlin, 1995, 2001; Frey and Stutzer, 2002; Oswald, 1997; Stevenson and Wolfers, 2007). But here, we provide the first cross-national data, how much ecological footprint is used in the nations of the world system to 'deliver' a given amount of democracy, economic growth, gender equality, human development, research and development, and social cohesion.

To this end, we first developed UNDP-type performance indicators from current standard international comparative, cross-national social science data on the six main dimensions of development (democracy, economic growth, gender equality, human development, research and development, and social cohesion) and on the combined performance on these six dimensions (a kind of super-UNDP *'human development index').* We then show the non-linear standard OLS regression trade-offs between ecological footprints per capita and their square on these six components of development and the overall super-UNDP development performance index, derived from them. **The residuals from these regressions are our new measures of smart development: a country experiences smart development, if it achieves a maximum of democracy, economic growth, gender equality, human development, research and development, and social cohesion, and the combination of them with a minimum of ecological footprint.**

We then look at the cross-national drivers and bottlenecks of this 'smart development', using standard comparative cross-national data, which operationalize standard economic, sociological and political science knowledge in international development accounting. We compare the predictive power of these standard predictors, using standard OLS stepwise regression procedures, based on IBM SPSS XXII. Apart from important variables and indicators, derived from sociological dependency and world systems theories, we also test the predictive power of other predictors as well, ranging from geography and achieved

development levels to the clash of civilization models, feminist theories, migration theories, and the *'small is beautiful paradigm'* in the tradition of Schumacher.

In Chapter 2 we sketch a possible theoretical background. Chapter 3 will introduce the measurement concepts and the methodology of this essay. Chapter 4 will be dedicated to the presentation of the results on the drivers and bottlenecks of *'smart development',* while Chapter 5 will discuss the results in the framework of earlier theories and hitherto existing research, relevant for our subject. Chapter 6 looks into the trade-off between inequality and smart development. Chapter 7 presents our preliminary conclusions.

2. Theoretical background and earlier studies

To present a theory or competing theories of 'smart development' is virtually impossible, because there has been no measurement, let alone accounting of its cross-national successes and failures in the literature up to now. We are really had to start research into this issue from 'scratch'.

At a time of a profound global economic crisis, which began in 2008, it might be permitted to look therefore at some of the more radical paradigms, challenging the wisdom of neo-liberal mainstream economic theory. Acemoglu, in his 2009 paper reflecting the lessons of the 2008 crisis, and certainly himself being a leading 'mainstream' and not a 'radical' and 'globalization critical' economist, went on the record of admitting that

'There is another sense in which the myth of the end of the business cycle is at odds with fundamental properties of the capitalist system. As Schumpeter argued long ago, the workings of the market system and the innovation dynamics that constitute its essence involve a heavy dose of creative destruction, where existing ... firms, procedures and products are replaced by new ones'. (Acemoglu, 2009: 3)

and later on saying:

'Economic growth will only take place if the society creates the institutions and policies that encourage innovation, reallocation, investment, and education. But such institutions should not be taken for granted. Because of the reallocation and creative destruction brought about by economic growth, there will always be parties, often strong parties, opposed to certain aspects of economic growth. In many less-developed economies, the key aspect of the political economy of growth is to ensure that incumbent producers, elites and politicians do not hijack the political agenda and create an environment inimical to economic progress and growth. Another threat to the institutional foundations of economic growth comes from its ultimate beneficiaries. Creative destruction and reallocation not only harm established businesses but also their workers and suppliers, sometimes even destroying the livelihood of millions of workers and peasants. It is then easy for impoverished populations suffering from adverse shocks and economic crises, — particularly in societies where the political economy never generated an effective safety net — to turn against the market system and support populist policies that will create barriers against economic growth. These threats are as important for advanced economies as they are for less-developed countries, particularly in the midst of the current economic crisis.' (Acemoglu, 2009: 9-10)

Arguably, the leading flagship article of the economics profession on the issue of the possible general drivers and bottlenecks of economic growth is Levine and Renelt, 1992, which maintains that **empirical linkages** between long-run growth rates and a variety of economic policy, political, and institutional indicators **are fragile to small changes in the conditioning information set.** But there is a positive, robust correlation between growth and the share of investment in GDP and between the investment share and the ratio of international trade to GDP. The variety of relationships, tested in multiple regression analysis, is truly amazing and includes the following non-exhaustive list of variables, which we reproduce here to give our readers, who are not economists, a glimpse of the startling variety of growth predictors, used in economic theory today:

Average inflation of GDP deflator
Black-market exchange-rate premium
Central-government gross capital formation
Dummy for OECD countries
Dummy for OPEC countries
Dummy for outward orientation
Dummy for socialist economy
Dummy sub-Saharan Africa
Dummy variable for Latin American countries
Dummy variable for mixed government
Export share of GDP
Government consumption less defense and education share of GDP
Government consumption share of gross domestic product
Growth of export share of GDP
Growth of exports
Growth of government consumption expenditures
Growth of import share
Growth of imports
Growth of population
Growth of the share of government consumption
Growth rate of domestic credit
Import share of GDP
Index of civil liberties
Investment share of gross domestic product
Land area (in thousands of square kilometers)
Literacy rate in 1960
Measure of openness based on import penetration
Measure of overall trade intervention
Measure of overall trade openness
Number of revolutions and coups per year
Population in 1970
Primary-school enrolment rate in 1960, 1970
Ratio of central-government defense expenditure
Ratio of central-government deficit to GDP
Ratio of central-government export-tax revenue to exports
Ratio of central-government tax revenue to GDP
Ratio of central-government to corporate income-tax revenue to GDP
Ratio of government educational expenditures
Ratio of import taxes to imports
Ratio of social-security tax revenue to GDP
Ratio of total government expenditure to GDP
Ratio of total trade (exports+imports) to GDP
Real exchange-rate distortion
Real government capital formation
Real government consumption share of GDP
Real investment share of GDP
Secondary-school enrolment rate in 1960, 1970
Share of real government consumption expenditures minus defense and education
Standard deviation of GDC (growth of domestic credit)
Standard deviation of PI (inflation)

As the result of their exercise, Levine and Renelt arrive at the following conclusions, which initiated an amazing and unparalleled more than 1.000 follow-up studies in global social science literature to this date:

'(i) We found a positive and robust correlation between average growth rates and the average share of investment in GDP.
(ii) We found a positive and robust correlation between the share of investment in GDP and the average share of trade in GDP.
(iii) We found that all findings using the share of exports in GDP could be obtained almost identically using the total trade or import share. Thus, studies that use export indicators should not be interpreted as studying the relationship between growth and exports per se but rather as studying the relationship between growth and trade defined more broadly.
(iv) We found that a large variety of trade policy measures were not robustly correlated with growth when the equation included the investment share.

(v) We found qualified support for the conditional-convergence hypothesis: we find a robust, negative correlation between the initial level income and growth over the 1960-1989 period when the equation includes a measure of the initial level of investment in human capital; but this result does not hold over the 1974-1989 period.
(vi) We found that none of the broad array of fiscal indicators that we studied is robustly correlated with growth or the investment share.
(vii) We found that a large assortment of other economic and political indicators are not robustly correlated with growth or the investment share.

We have tried to distinguish partial growth correlations that seem robust from those that are fragile. We find that, although there are many econometric specifications in which macroeconomic policy indicators- taken individually or in groups are significantly correlated with growth, the cross-country statistical relationship between long-run average growth rates and almost every particular macroeconomic indicator is fragile. National policies appear to be a complex package, and future researchers may wish to focus on macroeconomic policy regimes and interactions among policies as opposed to the independent influence of any particular policy.' (Levine and Renelt, 1992: 959-960)

In this presentation of possible theories explaining 'smart development', we now should deal with the notion of ***'openness'*** or ***'world economic openness'.*** Globalization critical audiences around the globe might largely disregard the evidence, provided by studies, suggesting that world market integration, not dissociation from the global markets would be the key to long-run economic growth and well-being, but this approach is especially popular in standard economic science, dealing with the issues of international growth accounting over the last decades. The amount and the empirical, i.e. econometric quality of these studies is at first sight overwhelming: *Cambridge Scientific Abstracts, nowadays taken over by PROQUEST (CSA)* listed, by end-October 2011, around 500+ articles on the issue of *'openness'* and *'economic growth',* and likewise, the list of scholars, mentioned in the CSA/COS *'Scholar Universe',* dealing with this subject, is 500+. Some of the world's leading and bestselling economists are among them[1]. Among the studies, listed in international online-bibliographies as especially often being referred to, we find, among others, Alesina, Spolaore and Wacziarg, 2000; Dollar, 1992a and 1992b; Edwards, 1993; Frankel and Romer, 1999; Rodrik, 2006; Rodrik, Subramanian, and Trebbi, 2004; and World Bank, 2005. While Dollar's writings, widely disseminated around the globe, were especially straightforward in suggesting that a high share of exports and imports per GDP, and hence, an outward orientation of the society in question, is especially beneficial for economic growth and works in favour of the poorest strata of the population, the equally widely disseminated and received study by Frankel and Romer, 1999, comes to a more cautious conclusion: examining the correlation between trade and income one really cannot identify the direction of causation between the two. According to that study, countries' geographic characteristics, however, have important effects on trade, and are plausibly uncorrelated with other determinants of income. Frankel and Romer then construct measures of the geographic component of countries' trade, and use those measures to obtain instrumental variables estimating the effect of trade on income. Frankel and Romer suggest that trade has a quantitatively large and robust, though only moderately statistically significant positive effect on income. Edwards, 1993, publishing a year after the two influential Dollar studies, comes to the conclusion that economists often ask too much of their data sets, and try to extract information that simply is not there. In that sense, cross-country aggregate data sets have little information regarding the relationship between trade policy and

[1] This can be checked easily by looking at the download figures or more complex ranking data, available from the open-access scientific archives like IDEAS/REPEC from the University of Connecticut or the Social Science Research Network, SSRN, in New York, N. Y.

growth. By contrast he maintains that theoretical developments in growth theory have suggested that microeconomic analysis could shed some light on the growth process. Rodrik, Subramanian, and Trebbi, 2004 further shattered the optimistic assumptions about the beneficial effects of world economic openness on development outcomes in their study about the respective contributions of institutions, geography, and trade in determining income levels around the world, using recently developed instrumental variables for institutions and trade. Their results indicate that *'the quality of institutions "trumps" everything else'* (Rodrik, Subramanian, and Trebbi, 2004). Once institutions are controlled for, conventional measures of geography have at best weak direct effects on incomes, although they have a strong indirect effect by influencing the quality of institutions. Similarly, once institutions are controlled for, trade is almost always insignificant, and often enters the income equation with the "wrong" (i.e., negative) sign. In his influential study, 2006, Rodrik even went so far as to fundamentally question the 'Washington Consensus' based on open markets, which featured so prominently in Dollar, 1992a and 1992b:

Table 1: Deconstructing the Washington Consensus of liberalization and openness

	Original Washington Consensus		**Augmented Washington Consensus**
1	Fiscal Discipline	11	Corporate governance
2	Reorientation of public expenditures	12	Anti-corruption
3	Tax reform	13	Flexible labor markets
4	Financial liberalization	14	WTO agreements
5	Unified and competitive exchange rates	15	Financial codes and standards
6	Trade liberalization	16	"Prudent" capital accounting
7	Openness to Direct Foreign Investment	17	Non-intermediate exchange rate regimes
8	Privatization	18	Independent central banks/inflation targeting
9	Deregulation	19	Social safety nets
10	Secure Property Rights	20	Targeted poverty reduction

Source: Rodrik, 2006, based on World Bank, 2005

The **divisive issue of migration** equally divides opinions around the globe, and it also divides opinions among the global social science research community. Also, it must be mentioned in our theoretical survey. **As it is well-known, migration is part and parcel of the *'four freedoms'* of capitalism, besides the freedom of goods, services, and capital.** It is only logical to treat its possible influence on 'smart development' immediately after dealing with the possible effects of 'openness'. **Migration might have a very big effect on *'smart development'***. Migration, after all, assures continued production and hence also pollution in the migration recipient countries, while worker remittances, sent from there to the migration sending countries, might contribute to overall consumption, well-being and investment in environmentally more sustainable housing and heating systems in the migration sending nations.

A flagship survey of the hitherto existing migration theories (Masey et al., 1993) came to the pessimistic conclusion that migration theories up to that time were either advanced to explain the initiation of international migration or put forth to account for the persistence of migration

across space and time. Masey et al. suggested that, because they are specified at such different levels of analysis, the theories are not inherently logically inconsistent.

As **Taylor** pointed out in his summarizing policy statement on the state of migration theory for the United Nations in 2006, indeed it would be foolish to exclude migration from any future discourse about global development: The number of international migrants has increased more or less linearly over the past 40 years, from an estimated 76 million in 1965 to 188 million in 2005. The flow of international migrant remittances has increased more rapidly than the number of international migrants, from an estimated US$2 billion in 1970 to US$216 in 2004. Nearly 70% of all remittances go to LDCs. Remittances were equivalent to 78% of the total value of exports in El Salvador and 108% in Nicaragua. Taylor is absolutely correct in further highlighting also the fact that international migration is playing an increasingly important role in developing country economies. As Taylor also pointed out in a number of other studies, especially in 1999, worker remittances are especially affecting the less developed sending countries by the **multiplier effect, well-known in economics since the days of John Maynard Keynes:**

Since the famous work of John Maynard Keynes, governments have recognized that public spending creates income multipliers. So do migrant remittances. Studies show that $1 of remittances from international migrants may create $2-$3 or more of new income in migrant-sending areas. This is partly because of the multiplier within the migrant-sending household, discussed earlier. However, it is mostly because the households that receive remittances spend their income on goods and services supplied by others in the local economy. One person's spending is another person's income. For example, if a village household receives $100 in remittances, its income increases, in the first instance, by $100. Suppose that it spends $10 of this new income on meat from a local butcher, another $40 paying a bricklayer for a home improvement project, and the rest on building materials purchased in a nearby town. Now the incomes of the village butcher and bricklayer also increase. The butcher and bricklayer, in turn, spend part of their new incomes at the village store, creating income for the storekeeper, and so on. In this way, the $100 of remittances creates a local income multiplier, similar to a Keynesian fiscal multiplier, in the migrant-sending economy.

The money spent in the city is a leakage; it does not contribute to the village income multiplier. However, it may create an income and employment multiplier in the city. The more closely integrated the village is with outside markets, the more the multiplier becomes diffused to other parts of the national economy.

It can easily be shown that if 50 cents out of every dollar are spent on goods and services purchased in the local economy, the local remittance income multiplier will be $2. Even if all income in remittance-receiving households is spent on consumption, remittances may stimulate investments by the other households whose incomes go up. (Taylor, 2006: 9)

The optimistic view about worker remittances is also supported in the well-received comparative international study by Ziesemer, 2009: in this analysis, the author shows with pooled data for four different samples of countries receiving remittances in 2003 that the countries with per capita income below $ 1200 benefit most from remittances in the long run because they have the largest impact of remittances on savings. Their changes in remittances account for about 2 % of the steady-state level of GDP per capita when compared to the counterfactual of having no changes of remittances. Their ratio of the steady-state growth rates with and without changes of remittances is 1.39. As savings react much more strongly

than investment, an important benefit of remittances is that less debt is incurred and less debt service is paid than without remittances. All effects are much weaker for the richer countries.

Jeffrey Williamson, 2002, the great liberal economic historian of global economics and the migration process, analyzed the basic facts of international migration in the following way: what he calls North-North migrations[2] between Europe and the New World involved the movement of something like 60 million individuals. Historically, South-North migrations were only a trickle: like today, poor migrants from the periphery were kept out of the centre by restrictive policy, by the high cost of the move, and by their lack of education. World labour markets were segmented then just as they are now. Real wages and living standards converged among the currently-industrialized countries. Emigration may contribute to labour scarcity, but it also lowers the GDP. Convergence was driven primarily by the erosion of the gap between the New World and the Old. In addition, many poor European countries were catching up with the industrial leaders. How much of this convergence in the Atlantic economy was due to North-North mass migration? The labour force impact of these migrations on each member of the Atlantic economy in 1910 varied greatly. Among receiving countries, Argentina's labour force was augmented most by immigration (86 per cent), Brazil's the least (4 per cent), with the United States in between (24 per cent). Among sending countries, Ireland's labour force was diminished most by emigration (45 per cent), France the least (1 per cent), with Britain in between (11 per cent). At the same time, the economic gaps between rich and poor countries diminished. Real wage dispersion in the Atlantic economy declined between 1870 and 1910 by 28 per cent, GDP per capita dispersion declined by 18 per cent and GDP per worker dispersion declined by 29 per cent. Migration affects equilibrium output, wages and living standards by influencing aggregate labour supply. According to Williamson, in the absence of the mass migration, wages and labour productivity would have been a lot higher in the New World and a lot lower in the Old. In the absence of the mass migration, income per capita would have been a bit higher in the New World and a bit lower in the Old World. Not surprisingly, the biggest impact was on those countries that experienced the biggest migrations. Emigration is estimated to have raised Irish wages by 32 per cent, Italian by 28 per cent and Norwegian by 10 per cent. Immigration is estimated to have lowered Argentine wages by 22 per cent, Australian by 15 per cent, Canadian by 16 per cent and American by 8 per cent (Williamson, J., 2002).

Most liberal and left of centre-oriented global political discourse would expect that **worker remittances** have very beneficial effects for the sending countries, and that they amount to a very huge transfer machine of wealth from the rich, migration recipient countries to the poor, migration sending countries. **Migration is thus seen in many approaches, most notably by the UNDP, as a win-win situation**. One has to distinguish carefully between **migration stocks** and **migration flow data**, and in addition, one has to assess the effects of **worker remittances per GDP**. In migration recipient countries, migration stocks and migration flow data will be highly positive, while in the migration sending countries, these values will be low or – in the case of migration flow data – negative. Worker remittances will be a high percentage of the GDP of the sending countries, and they will be low in most migration recipient countries, but also in the countries not participating substantially in international migration flows. The available UNDP data, unfortunately, are not based on the concept of **net** worker remittance balances as a percentage of GDP. The ten countries, whose economies are least dependent on worker remittances are Burundi, Chile, Japan, Laos, Malawi, United States, Gabon, Korea (Republic of), Madagascar, and Mauritania. In the following 16

[2] Correctly speaking, Williamson would have to deduce from the number of 60 million individuals the number of migrants, who emigrated from Europe to Argentina, Brazil, Chile and Uruguay, the main countries of destination of European migration in Latin America in the 19th Century.

countries, worker remittances make up more than 10 per cent of the current GDP each year: Tajikistan, Moldova, Lesotho, Honduras, Lebanon, Guyana, Jordan, Haiti, Jamaica, Kyrgyzstan, El Salvador, Nepal, Nicaragua, Philippines, Guatemala, and Albania. These nations are a real testing case for the hypothesis that outward migration remittances are a driver of development in sending countries.

The UNDP Human Development Report, 2009 (UNDP, 2009) devoted to the issue of **international migration,** quite correctly emphasizes that at the peak of Iberian rule in the Americas, more than half a million Spaniards and Portuguese and about 700,000 British subjects went to the colonies in the Americas. Through the brutal use of force, 11–12 million Africans were sent as slaves across the Atlantic between the 15th and late 19th centuries. Between 1842 and 1900, some 2.3 million Chinese and 1.3 million Indians travelled as contract labourers to South-East Asia, Africa and North America. At the end of the 19th century the fraction of foreign-born residents in many countries was higher than today (UNDP HDR, 2009: 28).

For several observers, among them Hatton and Williamson, 2009, the 'current hysteria' about inward migration in many industrialized countries has no real basis. For them, the Third World has been undergoing an emigration life cycle since the 1960s, and, except for Africa, emigration rates have been level or even declining since a peak in the late 1980s and the early 1990s. The current economic crisis will serve only to accelerate those trends. They estimate the economic and demographic fundamentals, which are driving these Third World emigration life cycles to the United States since 1970 – the income gap between the US and the sending country, the education gap between the US and the sending country, the poverty trap, the size of the cohort at risk, and migrant stock dynamics. Their projections imply that pressure on Third World emigration over the next two decades will not increase. In looking at the issue of the drivers of the international migration process, Hatton and Williamson, 2009, also cautiously argue on the basis of their econometric evidence, available from 62 countries for the period from 1970 to 2000, that the income ratio [the relationship between income levels in the migration sending and in the migration recipient country] and the education ratio [the relationship between education levels in the migration sending and in the migration recipient country] are strongly significant.

Hatton and Williamson maintain that the effect of poverty is negative as predicted, but it is attenuated by an increase in the emigrant stock. There is a chain migration effect in the US where for every 1,000 of the stock of previous migrants a further 90 arrive in the following five-year period, or 18 each year. Their study also shows interesting details about the effect of source country poverty. Excluding the interaction with the migrant stock, a doubling of per capita income from US$1,000 to $2,000 (about equivalent to the East and Southeast Asian per capita income level in 1960 and its growth rate between 1960 and 1985, 3.4 per cent) increases the emigration rate by 12 per cent. In contrast, an increase for today's middle income country from $10,000 to $11,000 has a negligible effect on the emigration rate (0.03 per cent). Without the migrant stock, economic fundamentals matter much more since migrants tend to be driven by job opportunities rather than family ties.

The UNDP HDR 2009 edition maintains that financial remittances are vital in improving the livelihoods of millions of people in developing countries. There is a positive contribution of international remittances to household welfare, nutrition, food, health and living conditions in places of origin. Even those whose movement was driven by conflict can be net remitters, as illustrated in history by Bosnia and Herzegovina, Guinea-Bissau, Nicaragua, Tajikistan and Uganda, where remittances helped entire war-affected communities to survive. In some

international migration corridors, money transfer costs have tended to fall over time, with obvious benefits for those sending and receiving remittances. Recent innovations have also seen significant falls in costs at the national level. With the reduction in money transfer costs, families who once relied on relatives and close family friends or who used informal avenues such as the local bus driver to remit are now opting to send money through banks, money transfer companies and even via cell-phones. An important function of remittances is to diversify sources of income and to cushion families against setbacks such as illness or larger shocks caused by economic downturns, political conflicts or climatic vagaries (UNDP HDR, 2009: 72).

Similarly, the UNDP also maintains that there should be significant aggregate gains from movement, both to movers and to destination countries. The destination countries will capture about one-fifth of the gains from a 5 per cent increase in the number of migrants in developed countries, amounting to US$ 190 billion dollars. Immigration increases employment, with no evidence of crowding out of locals, and investment also responds vigorously to immigration. Population growth due to migration increases real GDP per capita in the short run, one-for-one (meaning that a 1 per cent increase in population due to migration increases GDP by 1 per cent).

Migrants bring broader economic benefits, including higher rates of innovation. Data from the United States show that between 1950 and 2000, skilled migrants boosted innovation: a 1.3 per cent increase in the share of migrant university graduates increased the number of patents issued per capita by a massive 15 per cent, with marked contributions from science and engineering graduates and without any adverse effects on the innovative activity of local people. The United States, in particular, has been able to attract migrant talent through the quality of its universities and research infrastructure and its favourable patenting rules. In Ireland and the United Kingdom the share of migrants with tertiary education exceeds 30 per cent, while in Austria, Italy and Poland it is below 15 per cent. Countries offering more flexible entry regimes and more promising long-term opportunities have done better in attracting skilled people, whereas restrictions on duration of stay, visa conditions and career development, as in Germany for example, limit uptake. The aggregate effect of immigration on the wages of local workers may be positive or negative but is fairly small in the short and long run. In Europe, both multi- and single-country studies find little or no impact of migration on the average wages of local people (UNDP, HDR, 2009: 84-85).

Summing up the debate, we again should quote from the findings of Jeffrey Williamson, 2002: mass migration made an important contribution to late nineteenth century convergence in the 'North.' In the absence of mass migration, real wage dispersion would have increased by 7 per cent, rather than decreased by 28 per cent, as it did in fact. GDP per capita dispersion would also have decreased by only 9 per cent, rather than by 18 per cent as it did in fact. Wage gaps between New World and Old would have risen to 128 per cent in 1910 when in fact they declined from 108 to 85 per cent. Real wage convergence before World War I was attributable to migration, about two-thirds of the GDP per worker convergence, and perhaps one half of the GDP per capita convergence. There was an additional and even more powerful effect of the mass migrations on global income distribution. The 60 million European migrants before World War I came from countries whose average real wages and average GDP per worker were perhaps only half of those in the receiving countries. These migrant gains were an important part of the net equalizing effect on world incomes of the mass migrations. North-North mass migrations had a strong levelling influence in the world economy up to 1913. They made it possible for poor migrants to improve the living standards for themselves and their children. It also lowered the scarcity of resident New World labour

which competed with the immigrants, while it raised the scarcity of the poor European labour that stayed home (whose incomes were augmented still further by emigrant remittances). South-South migrations were about the same size as the North-North flows.

'Until new research tells us otherwise, I think it is safe to assume that South-South migrations put powerful downward pressure on real wages and labor productivity in Ceylon, Burma, Malaysia, Thailand, East Africa, Manchuria and other labor scarce regions that received so many Indian and Chinese immigrants. Since the sending labor surplus areas were so huge, it is less likely that the emigrations served to raise labor scarcity there by much.' (Williamson, J., 2002)

Sanderson, 2010, was one of the first consistent research attempts to bring in migration as a determining variable of social well-being. Contemporary levels of international migration in less-developed countries are raising new and important questions regarding the consequences of immigration for human welfare and well-being. However, there is little systematic cross-national evidence of how international migration affects human development levels in migrant-receiving countries in the less-developed world. The Sanderson paper addresses this gap in the literature by assessing the impact of cumulative international migration flows on the human development index, the composite, well-known UNDP measure of aggregate well-being. A series of panel data models are estimated using a sample of less-developed countries for the period, 1970-2005. The results indicate that higher levels of international migration are associated with lower scores on the human development index, net of controls, but that the effect of international migration is relatively small.

What are the counter-theories to the dominant neo-liberal development paradigm? For one, the **'Keynesian'** legacy should not be under-estimated. 'Keynesians' would expect **positive trade-offs** to hold between **'government intervention' and the human condition**, and not the other way around. The most consistent counter-perspective to the dominant neo-liberal consensus, often being referred to also as the ‚Washington Consensus' is the **Kalecki/Steindl-paradigm**. The Steindl-Kalecki growth policy implications are:

Table 2: the radical counter-perspective of the Kalecki-Steindl-paradigm

Differences in growth strategies	
Steindl–Kaleckian growth policy	**Current mainstream on growth**
Full employment as main political concerns	Price stability and budget consolidation as main political concerns
Demand as growth driver	Supply as growth driver
Higher effective demand to raise employment	Higher labour market flexibility to raise economic growth
Technology and educational policy	Deregulation and privatization
Lower household savings	Higher savings (for investment)
Stable or rising wage share	Falling wage share (real unit labour costs)
Anticyclical policy (cycle and trend have the same determinants)	No active anticyclical policy (irrelevant for growth path)
Rise of public sector promotes growth (through effective demand)	Decline and restructuring of the public sector (efficiency)
Tax coordination	International tax competition
International cooperation	International competition (location)

Source: Guger/Marterbauer/Walterskirchen, 2004 and Tausch, 2010

The contribution of the Austrian political economist Josef Steindl (1912--1993), whose work nowadays enjoys a renaissance (see also: Lavoie, 1996) is perceived by many as the most consistent policy alternative to the current, dominant Brussels/Paris neo-liberal consensus of the European Commission and the OECD. In Steindl (1946), the author analyzed the process of increasing concentration of capital and the oligopoly of the market. The change in the secular trend of income distribution since the end of the Second World War in the world's most advanced economies, observed by Steindl, has to be especially noted: since the early 1980s, income distribution has changed in favour of classes with high savings propensities; i.e. in most industrial countries the share of wages and salaries in national income has been declining, while non-wage income, in particular property income, has risen sharply, and income inequality between the rich and the poor has increased considerably.

According to Steindl, the burden of taxation has shifted from profits to wages - a process which reduced the expansionary effects of the public sector (Steindl, 1979, p. 5). Assuming that tax revenues are immediately spent, higher profit taxes are paid out of increasing profits (before taxation) due to higher capital utilization, while an increase in wage taxation reduces consumption. The following aspects of Steindl's analysis especially caught the attention of the empirical researchers from the Austrian Institute of Economic Research (Guger/Marterbauer/Walterskirchen, 2006): what Steindl calls a *'policy of stagnation'* will continue, since governments are preoccupied with inflation and the public debt (Steindl, 1979, p. 9). Thus the Steindl paper on *'Stagnation Theory and Stagnation Policy'* (Steindl, 1979, especially p. 13) must be regarded, as one of the first key documents against the current Euro-monetarist stagnation policy, which – according to this Kaleckian viewpoint – is the cause of stagnation, unemployment and rising inequality in Europe. The new political and economic landscape, which began to take shape in the late 1970s and 1980s, was characterized by:

• macroeconomic policy being oriented primarily towards price stability and budget consolidation
• declining international cooperation regarding economic policy (breakdown of the Bretton Woods system and the establishment of a flexible exchange rate system in the early 1970s)
• increasing environmental and energy problems
• a political trend against full employment (with Kalecki, 1943). Steindl believed in the 'political aspects of full employment'. This hypothesis, first published by Kalecki in 1943, argued that in the long run the entrepreneurs will be losing interest in full employment because of the increasing power of trade unions and employees as a consequence of full employment. As predicted by Kalecki in 1943, the end of the period of full employment, which came about in the late 1960s, was politically motivated.

This new set-up was called by Steindl the *'return of the Bourbons'*. The Bourbons' return resulted in a restrictive bias in economic policy, particularly in the EU. For Guger/Marterbauer/Walterskirchen, one of the main consequences for our analysis of the European Union today is the following:

'Steindl identified a persistent and lasting mood against growth and very clearly spoke about a deliberate 'policy of stagnation'. This characterization seems to be even more appropriate for the current development. In the EU a macroeconomic policy framework has been established that has a restrictive bias—it may even be characterized as a 'policy of stagnation'—although it promised stability and growth. In the current macroeconomic policy

framework of the EU, institutions to guarantee price stability and sound public finance are extensively developed. However, institutions responsible for aggregate demand and full employment are missing.' (Guger/Marterbauer/Walterskirchen, 2006)

In terms of thoroughly tested scientific knowledge, based on large-scale, cross-national empirical evidence, the next possible alternative theoretical tradition to fill the explanatory gap for 'smart development' accounting, coming to one's mind, would be **dependency and world systems theory**. Although its effect on the mainstream economic scholarly journals has been marginal, it had a very wide impact on the leading international sociological and political journals[3].

Reasons of space do not permit us to debate at greater length this very vast sociological, political science and economic theory literature, centred on the subject of MNC (multinational corporation) penetration and economic and social development. We should rather concentrate, first of all, on what was actually predicted in the Bornschier/Chase-Dunn/Rubinson study, 1978, which must be regarded as the most often quoted flagship study of empirical dependency theory, analyzing the effects of MNC penetration on economic growth and income inequality[4]:

'(1) The effect of direct foreign investment and aid has been to increase economic inequality within countries. (2) Flows of direct foreign investment and aid have had a short-term effect of increasing the relative rate of economic growth of countries. (3) Stocks of direct foreign investment and aid have had the cumulative, long-term effect of decreasing the relative rate of economic growth of countries. (4) This relationship has been conditional on the level of development of countries. The stocks of foreign investment and aid have had negative effects in both richer and poorer developing countries, but the effect is much stronger within the richer than the poorer ones. (5) These relationships hold independently of geographical area.' (Bornschier/Chase-Dunn/Rubinson, 1978: 651)

Important later tests of these hypotheses, taking into account the most important control variables, like initial income levels[5], could nothing but support and refine the original argument, independently from the research design for different indicators and different time periods and different samples and different methods (see *inter alia* and to mention but a few studies: Beer, 1999; Bornschier, 1982, 2002; Dutt, 1997; Heshmati, 2006b; Kentor, 1998; Klitgaard and Fedderke, 1995; Tausch, 2003; Tausch and Prager, 1993; Tsai 1995).

Centre-periphery models in the tradition of Prebisch, 1950, 1983, 1988, and the proper 'dependency theories' in the tradition of such authors as Cardoso, 1977, 1979, Cardoso/Faletto, 1971, Furtado, 1963, 1964, 1976, 1983, Sunkel, 1966, 1973, 1978, and the quantitative research inspired by these theories, namely by Galtung, 1971, Sunkel, 1973 and later Chase-Dunn, 1975, Bornschier/Chase-Dunn/Rubinson, 1978 and Bornschier/Ballmer-

[3] International quantitative bibliometrical data on the impact of scholarly journals, i.e. the frequency and structure of the references in the international literature, are now available from such indices as SCIMAGO (http://www.scimagojr.com/, based on SCIVERSE-SCOPUS), ISI Web of Knowledge (Reuters/Thomson http://www.isiwebofknowledge.com/) and SCIVERSE-SCOPUS (Elsevier http://www.hub.sciverse.com/action/home/proceed), which are available on-line at major Universities and research centres around the globe.

[4] International quotation figures, based on ISI Web of Knowledge (Reuters/Thomson http://www.isiwebofknowledge.com/).

[5] Also conventional economic theory growth accounting and income inequality accounting practices such controls. To treat properly what economists tend to call the convergence effects of poor countries growing faster than richer ones, see, among others, Barro, 2003.

Cao, 1979 all can be important elements in the debate about 'smart development'. All these theories claimed that the relations of dependency block long-run economic growth and bring about a socially unbalanced development, short spurts of economic growth notwithstanding. In what seems to be now a prophetic statement compared to today's realities around the globe, dependency and 'world systems' scholar Linda Beer stated more than ten years ago in 1999:

'In the World-System/Dependency perspective there are three mechanisms that are hypothesized to link foreign investment and social inequality […] First, foreign investment in developing countries generates large sectoral disparities in the national economy, creates labor aristocracies and results in the underutilization of indigenous labor. Second, transnational corporations operating in developing nations accrue a disproportionate share of local sources of credit and repatriate profits rather than reinvesting them in the local economy. Finally, the governments of these nations, motivated by the necessity (generated by their incorporation into the capitalist world economy) of attracting and maintaining foreign investment, implement policies and strategies that decrease the power of labor and inhibit vertical mobility. These include tax concessions, guarantees of profit repatriation, and labor laws unfavorable to workers.' (Beer, 1999: 4-7)

At this stage at the latest, critics of the dependency theory/world systems theory will argue that today, intensive globalization led to the spectacular take-off of growth in the two most populous nations of the world, China and India, over the last decades, bringing about a large-scale redistribution of the world's production and incomes to far more than two thousand million of human beings. **Andre Gunder Frank**, already in 1998, predicted a general pattern of *'Re-Orient'* away from the Northern-Euro-Atlantic region of our globe towards the Indian and Pacific Oceans, where, according to Frank, the future centre of the world economy will be situated again and – where according to Frank – it always was situated from the very beginning of the world economy to around the year 1750. Thus the period of European and later American dominance in the international system from 1750 to around 1995 is but an interlude in world history, always centred on China.

In view of the recent advances of international social science research on long economic cycles (the so-called Kondratiev economic cycles of around 50 years duration, see Bornschier, 1996, for the theoretical foundations and Korotayev and Tsirel, 2010 for the latest econometric evidence), we should briefly mention the possibility that the 'logic' of international development might change from cycle to cycle, and even from cycle phase to cycle phase (the A-phase of ascent, and the B-phase of decline), a phenomenon, which should be taken into account when analyzing different results about the effects of MNC penetration from different time periods. Let us thus look for a moment at the conclusions, drawn already in the Bornschier/Chase-Dunn/Rubinson essay in 1978 (emphasis is our own):

'Foreign investment leads to increasing income inequality, early monopolization, and structural underemployment, thus favoring early saturation of effective demand and lowering the rate of capital formation in a country. And since capital formation is a major cause of increasing growth, this reduction in capital formation is another mechanism by which foreign investment reduces growth. […] One of the ways in which foreign investment reduces growth is by reducing state power, and hence the ability of the state to undertake a policy of growth, independent of the class interests created by foreign capital. […] We note that the empirical relationships we have found occurred during a specific time period, from 1950 to 1970. ***It is possible that these relationships are conditional on features of the world economy at that time. It seems possible that the effects of foreign investment and aid on growth and inequality may be conditional on whether the world economy is in a period of relative***

***expansion or contraction**. […] The negative effects of foreign investment on economic growth are significantly greater from 1965 to 1975 than from 1955 to 1965. Since the earlier period was one of worldwide economic expansion and the later period has been one of worldwide relative economic contraction, […]* **foreign investment may have more negative effects in periods of economic contraction.** *(Bornschier/Chase-Dunn/Rubinson, 1978)*[6]

Later world system analyses tended to confirm and expand the dependency argument (Wallerstein, 2000). Capitalism in the periphery, like in the centres, is characterized by strong cyclical fluctuations, and there are centres, semi-peripheries and peripheries. The rise of one group of semi-peripheries tends to be at the cost of another group, but the unequal structure of the world economy based on unequal transfer tends to remain stable.

There was a real 'growth industry' of blossoming and booming dependency - and world-system oriented studies of environmental problems during the last years. It has become really fashionable in many traditions of sociology and political science to blame the lack of *'sustainable development'* on globalization and the workings of global capitalism, perceived as a centre-periphery system. Table 3 presents the main literature trends. Only one of the 34 studies in the major peer-reviewed journals of international social science surveyed could contradict the globalization critical approach. It has to be emphasized, however, that these studies relate the environmental situation of a given country to achieved development levels, without taking into account the relationship between development results and the natural resources needed to sustain them. The central question, posed by Meadows, 1992, and by the Happy Planet Index methodology is not how much deforestation, ecological destruction etc. we face in the world system at given levels of development, but how much footprint was consumed in the nations of the world system to 'deliver' a given amount of development [democracy, economic growth, gender equality, human development, research and development, and social cohesion].

[6] Thus, dependency and world systems theory today would be inclined to distinguish between the societal logic of the A-phase and the B-phase of the Kondratiev cycles. In the case of our empirical analysis, we would have to start from the assumption that the period under empirical scrutiny here, i.e. 1990 – 2010 is rather the B-phase of the Kondratiev cycle 1973 – 2008, thus resembling the B-phase of the earlier Kondratiev cycle, 1929 – 1973. As Bornschier/Chase-Dunn/Rubinson already stipulated in our quoted passage, it cannot be excluded out of hand that the empirical relationships between, say, multinational corporation penetration (MNC penetration) and economic growth are different in the A-phase of a cycle (say 1929 to the beginnings of the 1960s; and during the A-phase from 1973 to, say, 1990) and in the B-phase of an economic cycle (the beginnings of the 1960s to 1973; and 1990 – 2010).

Table 3: The major globalization critical studies about dependency and the environment

Author	Year	Title	Source	Research design focused on	Anti-globalization approach
Dick, Ch. and Jorgenson, A. K.	2010	Sectoral Foreign Investment and Nitrous Oxide Emissions: A Quantitative Investigation	Society and Natural Resources, vol. 23(1), 71-82, 2010	nitrous oxide emissions	Confirmed
Ehrhardt-Martinez, Karen; Crenshaw, Edward M.; Jenkins, J. Craig	2002	Deforestation and the Environmental Kuznets Curve: A Cross-National Investigation of Intervening Mechanisms	Social Science Quarterly, vol. 83(1), 226-243, Mar 2002	deforestation	Rejected
Jorgenson, A. K.	2003	Consumption and environmental degradation: A cross-national analysis of the ecological footprint	Social Probems, 50, 3, 374-394	ecological footprint	Confirmed
Jorgenson, A. K.	2007	Does foreign investment harm the air we breathe and the water we drink? A cross-national study of carbon dioxide emissions and organic water pollution in less-developed countries, 1975 to 2000	Organization & Environment, 20, 2, 135-157, 2007	carbon dioxide emissions; emission of organic water pollutants	Confirmed
Jorgenson, A. K.	2006	Unequal ecological exchange and environmental degradation: A theoretical proposition and cross-national study of deforestation, 1990-2000	Rural Sociology, 71, 4, 685-712, 2006	deforestation	Confirmed
Jorgenson, A. K. and Burns, T. J.	2007	The political-economic causes of change in the ecological footprints of nations, 1991-2001: A quantitative investigation	Social Science Research, 36, 2, 834-853	growth of ecological footprint	Confirmed
Jorgenson, A. K., Dick, C., and Mahutga, M. C.	2007	Foreign investment dependence and the environment: An ecostructural approach	Social Problems, 54, 3, 371-394	nitrogen oxides, volatile organic compounds, carbon monoxide, and carbon dioxide gas	Confirmed
Jorgenson, Andrew K	2008	Structural Integration and the Trees: An Analysis of Deforestation in Less-Developed Countries, 1990-2005	The Sociological Quarterly, vol. 49(3), 503-527, Summer 2008	deforestation	Confirmed
Jorgenson, Andrew K.	2004	Uneven Processes and Environmental Degradation in the World-Economy	Human Ecology Review, vol. 11(2), 103-117, summer 2004	ecological footprint	Confirmed
Jorgenson, Andrew K.	2005	Unpacking International Power and the Ecological Footprints of Nations: A	Sociological Perspectives, vol. 48(3), 383-402, fall	ecological footprint	Confirmed

		Quantitative Cross-National Study	2005		
Jorgenson, Andrew K.	2006	Global Warming and the Neglected Greenhouse Gas: A Cross-National Study of the Social Causes of Methane Emissions Intensity, 1995	Social Forces, vol. 84(3), 1779-1798, Mar 2006	greenhouse gas emissions	Confirmed
Jorgenson, Andrew K.	2009	Political-Economic Integration, Industrial Pollution and Human Health: A Panel Study of Less-Developed Countries, 1980--2000	International Sociology, vol. 24(1), 115-143, Jan 2009	industrial organic water pollution, infant mortality	Confirmed
Jorgenson, Andrew K.	2007	Foreign Direct Investment and Pesticide Use Intensity in Less-Developed Countries: A Quantitative Investigation	Society and Natural Resources, vol. 20(1), 73-83, Jan 2007	pesticide consumption	Confirmed
Jorgenson, Andrew K.	2009	The Transnational Organization of Production, the Scale of Degradation, and Ecoefficiency: A Study of Carbon Dioxide Emissions in Less-Developed Countries	Human Ecology Review, vol. 16(1), 64-74, Summer 2009	total carbon dioxide emissions and emissions per unit of production	Confirmed
Jorgenson, Andrew K.	2004	Global Inequality, Water Pollution, and Infant Mortality	The Social Science Journal, vol. 41(2), 279-288, 2004	water pollution, infant mortality	Confirmed
Jorgenson, Andrew K.; Burns, Thomas J.	2004	Globalization, the Environment, and Infant Mortality: A Cross National Study	Humboldt Journal of Social Relations, vol. 28(1), 7-52, 2004	water pollution, infant mortality	Confirmed
Jorgenson, Andrew K.; Kuykendall, Kennon A.	2008	Globalization, Foreign Investment Dependence and Agriculture Production: Pesticide and Fertilizer Use in Less-developed Countries, 1990-2000	Social Forces, vol. 87(1), 529-560, Sept 2008	pesticide and fertilizer use	Confirmed
Lawrence, Kirk S	2009	The Thermodynamics of Unequal Exchange	International Journal of Comparative Sociology, vol. 50(3)-4, 335-359, June/Aug 2009	energy use	Confirmed
Longo, Stefano; York, Richard	2008	Agricultural Exports and the Environment: A Cross-National Study of Fertilizer and Pesticide Consumption	Rural Sociology, vol. 73(1), 82-104, Mar. 2008	fertilizer and pesticide consumption	Confirmed
Mostafa, M. M.	2010	A Bayesian approach to analyzing the ecological footprint of 140 nations	Ecological Indicators, 10, 4, 808-817, 2010	ecological footprint	Confirmed
Mostafa, M. M.	2010	Clustering the ecological footprint of nations using Kohonen's self-organizing maps	Expert Systems with Applications, 37, 4, 2747-2755	ecological footprint per capita	Confirmed
Mostafa, M. M. and	2009	A neuro-computational intelligence analysis of	Computational Statistics	ecological footprint	Confirmed

Nataraajan, R.		the ecological footprint of nations	and Data Analysis, 53, 9, 3516-3531, 2009		
Nugent, Colleen and Shandra, John M.	2009	State Environmental Protection Efforts, Women's Status, and World Polity A Cross-National Analysis	Organization & Environment, 22, 3, 293-310, 2009	environmental protection efforts	Confirmed
Shandra, J. M., Leckband, C., McKinney, L. A, and London, B.	2009	Ecologically Unequal Exchange, World Polity, and Biodiversity Loss A Cross-National Analysis of Threatened Mammals	International Journal of Comparative Sociology, 50, 3-4, 285-310, 2009	threatened mammal species	Confirmed
Shandra, John M.	2007	Economic dependency, repression, and deforestation: A quantitative, cross-national analysis	Sociological Inquiry, 77, 4, 543-571, 2007	deforestation	Confirmed
Shandra, John M.	2007	International nongovernmental organizations and deforestation: Good, bad, or irrelevant?	Social Science Quarterly, 88, 3, 665-689, 2007	deforestation	Confirmed
Shandra, John M. Leckband, Christopher London, Bruce	2009	Ecologically Unequal Exchange and Deforestation: A Cross-National Analysis of Forestry Export Flows	Organization & Environment, 22, 2, 208-229, 2009	deforestation	Confirmed
Shandra, John M. Shandra, Carrie L. London, Bruce	2008	Women, non-governmental organizations, and deforestation: a cross-national study	Population and Environment, 30, 1-2, 48-72, 2008	deforestation	Confirmed
Shandra, John M. Shor, Eran London, Bruce	2009	World Polity, Unequal Ecological Exchange, and Organic Water Pollution: A Cross-National Analysis of Developing Nations	Human Ecology Review, 16, 1, 53-63, 2009	organic water pollution	Confirmed
Shandra, John M.; London, Bruce; Whooley, Owen P.; Williamson, John B.	2004	International Nongovernmental Organizations and Carbon Dioxide Emissions in the Developing World: A Quantitative, Cross-National Analysis	Sociological Inquiry, vol. 74(4), 520-545, Nov 2004	carbon dioxide emissions	Confirmed
Shandra, John M; Shor, Eran; London, Bruce	2008	Debt, Structural Adjustment, and Organic Water Pollution	Organization & Environment, vol. 21(1), 38-55, Mar. 2008	organic water pollution	Confirmed
Tausch, Arno	2007	Quantitative World System Studies Contradict Current Islamophobia: World Political Cycles, Global Terrorism, and World Development	Alternatives: Turkish Journal of International Relations, vol. 6(1)-2, 15-81, spring-summer 2007	11 indicators of development, including environmental indicators	Confirmed
Tausch, Arno	2005	Is Islam really a development blockade?	Insight Turkey, vol. 7(1), 124-135, Jan-Mar 2005	14 indicators of development, including environmental indicators	Confirmed
Tausch, Arno	2003	Social Cohesion, Sustainable Development and	Alternatives. Turkish	14 indicators of	Confirmed

		Turkey's Accession to the European Union: Implications from a Global Model	Journal of International Relations, Vol. 2(1), 2003	development, including environmental indicators	

Notably enough, only three of these 34 studies (Tausch, 2003, 2005, 2007) used the combined Yale/Columbia indices of the environmental situation, the 'Environmental Sustainability Index (ESI)' and the 'Environmental Performance Index (EPI)', already available since the middle of the first decade of the third Millennium for a very wide range of countries. These studies relied instead on a startling variety of approximately eighteen major environmental indicators, ranging from carbon dioxide emissions; deforestation; ecological footprint; emission of organic water pollutants; energy use; environmental protection efforts; fertilizer and pesticide consumption; greenhouse gas emissions; growth of ecological footprint; industrial organic water pollution, infant mortality; nitrogen oxides, volatile organic compounds, carbon monoxide, and carbon dioxide gas; nitrous oxide emissions; organic water pollution; pesticide consumption; pesticide and fertilizer use; threatened mammal species; total carbon dioxide emissions and emissions per unit of production to water pollution, and infant mortality, often available for only a limited number of developing nations, and often excluding the experience of the countries of East and Central Europe and the former USSR, and other post-communist nations. Nevertheless, the relatively coherent tendency of these studies, most notably Dick and Jorgenson, 2010; Jorgenson and Burns, 2007; Jorgenson, 2003; 2004a, 2004b; 2005; 2006a, 2006b; 2007a, 2007b; 2008; 2009a, 2009b; Jorgenson, and Burns, 2004; Jorgenson, Dick, and Mahutga, 2007; Jorgenson, Kuykendall, and Kennon 2008; Lawrence, 2009; Longo and York, 2008; Mostafa and Nataraajan, 2009; Mostafa, 2010a, 2010b; Nugent, and Shandra, 2009; Shandra, 2007a, 2007b; Shandra, and London, 2008; Shandra, Leckband, and London, 2009; Shandra, Leckband, McKinney, and London 2009; Shandra, London, Whooley, and Williamson, 2004; and finally Shandra, Shor, and London, 2008, 2009 suggests that there seems to be a strong causal interaction between transnational capitalist penetration and environmental degradation, especially in third world countries. To date, the most important counter-study to this fledging scientific tradition was the essay by Ehrhardt-Martinez, Crenshaw, and Jenkins, 2002, which analysed deforestation rates 1980-1995 in the developing countries, using ordinary least squares regression. Net of controls for initial forest stock and the quality of deforestation estimates, the authors find strong evidence for an 'environmental Kuznets' curve[7] driven by (1) agglomeration effects linked to the level of urbanization, (2) rural-to-urban migration that partially offsets rural population pressure, (3) the growth of services-dominated urban economies, and (4) strong democratic states. The authors find little evidence that foreign debt or export dependence influence the deforestation rate. Although deforestation continues to pose pressing and potentially irreversible environmental risks, there is evidence of self-corrective ecological and modernization processes inherent in development that act to mitigate these risks.

One of the most consistent attempts to present a dependency/world system paradigm of the environment was presented over the last years by A. K. Jorgenson. Jorgenson, 2003 already argued that the environmental problems are embedded within the context of hierarchical inter-state relationships and intra-national characteristics in the modern world-system. Using cross-national comparisons among 208 countries, Jorgenson constructs a recursive indirect effects model to estimate the direct, indirect, and total effects of world-system position, domestic inequality, urbanization, and literacy rates on the ecological footprint. Jorgenson finds that world-system position has the strongest positive total effect on per capita consumption, followed by urbanization and literacy rates. Domestic inequality, by contrast, has a strong negative total effect on per capita footprint consumption.

Jorgenson, 2005 again analyses the determinants of ecological footprints. Findings indicate that economic power in the form of capital intensity, military technological power, and overall

[7] Put in easily understandable everyday language, the Kuznets curve rests on the idea, proposed by Kuznets, 1955, that developmental outcomes (like inequality) are a non-linear function of development levels

export dependence are the structural driving forces of per-capita footprint consumption. The effects of military technological power and export dependence on per-capita footprints are primarily direct, whereas the effect of capital intensity is both direct and indirect, partly mediated by its effects on levels of secondary education and domestic income inequality, both of which impact levels of per-capita consumption.

In 2006, Jorgenson, proposed a structural theory of unequal ecological exchange. His theory posits that more-developed countries externalize their consumption-based environmental costs to less-developed countries, which increase forms of environmental degradation within the latter. To test a key assertion of the theory, a weighted index of vertical trade is created that quantifies the relative extent to which exports are sent to more-developed countries. Using the index, cross-national panel analyses of deforestation, 1990-2000, are conducted to test the hypothesis that less-developed countries with higher levels of exports sent to more-developed countries experience greater rates of deforestation, net of other factors. Results of the analyses confirm the hypothesis, providing support for the theory of uneven ecological exchange.

World-Bank-centred development research, meanwhile concedes that economic liberalization and adjustment policies to foreign debt and deficit policies of the past may increase pressure on forests, but that population growth and other variables have to be taken into account and that weak methodology and poor quality data make the results of generalized models questionable (Agelsen and Kaimowitz, 1999).

Nugent and Shandra, 2009 examined how women's status in economic, political, educational, and health spheres affect state environmental protection efforts in the form of protected land area. Hypotheses derived from eco-feminism and the empirical literature of gendered differences in individual-level attitudes and behaviours are tested using multiple regression models with a cross-national sample. The article finds no support for broader eco-feminist claims that the overall oppression of women and environmental degradation are linked by a common source. However, they find strong support for the idea that increasing women's political status in particular through representation in national government has a positive effect on state environmental protection efforts. They also find no evidence that connection to a world polity has a significant effect on nation-state designation of protected land area.

Interesting, as these theoretical currents from dependency theory may be, they would not provide us with a theoretical apparatus showing the negative consequences of a dependency situation and the lack of economic freedom/market distortions at the same time. Since the explorative empirical results of this essay, built on standard stepwise regression from many possible predictors, precisely suggest the need to have such a theory, which combines an explanation of these phenomena at the same time, we now present the relevance of the work of Samir Amin in our context.

The Arab scholar **Samir Amin** – who was born in Egypt (1931) – is to our knowledge the only social scientist from the globalization critical traditions, whose theoretical predictions best correspond with the empirical results, achieved in this essay – combining the negative results of *'world economic openness'* with a deep understanding of the detrimental role of the monopolies of powerful and big countries in the international system, a critical debate about Islamism in world society and a non-neo-liberal critique of rent-seeking, and the transfers of international resources, brought about by large-scale migration from the periphery to the centre of the world system in benefit of the countries of the periphery. All these factors, i.e. the absence of openness, the monopolies of powerful and big countries, outward migration

and the absence of rent-seeking (economic freedom) are the drivers of 'smart development'[8]. No single other social scientific theory combines these elements, and thus we start our theoretical presentation with a sketch of Amin's development theory.

Amin himself recalls in his intellectual itinerary, published in 1994, that the transition from mercantilist capitalism to the era of the Industrial Revolution, and the widening wage gap and the fall in the terms of trade of the periphery since around 1880 serve as starting points for his political economy. He shares many theoretical assumptions of fellow Marxist political economists but, on other points, his theory of global capitalist development is indeed very different from the mainstream of contemporary neo- Marxist political economy.

For one, he shares with some neo-conservatives the belief that the abolition of the gold standard by the United Kingdom in 1914 formed the true beginning of the period of inflation and facilitated the new forms of competition between capitalist monopolies. Economic cycles are the periodic expression of the imbalance between consumption and production. Amin also focuses quite extensively on the equilibrium in the balance of payments. Amin offers – in development of his theory of the effects of the abolition of the gold standard – a concept of a dominant exchange rate ensuring a distribution of returns consistent with the structural adjustment of the weakest nations to the worldwide expansion of capitalism. This 'structural adjustment of the weakest to the strongest' opens up the debate on a theory of unequal power relationships in world capitalism and a critique of contemporary theories of equilibrium exchange rates.

Apart from this debate of exchange rates and what Amin terms the problem of 'banking integration' of the periphery, the author deals extensively with the role of the peripheries in global capitalist crises. The peripheries play a significant role in the worldwide expansion of capital. They allow the recovery of exports from the centres by speeding the break-up of the non-capitalist or pre-capitalist environments. There are various phases in the globalization process, ranging from the classic models of raw material exporting economies to the semi-industrialization of the periphery, and the re-incorporation of the countries of Eastern Europe. There is a persistent tendency at the periphery for a deficit in the external balance of payments. Pressure on the external balance of payments always follows the continual progression of absolute advantage benefiting the centres; the limited range of products available in the periphery; the pressure for repatriation of profits; and the social impact of the worldwide polarization in urbanization, inequalities of income distribution, increase in administrative costs, and so on. Amin mentions in this context what he calls the transfer of the multiplier effect of investment from the peripheries to the centres of the system, produced by the strong marginal propensity of the peripheries to import, and export the profits of foreign capital. The underdeveloped economy is not a backward economy, but a limb of the dominant economy. Several other aspects of his theory can only be sketched in a rudimentary way: the observation that in 9 out of 10 cases, devaluation leads to price increases that cancel it out; the necessity of what Amin terms the distinction between the balance on real account and the balance of bank capital movements. The structural deficits in the periphery are accompanied by the monetarization of sectors of the subsistence economy, the ruination of craftsmanship, the flows of foreign investment into the mining and export cash crop sectors; peripheral growth, under such conditions, Amin says, leads to *'miraculous hopes suddenly dashed'.* **The overall dynamic of accumulation of the periphery is governed by exports,** whereas in the

[8] The positive effects of Muslim population share on smart economic growth are perfectly compatible with the transfer of world economic resources, described in Andre Gunder Frank's theory above, while the negative effects on smart gender equality are well compatible with Samir Amin's observations, sketched below.

centres production of the means of production is linked to the production of goods for local consumption.

In addition, there is according to the theory a strong causal link between this **export orientation** and the increasing inequality of income distribution in the periphery. Impoverishment of the peasants, enhancement of the position of the landowners, preference for investment in light industries, markedly low wages in relation to productivity, disarticulation of the economy and the juxtaposition of 'miracles' with large areas of social devastation are the final consequence of this structure. In the final analysis, which leads Amin also to state that the bourgeoisie in the periphery is a 'comprador class', the polarization between the centres and the peripheries is the most important feature of the capitalist world economy. Rewards for labour are lower in the periphery than in the centre for equal productivity. Secondly, capitalist self-reliance means the interlinkage between the production of capital goods and consumer goods; while in the peripheral social formation, the basic linkage is between exports and luxury consumption at home. For Samir Amin (1997), ascent and decline in the one and single capitalist world economy is largely being determined in our age by the following **'five monopolies'**

1) the monopoly of technology, supported by military expenditures of the **dominant nations**
2) the monopoly of control over global finances and a strong position in the hierarchy of current account balances
3) the monopoly of access to natural resources
4) the monopoly over international communication and the media
5) the monopoly of the military means of mass destruction

Let also recall that for Amin (1975), there are four main characteristics of the peripheral societal formation

a) the predominance of agrarian capitalism in the 'national' sector
b) the formation of a local bourgeoisie, **which is dependent from foreign capital, especially in the trading sector**
c) the tendency of bureaucratization
d) specific and incomplete forms of proletarization of the labour force

In partial accordance with liberal thought, (i) and (iii) explain the tendency towards low savings; thus there will be

1) huge **state sector deficits and, in addition, their 'twin'**
2) **chronic current account balance deficits**

in the peripheral countries.

High imports of the periphery, and hence, in the long run, capital imports, are the consequence of the already existing structural deformations of the role of peripheries in the world system, namely by

a) rapid urbanization, combined with an insufficient local production of food
b) excessive expenditures of the local bureaucracies
c) changes in income distribution to the benefit of the local elites (demonstration effects)
d) insufficient growth of and structural imbalances in the industrial sector
e) and the following reliance on foreign assistance

As we already hinted at above, the history of periphery capitalism, Amin argues, is full of short-term 'miracles' and long-term blocks, stagnation and even regression. Dependency has, according to Amin, a commercial, financial and technological aspect. **'Rent seeking' -** originally a neo-liberal concept, interpreted from the viewpoint of dependency theory, has its basis in big landholding, which throughout the periphery was introduced in the Orient and elsewhere, supported and upheld by colonial and postcolonial structures. Profitable investments in many periphery countries are - in part - constrained by the (emerging) unequal income distribution, which again determines that the local 'surplus' is being squandered by luxurious consumption, transferred abroad in the form of capital flight, or being used for speculation. Past and present foreign domination and colonialism cause long-term structural imbalances. Countries as far apart as large parts of Africa and Asia were no national state during the important era of the Industrial Revolution. **Their economies were geared to the needs of others, i. e. their colonizers.** The structural heterogeneity between the different economic sectors on the one hand and the 'modern', export oriented sector, the medium sector and the 'traditional sector' in agriculture, industry and services became the main reason for the unequal income distribution in the countries of the periphery. Colonial trade, foreign investment in the 19th Century, import substitution in the first half of the 20th Century, and the new international division of labour that we observe from the middle of the 1960s onwards did not really change the structures of inequality in the world system. While mass demand and agricultural structures were responsible for the transition from the tributary mode of production in Western Europe to capitalism from the Long 16th Century onwards, periphery capitalism was and is characterized by the following main tendencies (Amin, 1973 - 1997):

1) regression in both agriculture and small scale industry characterizes the period after the onslaught of foreign domination and colonialism
2) **unequal international specialization** of the periphery leads to the concentration of activities in **export oriented agriculture and or mining**. Some industrialization of the periphery is possible under the condition of low wages, which, together with rising productivity, determine that unequal exchange sets in (double factorial terms of trade < 1. 0; see Raffer, 1987)
3) these structures determine in the long run a rapidly growing tertiary sector with hidden unemployment and the rising importance of rent in the overall social and economic system
4) the development blocks of peripheral capitalism (chronic current account balance deficits, re-exported profits of foreign investments, deficient business cycles of the periphery that provide important markets for the centres during world economic upswings)
5) structural imbalances in the political and social relationships, inter alia a strong 'comprador' element and the rising importance of state capitalism and an indebted state class.

Amin also does not exclude the issue of **political Islam** from his analysis, which were widely popularized on the Internet[9]. At one point, Amin says:

If Political Islam is only a version of neoliberalism, extolling the virtues of the market – completely unregulated, naturally – it is also an absolute refusal of democracy. According to Political Islam, religious law (the Shari'a) has already given the answer to every question, thereby relieving humanity of the difficulty of inventing laws – a basic definition of democracy – and allows us at most to interpret the nuances of divine law. This kind of ideological talk

[9] Apart from his statements in Amin 1994, we find, among others, his following freely available statements on the subject: http://www.loompanics.com/Articles/PoliticalIslam.html and http://monthlyreview.org/2007/12/01/political-islam-in-the-service-of-imperialism

ignores reality, ignores the actual history of Muslim societies, in which it has obviously been necessary to invent laws, although this was done without saying so. It meant that only the governing class had the right, and the power to interpret the Shari'a. The extreme example of this kind of autocracy is Saudi Arabia, a country without a constitution, whose rulers claim that the Qur'an is a satisfactory substitute. In actual practice, the House of Saud has the power of an absolute monarchy or tribal chiefdom. Contemporary Political Islam is not the outcome of a reaction to the so-called abuses of secularism, as often purported, unfortunately. No Muslim society of modern times, except in the former Soviet Union, has ever been truly secular, let alone offended by the daring innovations of any atheistic and aggressive power. The semi-modern States of Kemal's Turkey, Nasser's Egypt, Baathist Syria and Iraq, merely subjugated the men of religion (as often happened in former times) to impose on them concepts aimed solely at legitimizing the State's political options. Western support for Political Islam has thus gone to grotesque extreme of furnishing weapons, financial backing and military training to the agents of Political Islam. The combination of neoliberal economy and political autocracy is perfectly suited to the dominant comprador class charged with management of societies at the contemporary capitalist periphery. The Islamist parties are all instruments of this class. This is true not only of the Muslim Brotherhood and other organizations considered moderate, and whose close ties to the bourgeoisie are well known. It is equally true of the small clandestine organizations which practice "terrorism." Both are useful tools of Political Islam, and the division of labour is highly complementary between those using violence and those infiltrating state institutions (especially education, the judiciary, the mass media and, if possible, the police and military). For all such groups and activities, there is one objective: seizure of state power, although on the morning after the anticipated victory, the "moderates" will put an end to the excesses of the "radicals." Immediately after the Iranian revolution, the Mullahs massacred the left-wing militants (Fedayin and Mojahedin) who had attempted to make common cause between their populist, revolutionary aims inspired by Socialism and the deeper mobilization of Political Islam. Without the Fedayin and Mojahedin, the triumph of the "Islamic" revolution would not have been possible. Since then, the Mullahs have recruited and trained millions of political terrorists from among the lumpen proletariat in order to enforce its rule. [10]

For Amin, political Islam is not interested in the religion which it invokes, and does not propose any theological or social critique:

'It is not a "liberation theology" analogous to what has happened in Latin America. Political Islam is the adversary of liberation theology. It advocates submission, not emancipation. Mahmoud Taha of Sudan […] attempted to emphasize the element of emancipation in his interpretation of Islam. Condemned to death by the authorities of Khartoum for his ideas, Taha's execution was not protested by any Islamic group, "radical" or "moderate." Nor was he defended by any of the intellectuals identifying themselves with "Islamic Renaissance" or even by those merely willing to "dialogue" with such movements. It was not even reported in the Western media'. [11]

For Amin, political Islam is not only 'reactionary' on certain questions (notably concerning the status of women) and perhaps even responsible for fanatic excesses directed against non-Muslim citizens (such as the Copts in Egypt)—it is **fundamentally reactionary and therefore obviously cannot participate in the progress of peoples' liberation.** Amin also attacks at great length the arguments, forwarded by Western liberal political circles to enter

[10] http://www.loompanics.com/Articles/PoliticalIslam.html
[11] http://www.loompanics.com/Articles/PoliticalIslam.html

into a dialogue with 'moderate Islamists'[12]. The first argument, according to Amin, is that political Islam mobilizes numerous popular masses, which cannot be ignored or scorned. Numerous images certainly reinforce this claim. But the power of the Islamist street is, in large part, for Amin simply the reverse side of the weaknesses of the organized left, which is absent from the spheres in which current social conflicts are occurring. Amin also attacks what he calls the second reason put forward by the partisans of "dialogue" that *'political Islam, even if it is reactionary in terms of social proposals, is "anti-imperialist"'*. The third argument, mentioned by Amin, rests on the perceived necessity of combating *'Islamophobia'*. *'Islamophobia'* according to Amin **provides a valuable service to 'reactionary political Islam', giving credibility to its anti-Western discourse**[13].

For Samir Amin, successive waves of immigration have also helped to strengthen what he calls 'the American ideology'. Immigrants are certainly not responsible for the misery and oppression that caused their departure. They left their lands as victims. However, emigration also meant renouncing the collective struggle to change the conditions in their country of origin; they exchanged their suffering for the host country's ideology of individualism and 'pulling oneself up by one's boot straps'. This ideological shift also serves to delay the emergence of class-consciousness, which hardly has the time to develop before a new wave of immigrants arrives to help abort its political expression. Migration inevitably weakens class consciousness and active citizenship in the migration recipient countries. American cities provided the stage for a series of murderous wars between gangs formed by successive generations of poor immigrants (Irish, Italian, etc.) and cynically manipulated by the ruling class. Thus, the workers' unions are apolitical, in every sense of the term. They have no links with a party that might share and express their concerns; nor have they ever been able to articulate a socialist vision of their own. Instead they subscribe, along with everyone else, to what Amin calls the 'dominant liberal ideology'[14], which thus remains unchallenged (Samir Amin: http://www.informationclearinghouse.info/article3681.htm).

Mass migration is for Amin (1997) part and parcel of the process of transnational capitalism. Migration is even part of the five pillars of international inequality (Amin, 1997):

a) unequal exchange: the gaps in wages are much greater than the gaps in productivities
b) capital flight from the peripheries to the centres
c) selective migration from the peripheries into the centres
d) the monopoly position of the centres in the international division of labour
e) the control of the centres over the earth's natural resources

In a similar vein, the fellow world system scholar **Immanuel Wallerstein** is implicitly highly critical of the migration optimism of large sectors of the European Left. People migrate, legally or illegally, for obvious reasons. Economic betterment and escape from persecution are the two principal ones. They migrate where they can, and where economic and political prospects for them are best. The recipient areas/countries have always been ambivalent about these migrants. Those in favour of stringent state action against migrants (and not only against illegal migrants) express themselves in xenophobic language, and get support based on a generalized sense of economic and social insecurity in the working and middle classes. This group, in the language of Immanuel Wallerstein, tends to favour building walls and

[12] http://monthlyreview.org/2007/12/01/political-islam-in-the-service-of-imperialism
[13] http://monthlyreview.org/2007/12/01/political-islam-in-the-service-of-imperialism
[14] Samir Amin uses the term 'liberalism' in a European, not in a U.S. tradition, i.e. he refers to 'liberalism' as an ideology, believing in market forces. In North America, unlike in Europe, the word liberalism often refers to 'social liberalism' in the tradition of President Franklin Delano Roosevelt, and the New Deal.

expulsions of various kinds. They usually are located in more conservative political forces but attract support from some groups that normally support parties more on the left. Those opposed to stringent state action are in fact two quite different groups. There are the business elites who welcome migrants in the belief that this enables them to keep wage rates down. And to some extent they are right. They thus want migrants to have the right to enter and to work. But they are not anxious that migrants have political rights, which would enable them to fight for higher remuneration. The second group is quite the opposite. It is composed of the targeted groups plus those on the left who favour increasing, not decreasing, social and political rights for the migrants (Immanuel Wallerstein: http://www.binghamton.edu/fbc/182en.htm).

The **critique of the political economy in Arab countries, which Amin offers, is radical and even harsh**. His earlier prognosis that 'Arab socialism' will one day lead – just as in the former Soviet Union – towards a general opening towards capitalism, has come true; his predictions about the results of this opening sound very pessimistic. Amin, who is not only a theoretician of political economy, but also a development planer, an academic teacher and a political activist, combines in his more recent writings a rather Gaullist analysis of an **alternative European project** that is a critical force against the driving mechanisms of globalization and a Europe that serves as a model in terms of food-self-sufficiency and as a model of relative 'delinking' from the forces of global capitalism to the third world.

It is now time to present also some thoughts on the other control variables. A number of high-profile studies in economics have used such control variables, while the sociological profession seems to be more cautious about their use[15]. The **Kuznets curve** of **economic inequality** (Barro, 2000) or **environmental degradation** (Selden and Song, 1994; Stern, 2004; Stern, Common and Barboer, 1996) must be just as mentioned in this context as the study by Biswas and Ram, 1986 on **military expenditures**; Ram, 1997 on **tropical climate**; the sociological study by Crenshaw and Robison, on **population, demography, pre-industrial heritage and socio-linguistic integration** as factors of economic growth (see also the essays on **demography**, the **economic size of nations**, and **geography** (absolute latitude) into account - see also Easterly, 2000; Poe and Tate, 1994); Ram, 1986 on **government expenditures**; and the sociological essay by Scanlan, 2004, on **women in government** on food security and social development (see also UNDP, HDR, 1995; furthermore, from the ever more growing important perspective of feminism and good governance: Holmberg, Rothstein and Nasiritousi, 2009; Logo, 2008; Matt, 2010; McDowell, 1992; Rankin, 2002; Rothstein and Teorell; as well as the survey on women in government and the welfare state in Orloff, 1996). We also should mention **culture** (membership of a country in the Islamic Conference; see the vast social science debate following Huntington, 1993; by contrast: Amin, 1997).

Recent investigations in the economics profession highlighted the critical importance of such variables as institutions, historical mortality trends, population and world economic openness on economic behaviour, while the sociological traditions, highlighted in Table 3 of this book, hardly ever used these variables as control variables in their cross-national development pattern accounting. Leading economic contributions on democracy, economic growth, and income inequality include Acemoglu, 2003, 2005, 2010a, 2010b; Acemoglu and Dell; Acemoglu and Robinson, 2000, 2001, 2006, Acemoglu, Johnson and Robinson, 2001, 2002, 2005; Ram, 1997. In Acemoglu, Johnson and Robinson, 2001, we find among the possible drivers and bottlenecks of 'good' institutions and hence long-run economic growth even such

[15] Interested readers are also referred to Easterly, 2000, 2002; Easterly and Levine, 1997; Heshmati and Tausch, 2007 for further reference.

variables as ethno-linguistic fractionalization; percent of population Catholic, Protestant, Muslim and 'others'; French legal dummy; colonial past (dummies for British, French, Spanish, Italian, Belgian, Dutch, Portuguese rule); temperature; humidity; soil quality; natural resources; dummy landlocked; malaria; geographical latitude; historical European settler mortality; yellow fever; and distance of the country from the coast.

Ever since the writings of Coleman (1965), **education** should be mentioned among the determining variables of the development performance of a country (see also Glomm and Ravikumar, 1997). **Education and human capital formation** figure prominently in the *'Human Development Reports'* of the United Nations Development Programme as variables, which determine positively the development outcome. For the UNDP it has been self-evident over the last decade that gender empowerment and the re-direction of public expenditures away from defence will positively contribute to a positive development outcome. However, neo-liberal thought would caution against such premature conclusions. Erich Weede (2002) has shown that standard indicators of human capital endowment - like literacy, school enrolment ratios, or years of schooling - suffer from a number of defects. They are crude. Mostly, they refer to input rather than output measures of human capital formation. Occasionally, Weede and Kaempf believe, these indicators produce implausible effects. They are not robustly significant determinants of growth. They replaced them by average intelligence. This variable consistently outperforms the other human capital indicators in spite of suffering from severe defects of its own.

Weede and his associates maintain that the immediate impact of institutional improvements, i.e., more government tolerance of private enterprise or economic freedom, on growth is in the same order of magnitude as intelligence effects. **Public education expenditure** is still public expenditure, and it is entirely conceivable that in the end public education expenditure might negatively affect the development chances of a society, not because it is education expenditure, but because it is still public expenditure. For such a theoretical understanding, **university reform and university privatization** would be important political steps to achieve a more viable development. The UNDP has devoted considerable energies into developing its own kind of human capital and human development approach that quoted large amounts of statistics on how much different countries devoted to their 'unproductive' military efforts and how little they devoted to the 'good' public education expenditures. Such number games suffered from a major scientific handicap by evading the vital question of the comparison of the effects of different types of government expenditures, among them public education expenditures and military expenditures, on indicators of economic growth, human rights, social justice, gender empowerment and ecological well-being [see United Nations Development Programme HDR 1998, 2004, 2005].

Recent empirical evidence, published in the transnational journals of social science, supports our argument: Blankenau and Simpson, 2004, investigated the public education expenditure-growth relationship in the context of an endogenous growth model in which private and public investment are inputs to human capital accumulation. The positive direct effect of public education spending on growth can be diminished or even negated when other determinants of growth are negatively affected by general equilibrium adjustments. Blankenau and Simpson showed that the response of growth to public education expenditures may be nonmonotonic. The relationship depends on the level of government spending, the tax structure and the parameters of production technologies. Sylwester, 2000, starts from the assumption that income inequality raises expenditures for public education as a fraction of gross domestic product (GDP). Although public education expenditures are positively associated with future economic growth, the contemporaneous effect upon growth is negative.

Given this cost upon current growth, these findings may help to explain the lack of a large, positive effect from the growth of human capital upon economic growth as reported in the literature.

As we already mentioned, we also included the well-documented **'butter versus guns'** dimension of **militarization as a possible development blockade** into our research design. In our analysis, militarization is considered to be part and parcel of the syndrome of the dependent insertion of the countries of the periphery into the world economy. Especially German inspired peace research underlined this fatal connection, and a number of such studies are available in English on the issue.[16] With some justification, it can be claimed that the highlighting of this point was one of the genuine contributions of peace research in West Germany in the 1970s and 1980s to the international debate on dependency and the world system.

In addition, recent macro-quantitative comparative research again highlighted the ***'peace dividend'*** and the old ***'butter versus guns'*** alternative (Auvinen and Nafziger, 1999; Heo, 1998; Mintz and Stevenson, 1995). These influential studies all highlight the fact that in only 10% of the 103 countries surveyed, military expenditures had a positive effect on economic growth (Mintz and Stevenson, 1995); and that of 80 countries surveyed in the Heo study 1998, 2/3 might expect a peace dividend. In addition, high military expenditures contribute to humanitarian emergencies in conjunction with a tradition of violent conflict, high income inequality and slow growth in average food production (Auvinen and Nafziger, 1999).

Military personnel rates were also featured quite frequently in the literature as a possible driver or bottleneck of development. The neoliberal German sociologist Erich Weede – challenging the mainstream of international and German peace research, critical of high military efforts of a given country - has been among those to state that high military personnel ratios are good for economic growth and income redistribution, reflecting a high external world political threat against a given country, mobilizing the internal resources. The evidence, provided by Weede against the basic assumptions of peace research and dependency research, claiming that multinational corporation penetration and other measures of the dependent insertion of countries into the global economy has no detrimental effect on economic and social development, has been impressive, and suggests at least the dire need of further empirical studies on the subject (Weede, 1980, 1981a, 1981b, 1983, 1985, 1986, 1993; Weede and Jagodzinski, 1980; Weede and Tiefenbach, 1980a, 1980b, 1981). While some researchers think that military expenditures improve domestic economic performance, others vehemently believe that they crowd out growth-inducing processes. Military expenditures could inhibit national development in part by slowing the expansion of the labour force. Labour-intensive militaries may provide a pathway for upward mobility, but comparatively capital-intensive military organizations limit entry opportunities for unskilled and under- or unemployed people. Deep investments in military hardware also may reduce the investment capital available for more economically productive opportunities. A forceful argument against high military personnel rates and against conscription has come however from a recent, widely circulated study by Keller, Poutvaara, and Wagener, 2010, which maintains that economic theory as such would predict that military conscription is associated with static inefficiencies as well as with dynamic distortions of the accumulation of human and physical capital. Relative to an economy with an all-volunteer force, the authors think that output levels and growth rates are expected to be lower in countries that rely on military draft to recruit their army personnel. Military conscription has a negative impact on GDP and on its growth is

[16] Brzoska and Lock, 1992; Brzoska and Ohlson, 1986, 1987; Brzoska and Pearson, 1994

claimed to be robust. OECD countries would be ill-advised to rely on military drafting in their effort to achieve higher economic performance.

The well-known, and above mentioned non-linear effects of development levels on development performance (what social sciences sometimes call the *'**acceleration** and **maturity** effects')* have to be also qualified in an important way. Ever since the days of the Nobel laureate economist **Simon Kuznets**, development researchers have applied certain types of mathematical formulations *('curve-linear formulations')* in order to capture these effects. One particular formulation, explaining economic growth by a non-linear function of development levels and their square (what is then called, in technical language, a 'curve-linear function of economic growth'), are sometimes called the *'Matthew effect'* following Matthew (chapter 13, verse 12):

'For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath' (The Holy Bible Containing the Old and New Testaments. London and New York: Collins' Clear-Type Press, Ruby Text)

Social scientists interpreted this effect mainly in view of an acceleration of economic growth in middle-income countries *vis-à-vis* the poor countries and in view of the still widening gap between the poorest periphery nations ('have-nots') and the 'haves' among the semi-periphery countries (Jackman, 1982), but they also applied a similar effect to income inequality and more recently, to an 'environmental Kuznets curve'.

We also should say some words here about population density. For Acemoglu and associates, the conditions found by European settlers under colonialism at the end of the day determine the quality of today's institutions in large portions of the extra-European world. From the point of view of dependency theory, there is a strikingly parallel and competing explanation at hand. It is not so European settler mortality, but population density in general, which is the determining variable for the subsequent trajectories of development patterns. Already classical Latin American social science, in the works of the Peruvian Marxist and precursor of dependency theory, **José Carlos Mariategui** (1894-1930), whose name is hardly ever mentioned in the cross-national development debate, clearly foresaw what he saw as the devastating negative long-term development effects of a **low population density** on subsequent patterns of development. Mariategui, a very interesting Marxist scholar, who achieved unfortunately posthumous international celebrity by the high jacking of his name by the terrorist group *'Sendero Luminoso'* five decades after his death, clearly distinguishes between what he sees as the extensive and wasteful Iberian heritance of colonialism, with its use of the 'abundant production factors' land and fresh, unqualified labour. His account of the rapidly growing labour force in scattered tiny settlements in the Sierra region of the Andes in conjunction with extensive land use and high land concentration make the inclusion of the population density variable in any macro-quantitative account of development performance important. At the other end of the scale of the views on population density and size, our readers should be reminded that these questions also play an important role in the works of the economists **Ernst Friedrich 'Fritz' Schumacher** (16 August 1911 – 4 September 1977) and **Leopold Kohr** (5 October 1909 – 26 February 1994.[17] Their work is often being referred to today as **'Buddhist economics'**. We already drew our reader's attention to the fact that on an international level, the Happy Planet Organization indicators[18] – Ecological Footprint,

[17] The most important ideas by Kohr and Schumacher were stated in Kohr, 1957, 1958, 1960, 1977, 1992 and Schumacher, 1973a, 1973b, 1976, 1977.
[18] http://www.happyplanetindex.org/

Happy Life Years, and the derived measure Happy Planet Index (HPI), which measures the ecological efficiency with which human well-being is delivered around the world, increasingly gained in importance. At first sight, the measure is of a compelling simplicity, capturing at the same time the growing global ecological concerns about the validity of our lifestyle, needing more and more energy to produce a stagnant or even shrinking rate of human happiness. Accordingly, the basic logic of the Happy Planet Index must be traced back especially to Schumacher's writings. [19] Schumacher's *'Buddhist economics'* are based on an envisaged minimum material consumption in relation to life quality. Internationally, we observe a growing framework of what is being increasingly referred-to as *'the environmental efficiency of well-being'* (EWEB, see also Dietz, Rosa and York, 2007 and 2009; Knight and Rosa, 2011). Schumacher's critique of Western economies and his proposals for human-scale, decentralized and appropriate technologies led him to call for 'Intermediate Size' and 'Intermediate Technology'.[20] Schumacher, in many ways, must be considered as one of the founders of contemporary thinking about *'sustainable development'*. Central for Schumacher's concerns is the idea that in rich countries these developments can be partly compensated, as far as incomes are concerned, by an enormous and never ending expansion of welfare payments; in poor countries it produces 'dual societies' - great masses of destitute people on the one side - many of them without work and living in slums - and a small, rich elite on the other, who often 'earn' in an hour more than most of their compatriots earn in a month. A genuine middle class to connect the extremes does not exist; it has disappeared together with the 'disappearing middle' of technology. The loss of social structure is paralleled by the loss of a coherent structure as far as human settlements are concerned: hence the appearance of vast congestion in a few places and a vast (relative) emptiness in all other places. (Schumacher, 1973b; 1976). Schumacher's alternative strategy is based on the factors of smallness, simplicity, capital-cheapness and non-violence. Schumacher was also among the first to highlight the enormous dependence of modern, industrialized agriculture on fossil fuels. Harvested crops capture solar energy and store it as food or some other useful product. Yet the energy captured is small compared to the energy we burn to capture it. Agriculture, as a result, has become a major consumer of our stores of energy, using more petroleum than any other single industry. If the world is facing a future with rising energy prices, the highly mechanized technology currently used in modern, industrialized agriculture may be inappropriate (Schumacher, 1973b).

In Schumacher, 1973b, it is already being argued that government effort must be concentrated on sustainable development, because relatively minor improvements, for example, technology transfer to Third World countries, will not solve the underlying problem of an unsustainable economy. Schumacher indeed was one of the first economists to question the appropriateness of gross national product as a measure for human well being, emphasizing that 'the aim ought to be to obtain the maximum amount of well being with the minimum amount of consumption' (Schumacher, 1973b).

For Kohr's approach, the consequences are even more radical:[21] there seems only one cause behind all forms of social misery: bigness. Whenever something is wrong, something is too big. Social problems have the tendency to grow at a geometric ratio with the growth of the organism of which they are part, while the ability of man to cope with them, if it can be extended at all, grows only at an arithmetic ratio. For Kohr it is clear that if a society grows beyond its optimum size, its problems must eventually outrun the growth of those human

[19] see http://www.resurgence.org/education/schumacher-circle.html#ne
[20] For a very good overview of Schumacherian economics, see also http://www.resurgence.org/education/schumacher-circle.html#ne
[21] Kohr, 1957, 1958, 1960, 1977, 1992

faculties which are necessary for dealing with them. A small-state world would not only solve the problems of social brutality and war; it would solve the problems of oppression and tyranny. It would solve all problems arising from power (Kohr, 1957):

'As regards the scale of socially committed or condoned atrocities, we have so far discovered one fact. Most nations, irrespective of their racial background, the stage of their civilization, their ideology, or their economic system, have managed to roll up an impressively similar record. Mass executions and related monstrosities were perpetrated in Germany under the nazis, in India under the British, in France under the Catholics, in Russia under some of the most savage, and in Italy under some of the most enlightened, princes. There could not have been a vaster difference of conditions. Yet, if similar excesses occurred everywhere and in all phases and periods of historic development, there must apparently be a common element transcending these differences. This common denominator, as we shall see, seems to be the simple ability, the power, to commit monstrosities. As a result, we arrive at what we might call a power theory of social misery. In part, the proposition seems self-evident. For no one could perpetrate atrocities without the power to do so. But this is not the point. The point is that the proposition operates also in the reverse. Everyone having the power will in the end commit the appropriate atrocities. This sounds somewhat extreme. Clearly, not everybody holding power must necessarily make evil use of it. Which is quite true, but it does not alter the proposition'. (Kohr, 1957, Chapter II)

Confronted with all this startling variety of contradictory statements on the drivers and bottlenecks of international development, we now should present a survey of the empirical methods used in this study.

3. Methods and measurement

To start with, we have made our data for our calculations completely and freely available on the Internet, so that the global research community can have free access to the original data and the opportunity to check our results or to conduct new research (http://www.hichemkaroui.com/?p=2017). This internet site offers not only the Microsoft EXCEL data (Table 1 of the EXCEL file) and a list of the sources (Table 2 of the EXCEL file), but also a codebook in PDF format. A brief description of the smart development data, calculated from that data source, is also contained in the Appendix of this work.

Our investigation duly acknowledges many of the key determinants of economic growth, mentioned in the economic literature, like current shares of the country's inhabitants in total world population, calculated from UNDP data; the famous Heritage Foundation 2000 Economic Freedom Score; absolute geographical latitude, adapted from Easterly's growth theory; the UNDP figures for long-term annual population growth rate, 1975-2005 (per cent); the trade-off between development level and development performance, otherwise also known in economics as 'conditional convergence' (ln GDP per capita; ln GDP per capita ^2); the simple Huntingtonian fact of whether a country is a Muslim country, to be measured by the Organization of Islamic Conference (OIC) Membership or by Muslim population share (Nationmaster); UNDP data on the simple geographical fact of population density (based on the CIA's World Factbook); UNDP data on public education expenditure per GDP; and the UNDP education index, combining the enrolment rates at the primary, secondary and tertiary education levels. We also take into account UNDP figures on military expenditures per GDP and the openly available CIA data on military personnel rate, which are key variables of

contemporary political science international relations theory and peace research. In our analysis, we also show the theoretical and practical (political) potential of the following two drivers of development, which are somewhat a 'terra incognita Australis' in the hitherto existing macro-sociological debate, like migration and European (Monetary) Union membership.

To gain a real empirical knowledge under scrutiny here, we first developed UNDP-type indicators from current standard international comparative, cross-national social science data on these six dimensions of development and on the combined performance on the six dimensions. We then show the non-linear standard OLS regression trade-off between ecological footprint per capita and its square and these six dimensions of development (and the overall development performance indices). The residuals from these regressions are our new measure of smart development: with a minimum of ecological footprint one has to achieve a maximum of democracy, or economic growth, or gender equality, or human development, or research and development, or social cohesion (and the combination of all of them). We then look in a very preliminary way at the drivers and bottlenecks of smart development. Can the accumulated knowledge of cross-national development research be applied to this new question writing? We use standard comparative cross-national 'development accounting' data, which operationalize standard econometric drivers of economic growth, and compare their weight in explaining 'smart development' with the results for the clash of civilization models, political integration theories, feminist theories, migration theories, and peace research approaches to global development. We also analyze the possible explanatory weight of sociological dependency and world systems theories and later globalization critical research, and also do not overlook in our choice of independent variables with a possible effect on the dependent variables – smart development - the *'small is beautiful paradigm'* in the tradition of Schumacher.

Instead of concentrating on the ever more complex modelling of the effects of *'foreign capital dependence',* the economics profession, by contrast, developed its mathematical models of 'development accounting' side by side with an ever growing amount of many different variables, which featured as *'control variables'* in the literature. An attempt, like the one by Sala-i-Martin (1997), to filter out the most robust predictors of economic growth by applying Bayesian techniques and combining dozens of predictor variables in all mathematically possible different combinations is a very legitimate one from the viewpoint of the advancement of social science and statistical methodology. By contrast, sociologists used to the published articles in journals like the *'American Sociological Review'* most probably would be shocked by Sala-i-Martin's successful attempt to run **two million regressions** (in a scientific paper version of his 1997 essay, he even speaks about **four million regressions**). Availability of computer power, common databases and search engines with same on-line journal service may finally bring the three disciplines of sociology, politics and economics closer.

The question of the geographic, demographic and other independent variables in development accounting found much more attention in the recent **economic** literature. According to this type of research, we currently are facing around 100 popular independent variables in the current econometric literature on the determinants of economic growth. Sala-i-Martin, Doppelhofer and Miller, 2004, arrived at the following list of robust growth predictors, which keep their significance after all possible relevant changes in the research design, applying their Bayesian estimation techniques:

1. East Asian dummy
2. Primary schooling 1960

3. Investment price
4. GDP 1960 (log)
5. Fraction tropical area
6. Population density coastal 1960's
7. Malaria prevalence in l960's
8. Life expectancy in 1960
9. Fraction Confucian
10. African dummy
11. Latin American dummy
12. Fraction GDP in mining
13. Spanish colony
14. Years open
15. Fraction Muslim
16. Fraction Buddhist
17. Ethno-linguistic fractionalization
18. Government consumption share l960s

In their *American Economic Review* article 2004, Sala-i-Martin and associates highlight the point that the strongest effects on growth are found for good primary schooling enrolment, the low price of investment goods and a low initial level of income where the latter reflects the concept of conditional convergence. Other important variables, according to this study, include regional dummies (such as East Asia, Sub- Saharan Africa, or Latin America), some measures of human capital and health (such as life expectancy, proportion of a country in the tropics, and malaria prevalence), religious dummies, and some sectoral variables such as mining. Interestingly enough, and in contrast to current contemporary Islamo-phobic reasoning, Sala-i-Martin and his team even found quite strong and positive effects of the predominance of the Islamic faith on economic growth, with a likewise positive effect of Buddhist and Confucian cultures on economic growth, while the initial income levels and government consumption levels also quite strongly affected the growth rate.

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The choice of a country to be included in the final analysis (175 countries[22]) was determined by the availability of a fairly good data series for these independent variables (if not mentioned otherwise, UNDP data for the middle of the first decade of the new millennium). In the final regressions, we applied the 'list wise deletion of missing values' routine (i.e. only entering countries with complete data into the statistical analysis).

For the interested readers, Box 1 summarizes this 'dependency theory'/'world systems theory' 'empirical logic':

Box 1: The logic of dependency and the capitalist world system, challenging neo-liberal orthodoxies

MNC penetration (MNC PEN) measures the different degrees of weight that foreign capital investments have in the host countries, i.e. the UNCTAD percentages of the stocks of multinational corporation investments per total host country GDP. This research tradition has been especially developed, as mentioned earlier, by the Swiss sociologist Volker Bornschier and his school. Bornschier and his school predicted a strong negative determination of development by a high MNC penetration, due to the negative consequences that monopolies have on the long term development trajectory of countries.

- We also ascertain the **growth of MNC penetration over time (DYN MNC PEN)**, from 1995 to 2005. The Bornschier School expected short-term dynamic effects from such MNC penetration increases.
- Equally, Bornschier and his school already developed a high theoretical and empirical awareness about the long-term consequences of the presence or absence of **'MNC headquarter status' (MNC HEADQU),** measured in our analysis by the indicator MNC outward investments (stock) per GDP. Bornschier and his school expected that a high headquarter status mitigates against the long-term negative effects of MNC penetration.
- **FPZ (free production zones)** employment as a per cent of total population is the indicator best suited to measure the so-called 'NIDL' (new international division of labour) school. Early on, Froebel, Heinrichs and Kreye (1980) already predicted the unfettered rise of the model of 'export processing zones', especially in China and Southeast Asia. This first major international study by Froebel/Heinrichs/Kreye, 1980 was followed, among others, by Ross, 2004; and Singa-Boyenge, 2007. Export Processing Zones (EPZ) – or ***'Free Production Zones'*** today already account for some 80 per cent of the merchandise exports of countries like China, Kenya, the Philippines, Malaysia, Mauritius, Mexico, Senegal, Tunisia, and Vietnam. The 3500 EPZs in 130 countries of the world now employ 66 million people, among these 40 million employees in China. The tendency, correctly foreseen by Froebel/Heinrichs/Kreye, 1980 towards this total global re-location of world industries continues unabated. In the present book, we try to determine the quantitative weights, which free production

[22] Albania; Algeria; Angola; Antigua and Barbuda; Argentina; Armenia; Australia; Austria; Azerbaijan; Bahamas; Bahrain; Bangladesh; Barbados; Belarus; Belgium; Belize; Benin; Bhutan; Bolivia; Bosnia and Herzegovina; Botswana; Brazil; Brunei Darussalam; Bulgaria; Burkina Faso; Burundi; Cambodia; Cameroon; Canada; Cape Verde; Central African Republic; Chad; Chile; China; Colombia; Comoros; Congo; Congo (Democratic Republic of the); Costa Rica; Côte d'Ivoire; Croatia; Cuba; Cyprus; Czech Republic; Denmark; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Eritrea; Estonia; Ethiopia; Fiji; Finland; France; Gabon; Gambia; Georgia; Germany; Ghana; Greece; Grenada; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hong Kong, China (SAR); Hungary; Iceland; India; Indonesia; Iran (Islamic Republic of); Ireland; Israel; Italy; Jamaica; Japan; Jordan; Kazakhstan; Kenya; Korea (Republic of); Kuwait; Kyrgyzstan; Lao People's Democratic Republic; Latvia; Lebanon; Lesotho; Libyan Arab Jamahiriya; Lithuania; Luxembourg; Macedonia (TFYR); Madagascar; Malawi; Malaysia; Maldives; Mali; Malta; Mauritania; Mauritius; Mexico; Moldova; Mongolia; Morocco; Mozambique; Myanmar; Namibia; Nepal; Netherlands; New Zealand; Nicaragua; Niger; Nigeria; Norway; Oman; Pakistan; Panama; Papua New Guinea; Paraguay; Peru; Philippines; Poland; Portugal; Qatar; Romania; Russian Federation; Rwanda; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Samoa; Sao Tome and Principe; Saudi Arabia; Senegal; Seychelles; Sierra Leone; Singapore; Slovakia; Slovenia; Solomon Islands; South Africa; Spain; Sri Lanka; Sudan; Suriname; Swaziland; Sweden; Switzerland; Syrian Arab Republic; Tajikistan; Tanzania (United Republic of); Thailand; Timor-Leste; Togo; Trinidad and Tobago; Tunisia; Turkey; Turkmenistan; Uganda; Ukraine; United Arab Emirates; United Kingdom; United States; Uruguay; Uzbekistan; Vanuatu; Venezuela (Bolivarian Republic of); Vietnam; Yemen; Zambia; and Zimbabwe.

zones have in the determination of development performance (per cent of the population working in export processing zones versus MNC penetration versus the other dependency/globalization indicators).

- **'low comparative price levels'** (for an exhaustive debate on the underlying issues from a dependency theory/world systems perspective, see Kohler/Tausch, 2003, furthermore Raffer, 1987, Yotopoulos, 1996, and Yotopoulos/Sawada, 2005 from a dependency theory/world systems perspective, as well as Balassa, 1964 and Samuelson, 1964 from a more conventional economic theory framework) is operationalized here simply by ERD or ERDI, the exchange rate deviation index, which is calculated by the ratio between GDP at purchasing power parities, divided by GDP at current exchange rates (see also http://epp.eurostat.ec.europa.eu/portal/page/portal/structural_indicators/indicators/economic_reform). Dependency theories and world systems theories assume that low comparative price levels are an indicator of 'unequal exchange' between the countries of the center and the periphery. [23]
- For dependency authors, **foreign savings** show the weight that foreign savings, mostly from the centres and richer semi-peripheries, have in the accumulation process of the host countries in the periphery and semi-periphery. It is calculated by the difference between the share of investments per GDP and the share of savings per GDP.

The statistical design of our study is thus based on the usual, SPSS XVIII ordinary least square standard regression analysis of the **'kitchen sink type'** (Durlauf *et al.,* 2008; Hertz, Hebert, and Landon, 1994) of economic growth and economic, social and political performance in the research tradition of Barro, 2003.[24] Surveying the vast econometric literature on the subject of the possible drivers and bottlenecks of the EU-2020 process and overall development performance of a given country, one indeed finds support for the inclusion of geographic and demographic variables in the comparative analysis of development success or failure. Our list is thus corresponding to international research standard praxis in the discipline of general 'development accounting' (Barro and Sala-i-Martin, 2003; Dixon, 1987; Dixon and Moon, 1986, 1989; Durlauf et al., 2008; Fain, 1997; Fosu, 2009, 2010a, 2010b, 2010c; Moon and Dixon, 1992; Shandra, 2007a, 2007b; Shandra et al., 2009; Tausch and Prager, 1993). Compared to a recent approach on the subject (Knight and Rosa, 2011), we do include globalization-oriented variables as well, and not just levels of GDP, winters, social trust, democracy, inequality, and Latin America, former USSR, Africa, and Asia as 'dummy variables' (Knight and Rosa, 2011). There is a wide and well-established research tradition in international comparative sociology to include globalization-related drivers of environmental decay (Jorgenson, 2008, 2009a, 2009b, 2009c, 2009d). To exclude such variables and to introduce instead four geographically determined dummy variables (Latin America, former USSR, Africa, and Asia, as was done by Knight and Rosa, 2011) does not necessarily increase the theoretical and predictive power of analysis. Our main independent variables and their theoretical linkages are presented in Table 4:

[23] For an easily readable and available survey of the available and often very complicated literature as well as the empirics of 'unequal exchange', see Kohler/Tausch, 2003 and http://wsarch.ucr.edu/archive/papers/kohlertoc.htm

[24] To our knowledge, the term 'kitchen sink regression', commonly used in econometrics of economic growth, was re-introduced in more recent standard social science journal vocabulary in Laver and Shepsle, 1999.

Table 4: the independent variables of our model and theories or earlier empirical studies, connected with these variables

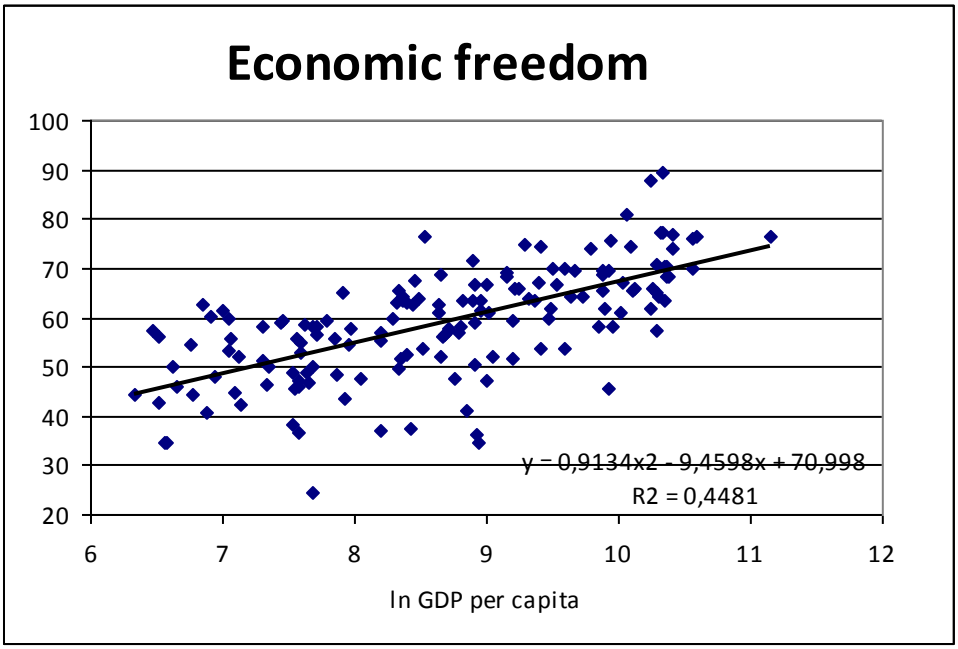
Independent variables, determinants of smart development	**Theories or earlier empirical studies, connected with these variables**
% women in government, all levels	Holmberg, Rothstein and Nasiritousi, 2009; Logo, 2008; Matt, 2010; McDowell, 1992; Orloff, 1996; Rankin, 2002; Rothstein and Teorell; UNDP, HDR, 1995
% world population	Acemoglu and Dell, 2010; Acemoglu and Robinson, 2000, 2001, 2006; Acemoglu, 2003, 2005, 2010a, 2010b; Acemoglu, Johnson and Robinson, 2001, 2002, 2005; Amin, 1997a, 1997b; Crenshaw and Robison, 2010; Kohr, 1957, 1958, 1960, 1977, 1992; Ram, 1997; Schumacher, 1973a, 1973b, 1976, 1977
2000 Economic Freedom Score	Alesina and Perotti, 1994; Helliwell, 1994; La Porta, Lopez de Silanes, Shleifer, 1999; York, Rosa and Dietz, 2003
Absolute latitude	Acemoglu and Dell, 2010; Acemoglu and Robinson, 2000, 2001, 2006; Acemoglu, 2003, 2005, 2010a, 2010b; Acemoglu, Johnson and Robinson, 2001, 2002, 2005; Easterly, 2000; Poe and Tate, 1994; Ram 1997
Annual population growth rate, 1975-2005 (%)	Acemoglu and Dell, 2010; Acemoglu and Robinson, 2000, 2001, 2006; Acemoglu, 2003, 2005, 2010a, 2010b; Acemoglu, Johnson and Robinson, 2001, 2002, 2005; Crenshaw and Robison, 2010; Ram, 1997
Comparative price levels (US=1.00)	Egert, Drine and Lommatzsch, 2003; Faria and Leon-Ledesma, 2003; Gould, 2002; Kohler and Tausch, 2003; Paya, Venetis and Peel, 2003; Raffer, 1987; Tausch and Ghymers, 2006; Yotopoulos and Sawada, 2005; Yotopoulos, 1996
Foreign savings rate	Bovenberg and van Ewijk, 1997; Cook, 1995; Doucouliagos and Paldam, 2008; Easterly and Schmidthebbel, 1993; Feldstein, 1994; Gine and Townsend, 2004; Singh, 1985; Tausch and Ghymers, 2006; Tausch and Prager, 1993; Taylor, 1992
FPZ (free production zones) employment as % of total population	Chen, 1995; Rondinelli, 1987; Tausch and Ghymers, 2006; Tausch and Prager, 1993
Immigration - Share of population 2005 (%)	Barro and Sala-i-Martin, 2003; Dixon and Moon, 1986, 1989; Dixon, 1987; Durlauf *et al.,* 2008; Fain, 1997; Fosu, 2009, 2010a, 2010b, 2010c; Moon and Dixon, 1992; Shandra et al., 2009; Shandra, 2007a, 2007b; Tausch and Prager, 1993
ln GDP per capita	Afxentiou, 1990a, 1990b; Anand and Ravillion, 1993; Anson, 1988, 1991; Barro, 2000; Cheng, 1989; Dixon and Moon, 1986, 1989; Dixon, 1987; Fosu, 2009, 2010a, 2010b, 2010c; Kakwani, 1993, 1995; Khan, 1991; King, 1998; Knight and Rosa, 2011; Mazumdar, 1996, 2000; Moon and Dixon, 1992; Newman and Thomson, 1989; Rudra, 2009; Selden and Song, 1994; Stern, 2004; Stern, Common and Barboer, 1996; Tausch and Prager, 1993
ln GDP per capita ^2	Afxentiou, 1990a, 1990b; Anand and Ravillion, 1993; Anson, 1988, 1991; Barro, 2000; Cheng, 1989; Dixon and Moon, 1986, 1989; Dixon, 1987; Fosu, 2009, 2010a, 2010b, 2010c; Kakwani, 1993, 1995; Khan, 1991; King, 1998; Knight and Rosa, 2011; Mazumdar, 1996, 2000; Moon and Dixon, 1992; Newman and Thomson, 1989; Rudra, 2009; Selden and Song, 1994; Stern, 2004; Stern, Common and Barboer, 1996; Tausch and Prager, 1993
Membership in the Organization of Islamic Cooperation (OIC)	de Soysa and Ragnhild, 2007; Haynes, 2001
Military expenditures per GDP	Auvinen and Nafziger, 1999; Biswas and Ram, 1986; Brzoska and Lock, 1992; Brzoska and Ohlson, 1986, 1987; Brzoska and Pearson,

	1994; Heo, 1998; Mintz and Stevenson, 1995
Military personnel rate ln (MPR+1)	Auvinen and Nafziger, 1999; Heo, 1998; Keller, Poutvaara, and Wagener, 2010; Mintz and Stevenson, 1995; Weede and Jagodzinski, 1980; Weede and Tiefenbach, 1980a, 1980b, 1981; Weede, 1980, 1981a, 1981b, 1983, 1985, 1986, 1993
MNC outward investments (stock) per GDP	Beer, 1999; Bornschier, 1982, 2002; Dick and Jorgenson, 2010; Dutt, 1997; Heshmati, 2006b; Jorgenson and Burns, 2007; Jorgenson, 2003, 2004a, 2004b, 2005, 2006a, 2006b, 2007a, 2007b, 2008, 2009a, 2009b; Jorgenson, and Burns, 2004; Jorgenson, Dick, and Mahutga, 2007; Jorgenson, Kuykendall, and Kennon 2008; Kentor, 1998; Klitgaard and Fedderke, 1995; Lawrence, 2009; Longo and York, 2008; Mostafa and Nataraajan, 2009; Mostafa, 2010a, 2010b; Nugent, and Shandra, 2009; Shandra, 2007a, 2007b; Shandra, and London, 2008; Shandra, Leckband, and London, 2009; Shandra, Leckband, McKinney, and London 2009; Shandra, London, Whooley, and Williamson, 2004; Shandra, Shor, and London, 2008, 2009; Tausch and Prager, 1993; Tausch, 2003; Tsai 1995
MNC PEN - stock of Inward FDI per GDP	Beer, 1999; Bornschier, 1982, 2002; Dick and Jorgenson, 2010; Dutt, 1997; Heshmati, 2006b; Jorgenson and Burns, 2007; Jorgenson, 2003, 2004a, 2004b, 2005, 2006a, 2006b, 2007a, 2007b, 2008, 2009a, 2009b; Jorgenson, and Burns, 2004; Jorgenson, Dick, and Mahutga, 2007; Jorgenson, Kuykendall, and Kennon 2008; Kentor, 1998; Klitgaard and Fedderke, 1995; Lawrence, 2009; Longo and York, 2008; Mostafa and Nataraajan, 2009; Mostafa, 2010a, 2010b; Nugent, and Shandra, 2009; Shandra, 2007a, 2007b; Shandra, and London, 2008; Shandra, Leckband, and London, 2009; Shandra, Leckband, McKinney, and London 2009; Shandra, London, Whooley, and Williamson, 2004; Shandra, Shor, and London, 2008, 2009; Tausch and Prager, 1993; Tausch, 2003; Tsai 1995
MNC PEN: DYN MNC PEN 1995-2005	Beer, 1999; Bornschier, 1982, 2002; Dick and Jorgenson, 2010; Dutt, 1997; Heshmati, 2006b; Jorgenson and Burns, 2007; Jorgenson, 2003, 2004a, 2004b, 2005, 2006a, 2006b, 2007a, 2007b, 2008, 2009a, 2009b; Jorgenson, and Burns, 2004; Jorgenson, Dick, and Mahutga, 2007; Jorgenson, Kuykendall, and Kennon 2008; Kentor, 1998; Klitgaard and Fedderke, 1995; Lawrence, 2009; Longo and York, 2008; Mostafa and Nataraajan, 2009; Mostafa, 2010a, 2010b; Nugent, and Shandra, 2009; Shandra, 2007a, 2007b; Shandra, and London, 2008; Shandra, Leckband, and London, 2009; Shandra, Leckband, McKinney, and London 2009; Shandra, London, Whooley, and Williamson, 2004; Shandra, Shor, and London, 2008, 2009; Tausch and Prager, 1993; Tausch, 2003; Tsai 1995
Muslim population share per total population	Acemoglu and Dell, 2010; Acemoglu and Robinson, 2000, 2001, 2006; Acemoglu, 2003, 2005, 2010a, 2010b; Acemoglu, Johnson and Robinson, 2001, 2002, 2005; Ram, 1997
Net international migration rate, 2005-2010	Ehrhardt-Martinez, Crenshaw and Jenkins, 2002
Openness-Index, 1990 (export-share per GDP + import-share per GDP)	Alesina, Spolaore and Wacziarg, 2000; Dollar, 1992a, 1992b; Edwards, 1993; Frankel and Romer, 1999; Rodrik, 2006; Rodrik, Subramanian, and Trebbi, 2004; World Bank, 2005
Population density	Acemoglu and Dell, 2010; Acemoglu and Robinson, 2000, 2001, 2006; Acemoglu, 2003, 2005, 2010a, 2010b; Acemoglu, Johnson and Robinson, 2001, 2002, 2005; Ram, 1997
Public education expenditure per GNP	Blankenau and Simpson, 2004; Glomm and Ravikumar, 1997; Ram, 1986; Scanlan, 2004; Sylwester, 2000; Weede and Kampf, 2002
UNDP education index	Blankenau and Simpson, 2004; Glomm and Ravikumar, 1997; Sylwester, 2000; Weede and Kampf, 2002
Worker remittance inflows as % of GDP	Acosta, Calderon, Fajnzylber, et al., 2008; Amuedo-Dorantes and Pozo, 2004; Martin and Straubhaar, 2002
Years of membership in EMU, 2010	Allsopp and Artis, 2003; Buti, Franco and Ongena, 1998; de la Porte, Pochet and Room, 2001; Egert, Drine and Lommatzsch, 2003; Molle and Boeckhout, 1995

Years of membership in the EU, 2010	Allsopp and Artis, 2003; Buti, Franco and Ongena, 1998; de la Porte, Pochet and Room, 2001; Egert, Drine and Lommatzsch, 2003; Molle and Boeckhout, 1995

As to the possible theoretical explanations, we have to state that we regard the openness indicator from a completely different angle as Dollar, 1992 and 1992b: First of all, we show the non-linear trade-off between n-log GDP per capita and economic freedom, showing that almost 45% of economic freedom is being determined by income levels:

Graph 1: GDP per capita (n-log) and world economic openness



In Table 5 we show the residuals from a linear trade-off (since, as can be seen by our Graph 3, the curvilinear formulation of the function is not really necessary). Hong Kong, Singapore and El Salvador are – relative to their GDP per capita – the freest economies in the world, while Angola, Libya and Iran are the most unfree economies of the world relative to their GDP per capita.

Table 5: n-log GDP per capita and 'economic freedom'

	ln GDP per capita	2000 Economic Freedom Score	trend value	residual
Hong Kong, China (SAR)	10,34	89,53	69,37	20,16
Singapore	10,24	87,67	68,78	18,88
El Salvador	8,53	76,30	58,00	18,31
Zambia	6,85	62,76	47,47	15,29
New Zealand	10,06	80,89	67,64	13,25
Benin	6,99	61,53	48,39	13,14

Mali	6,91	60,25	47,83	12,42
Malawi	6,47	57,39	45,10	12,29
Chile	9,29	74,68	62,83	11,86
Panama	8,89	71,56	60,31	11,25
Kenya	7,04	59,66	48,67	10,99
Trinidad and Tobago	9,41	74,47	63,54	10,93
Bolivia	7,91	65,03	54,13	10,91
Tanzania	6,51	56,03	45,37	10,67
Jordan	8,45	67,50	57,54	9,96
Peru	8,64	68,67	58,75	9,92
Bahrain	9,94	75,68	66,89	8,79
Jamaica	8,33	65,54	56,80	8,75
Moldova	7,46	59,57	51,28	8,29
Bahamas	9,79	73,86	65,94	7,92
United Kingdom	10,34	77,28	69,37	7,91
Uganda	7,30	58,16	50,30	7,87
Australia	10,32	77,12	69,27	7,85
Senegal	7,45	58,87	51,22	7,65
Madagascar	6,75	54,35	46,87	7,48
Uruguay	9,15	69,33	61,93	7,40
Guatemala	8,37	64,34	57,02	7,32
Switzerland	10,41	76,76	69,80	6,96
Burkina Faso	7,06	55,69	48,82	6,87
United Arab Emirates	10,09	74,23	67,81	6,42
Costa Rica	9,16	68,37	61,97	6,40
Armenia	8,32	63,03	56,70	6,32
Paraguay	8,48	64,01	57,71	6,30
Namibia	8,91	66,73	60,42	6,30
Morocco	8,37	63,25	57,01	6,24
Mongolia	7,63	58,53	52,37	6,16
Sri Lanka	8,39	63,18	57,13	6,04
Argentina	9,50	70,04	64,09	5,95
Cambodia	7,79	59,29	53,40	5,89
Thailand	9,00	66,60	60,97	5,63
United States	10,59	76,42	70,95	5,47
Guinea	7,69	58,18	52,74	5,44
Estonia	9,59	69,93	64,66	5,27
Ireland	10,57	76,08	70,82	5,26
Ghana	7,71	58,07	52,91	5,17
Philippines	8,44	62,54	57,44	5,09
Barbados	9,66	69,55	65,14	4,41
Nigeria	7,05	53,13	48,74	4,39
Iceland	10,41	73,97	69,81	4,16
Ethiopia	6,63	50,19	46,09	4,10
Swaziland	8,64	62,58	58,70	3,88
Mauritius	9,39	67,20	63,46	3,74
Kyrgyzstan	7,57	55,70	51,99	3,71
Pakistan	7,71	56,38	52,86	3,52
Malaysia	9,24	65,98	62,47	3,51
Botswana	9,20	65,76	62,27	3,49
Belize	8,82	63,27	59,83	3,44
Ecuador	8,28	59,78	56,49	3,29
Kuwait	9,87	69,71	66,46	3,26
Honduras	7,96	57,62	54,48	3,14

Colombia	8,89	63,33	60,29	3,04
Mozambique	7,12	52,21	49,18	3,03
Korea (Republic of)	9,93	69,70	66,81	2,89
Djibouti	7,60	55,06	52,17	2,88
Turkey	8,96	63,42	60,70	2,72
Saudi Arabia	9,53	66,53	64,33	2,20
Czech Republic	9,87	68,64	66,46	2,17
Samoa	8,63	60,81	58,67	2,14
Papua New Guinea	7,84	55,80	53,70	2,10
Luxembourg	11,16	76,44	74,51	1,92
Japan	10,28	70,71	69,04	1,67
Canada	10,35	70,48	69,46	1,03
Nepal	7,31	51,30	50,35	0,95
Nicaragua	8,20	56,86	55,94	0,91
Netherlands	10,37	70,40	69,56	0,84
South Africa	9,32	63,74	63,01	0,74
Tunisia	8,96	61,35	60,71	0,63
Gambia	7,60	52,71	52,17	0,55
Latvia	9,36	63,38	63,26	0,12
Brazil	9,01	61,10	61,05	0,05
Sierra Leone	6,33	44,24	44,21	0,03
Georgia	7,95	54,34	54,41	-0,07
Myanmar	6,93	47,94	48,01	-0,07
Cyprus	10,03	67,25	67,48	-0,23
Niger	6,66	45,92	46,27	-0,36
Côte d'Ivoire	7,35	50,18	50,60	-0,42
Norway	10,56	70,07	70,76	-0,68
Indonesia	8,19	55,17	55,90	-0,73
Oman	9,63	64,14	64,95	-0,82
Portugal	9,88	65,54	66,53	-0,99
Hungary	9,73	64,38	65,56	-1,18
Austria	10,38	68,40	69,66	-1,26
Denmark	10,37	68,26	69,59	-1,32
Fiji	8,71	57,80	59,16	-1,36
Dominican Republic	8,92	59,03	60,45	-1,42
Gabon	8,80	58,21	59,71	-1,50
Venezuela	8,71	57,43	59,14	-1,71
Lithuania	9,48	61,90	64,00	-2,10
Spain	10,13	65,86	68,06	-2,21
Israel	10,10	65,50	67,90	-2,39
Yemen	6,78	44,50	47,03	-2,54
China	8,68	56,37	58,98	-2,62
Lebanon	8,67	56,13	58,92	-2,79
Burundi	6,52	42,58	45,39	-2,82
Bangladesh	7,53	48,95	51,77	-2,82
Cameroon	7,68	49,89	52,72	-2,83
Mexico	9,19	59,34	62,18	-2,83
Algeria	8,80	56,84	59,69	-2,86
Germany	10,25	65,74	68,83	-3,10
Zimbabwe	7,63	48,67	52,40	-3,73
Sweden	10,29	65,14	69,10	-3,96
Poland	9,47	59,95	63,93	-3,98
Togo	7,34	46,43	50,54	-4,10
Tajikistan	7,09	44,83	49,00	-4,17

Albania	8,51	53,60	57,92	-4,32
Qatar	9,90	62,03	66,60	-4,57
Guyana	8,40	52,42	57,20	-4,78
Finland	10,31	64,34	69,19	-4,85
Sudan	7,58	47,16	52,03	-4,87
Egypt	8,35	51,71	56,87	-5,16
Lesotho	7,87	48,36	53,89	-5,53
Chad	7,64	46,75	52,47	-5,72
Belgium	10,34	63,53	69,42	-5,89
Mauritania	7,57	45,98	52,00	-6,02
Haiti	7,55	45,75	51,85	-6,10
Greece	10,01	60,98	67,31	-6,33
Cape Verde	8,65	51,89	58,80	-6,91
Italy	10,25	61,89	68,80	-6,91
Azerbaijan	8,33	49,83	56,78	-6,95
Rwanda	7,14	42,31	49,31	-7,00
Congo	6,89	40,57	47,70	-7,13
India	8,05	47,44	55,03	-7,59
Malta	9,85	58,28	66,29	-8,01
Slovenia	9,95	58,32	66,94	-8,62
Romania	9,05	52,08	61,26	-9,19
Croatia	9,41	53,64	63,54	-9,90
Kazakhstan	8,91	50,35	60,44	-10,09
Russia	9,20	51,84	62,24	-10,40
Vietnam	7,92	43,71	54,18	-10,48
Congo (Democratic Republic of the)	6,56	34,78	45,65	-10,87
Slovakia	9,59	53,77	64,69	-10,92
Guinea-Bissau	6,58	34,73	45,80	-11,07
Ukraine	8,76	47,81	59,49	-11,69
France	10,29	57,36	69,05	-11,69
Bulgaria	9,00	47,34	60,96	-13,62
Uzbekistan	7,53	38,13	51,77	-13,63
Laos	7,58	36,78	52,05	-15,27
Syria	8,19	37,16	55,90	-18,74
Belarus	8,85	41,29	60,03	-18,75
Turkmenistan	8,43	37,60	57,40	-19,80
Equatorial Guinea	9,93	45,62	66,81	-21,19
Iran	8,93	36,11	60,51	-24,40
Libya	8,93	34,65	60,55	-25,90
Angola	7,69	24,27	52,74	-28,47

Table 6 now lists the main drivers and bottlenecks of ‘economic freedom’ on the basis of our independent variables. Our results were achieved with 145 countries of the world with complete data. Our regression explains 52.6% of the variance of ‘economic freedom’. Independent of the income effect on ‘economic freedom’, which, in numerical terms is quite strong and which is statistically highly significant, we find rather surprisingly no significant relationship with ‘world economic openness’ (as would have been to have to be expected by Dollar, 1992a, and 1992b, and all subsequent investigations of the ‘world economically open growth is good for the poor’ paradigm. By contrast, we have to propose a peace research paradigm of world economic openness because we find that military personnel ratios are the biggest bottleneck for economic freedom; and that institutional feminism is not an adversary,

but an ally of economic freedom! In addition, we also find that the demographic challenges, posed by population growth and population density are the healthiest impulses for a society to embrace economic freedom, independent of the level of incomes achieved, independent of the level of feminism in power, and independent of the military personnel ratio. All the 'world economic variables' and other possible drivers and bottlenecks of economic freedom wield only insignificant results. Among them are the following variables:

- % world population
- Absolute latitude
- comparative price levels (US=1.00)
- foreign savings rate
- FPZ (free production zones) employment as % of total population
- ln GDP per capita
- Membership in the Islamic Conference
- military personnel rate ln (MPR+1)
- MNC outward investments (stock) per GDP
- MNC PEN - stock of Inward FDI per GDP
- MNC PEN: DYN MNC PEN 1995-2005
- Openness-Index, 1990 (export-share per GDP + import-share per GDP)
- public education expenditure per GNP
- UNDP education index

Table 6: Determinants of economic freedom

Variable	Coefficient	Std Error
% women in government, all levels	0,286**	0,100
Annual population growth rate, 1975-2005 (%)	1,794**	0,634
ln GDP per capita ^2	0,397***	0,041
military personnel rate ln (MPR+1)	-3,21***	1,063
population density	0,008**	0,003
Constant	25,940***	3,639
N =	145	
Adj. R^2 =	52.6%	
F-test =	33.001	
p-value =	0.000	

Significance level: *p <0.05, **p <0.01, ***p <0.001;

The choice of a country to be included in the final analysis (175 countries) was determined by the availability of fairly good data series for these independent variables (if not mentioned otherwise, UNDP data for the middle of the first decade of the new millenium).

The statistical design of our study is based on the usual, SPSS-PAWS XVIII[25] ordinary least square standard regression of the 'kitchen sink type' (Durlauf *et al.,* 2008; Hertz, Hebert, and Landon, 1994) of economic growth and economic, social and political performance in the research tradition of Barro, 2003. To our knowledge, the term *'kitchen sink regression',* commonly used in econometrics of economic growth, was re-introduced in more recent standard social science journal vocabulary in Laver and Shepsle, 1999. Prior stepwise regression procedures selected the significant among the total list of 26 available predictors. Among the many international studies, applying such a research design, we find Hertz,

[25] http://www-01.ibm.com/software/analytics/spss/products/statistics/

Hebert, and Landon, 1994. This study analysed the effects of independent variables including dietary factors, medical resource availability, gross national product (GNP/capita), literacy rates, growth in the labour force, and provision of sanitation facilities and safe water on infant and maternal mortality rates and life expectancy at birth. The study fitted a series of general linear models for each of the three dependent variables[26].

Since our book does not feature primarily on ecological footprint, but on a variety of measures of 'smart development', which are mathematically derived from the logic of the Happy Planet Index (see also Ng, 2008a and 2008b; Veenhoven, 1996), it suffices to say here that ecological footprint (g ha /cap)[27], as it is universally well-known by now, is indeed a one-catch all-indicator of ecological strain, caused by human activity. Ecological footprint and its measurement cannot be further debated in the framework of our book and at this stage must be regarded as a 'given' (for studies about the logic and determinants of footprint per capita see also Dietz *et al.,* 2007 and 2009). It should be enough to state here that it is measure of the amount of land required to provide for all their resource requirements plus the amount of vegetated land required to sequester (absorb) all their CO2 emissions and the CO2 emissions embodied in the products individuals consume. This figure is expressed in units of 'global hectares'. In 2005, the per capita footprint for the rich OECD nations was 6.0 global hectares[28]. The other variables are then compared to the footprint, which was used by a society to achieve a given standard of democracy, economic growth, gender equality, human development, research and development, and social cohesion. We should also remind our readers here of the fact that the Happy Planet Index Organization measures the Happy Planet Index on the basis of the global life satisfaction (Happy Life Years), which have to be maximized in relationship to the 'ecological price' of happiness, ecological footprint.

It is then of course very tempting to calculate – in a Schumacherian tradition – the 'environmental price' of different development processes, like democracy, economic growth, gender equality, human development, research and development, and social cohesion. The Happy Planet Organisation calculates the HPI in the following way:

$$(1) \qquad HPI_i = \left((HLYE_i)/(EFPC_i + \alpha)\right) \times \beta$$

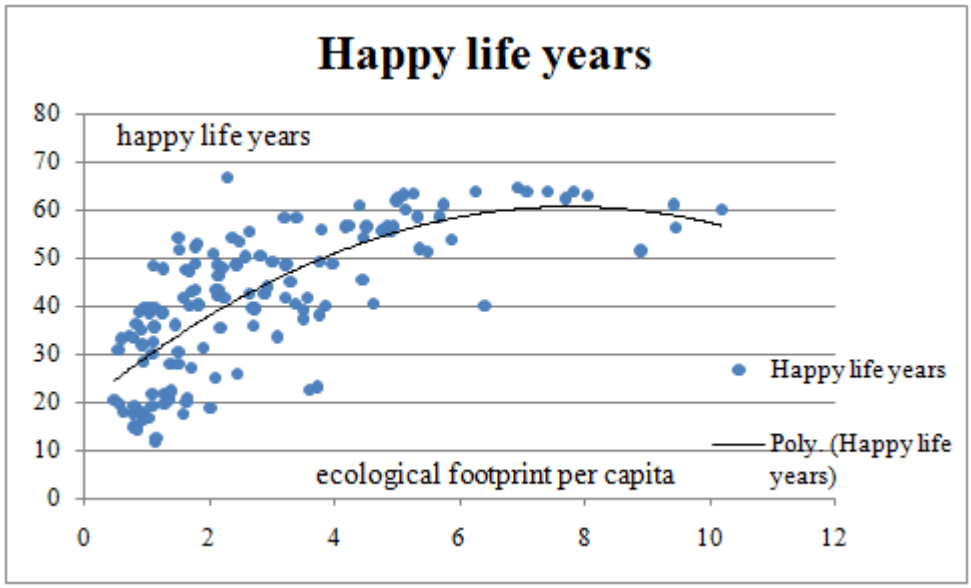
where Happy Life Years (HLYE) is obtained as the product of life expectancy (LE) and average life satisfaction (LS) index. In its currently used formula, the Happy Planet Organization adds a constant (α) to ecological footprint. The result of the division: [Happy Life Years divided by Ecological Footprint plus the constant (α)] is then multiplied by another, equally arbitrarily chosen constant (β) to normalize the efficiency index. In the Happy Planet Organization formula, the constants have the following numerical values: (α) = 3.35 and (β) = 6.42.

The highest global HPI score is that of Costa Rica (76.1 out of 100). Of the 10 best performing countries of the world, nine are in Latin America.[29] But unfortunately, the Happy Planet Organization's straightforward and simple methodology overlooks advances in the social sciences, which long ago already developed appropriate methodologies to relate life quality variables – like life expectancy – to GDP per capita or energy consumption levels in empirical, and non-linear mathematical formulations, which capture much better than the

[26] It emerged that the percent of households without sanitation facilities showed the strongest association with all three dependent variables: life expectancy at birth, infant mortality rate, and maternal mortality rate
[27] http://www.footprintnetwork.org/en/index.php/GFN/
[28] http://www.happyplanetindex.org/
[29] http://www.happyplanetindex.org/

above simple equation the underlying non-linear tradeoffs between *'energy consumption and/or environmental strain'* and *'life quality'* (Goldstein, 1985). Goldstein's empirically developed idea that basic human needs indicators – like life expectancy – are a non-linear function of development levels has been so widely received in the social science literature that is has become a real international standard nowadays (see Afxentiou, 1990a, 1990b; Anand and Ravillion, 1993; Anson, 1988, 1991; Cheng, 1989; Dixon, 1987; Dixon and Moon, 1986, 1989; Fosu, 2009, 2010a, 2010b, 2010c; Kakwani, 1993, 1995; Khan, 1991; King, 1998; Knight and Rosa, 2011; Mazumdar, 1996, 2000; Moon and Dixon, 1992; Newman and Thomson, 1989; Rudra, 2009; Tausch and Prager, 1993). The neglect of such a basic non-linear function (whatever its concrete mathematical formulation[30]) is a major shortcoming of the currently used Happy Planet Index calculation. The global public health research tradition, too, produced massive evidence on the cross-national determinants of life expectancy and other life quality variables (to quote but a few studies: Wilkinson, 1992; Wilkinson and Picket, 2006; Tausch, 2010). This growing methodological convergence of the social sciences, geography and earth sciences, and public health research on predictors of life quality at different stages of development should be taken into account in this book (Fain, et al. 1997; Mostafa, 2010a and 2010b; Mostafa and Nataraajan, 2009; Shandra, 2007a, 2007b, Shandra, Leckband, McKinney and London, 2009). Graph 2 depicts the trade-off between ecological footprint and happy life years; the (standardized) residuals in our graph are a reformulated Happy Planet Index:

Graph 2: The non-linear relationship between Happy Life Years (HLYE, vertical Y) and ecological footprint (horizontal X), n=140 countries in 2005.



Variable	Coefficient	Std Error
Ecological Footprint per capita	10.541***	1.313
Ecological Footprint per capita^2	–0.677***	0.147
Constant	19.631***	2.246

[30] The most often encountered formulation in the literature is a double logarithmic expression, based on the natural logarithm of development level/energy consumption and its square.

N =	140
Adj. R^2 =	54.1%
F-test =	83.081
p-value =	0.000

Significance level: *p <0.05, **p <0.01, ***p <0.001;

In a similar vein, we investigated the non-linear trade-offs between ecological footprint and the combined UNDP type indices for six dimensions of development, derived from freely available current cross-national, comparative data:

Table 7: the combined six components, measuring development, and the overall indicators, combining 26 variables

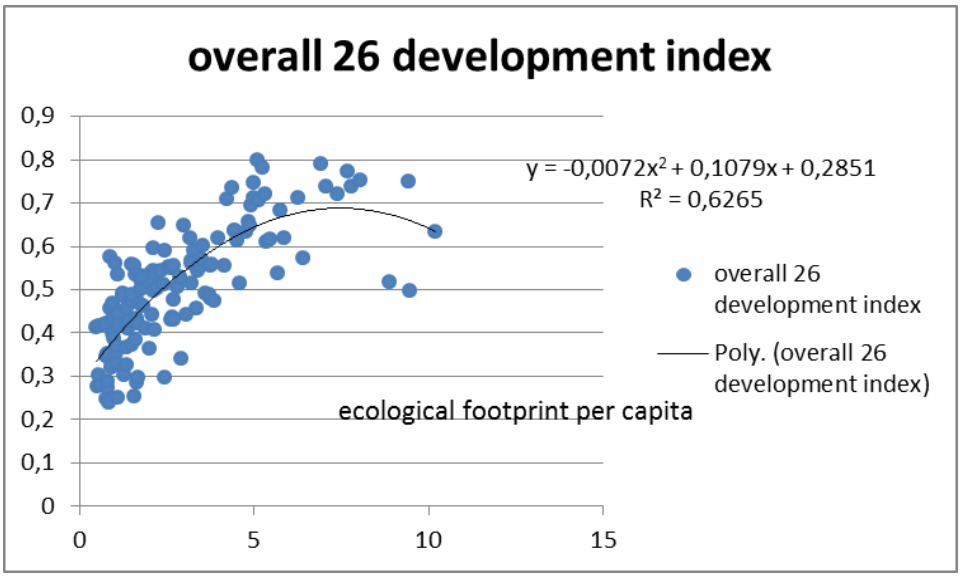
democracy	Combined Failed States Index
democracy	Civil and Political Liberties violations
democracy	Corruption avoidance measure
democracy	Democracy measure
democracy	Global tolerance index
democracy	Rule of law
economic growth	Crisis Performance Factor
economic growth	economic growth IMF prediction growth rate in 2009
economic growth	economic growth IMF prediction growth rate in 2010
economic growth	economic growth in real terms pc. per annum, 1990-2005
Gender equality	closing economic gender gap
Gender equality	closing educational gender gap
Gender equality	closing health and survivial gender gap
Gender equality	closing of global gender gap overall score 2009
Gender equality	closing political gender gap
Gender equality	gender empowerment index value
human development	Infant mortality 2005
human development	female survival probability of surviving to age 65 female
human development	Human development index (HDI) value 2004
human development	Life Expectancy (years)
human development	Life Satisfaction (0-10)
R&D	Country share in top world 500 Universities
R&D	per capita world class universities
R&D	tertiary enrollment
social cohesion	quintile share income difference between richest and poorest 20%
social cohesion	unemployment rate
nonparametric_26 equal weights	overall 26 development index
nonparametric, weighting each dimension equally	overall 26 development index, based on six dimensions

Graphs 3a – 3g show the trade-off between ecological footprint and ‘smart development’, measured for the various dimensions (democracy, economic growth, gender equality, human

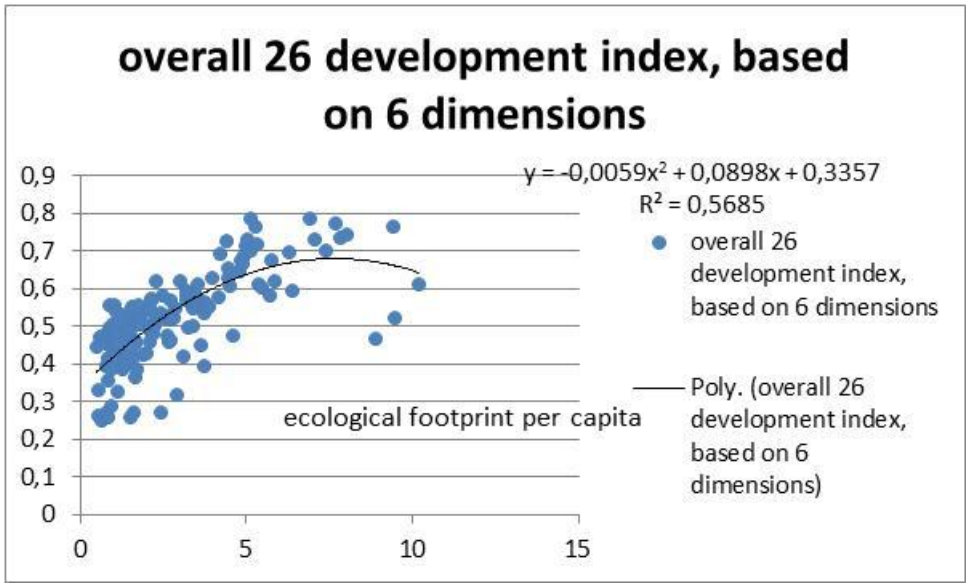
development, research and development, social cohesion, and the two differently combined overall measurement scales). Only the scatterplot for ecological footprint and ‘social cohesion’ suggests a weaker relationship, all the other relationships are considerable. The overall development performance, democracy, gender equality, human development, research and development are a clear non-linear, inverted U-shaped function of ecological footprint per capita, while economic growth and also social cohesion first decrease and then increase with rising levels of ecological footprint per capita.

Graph 3: ecological footprint and general development performance – the non-linear tradeoffs

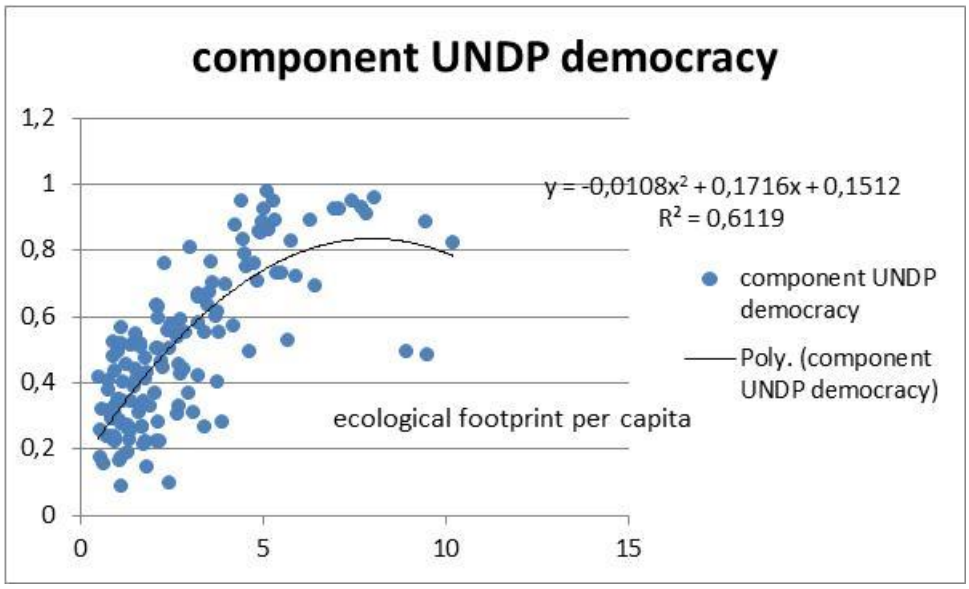
Graph 3a: ecological footprint and the general development performance index, based on an equal weighting of its 26 components



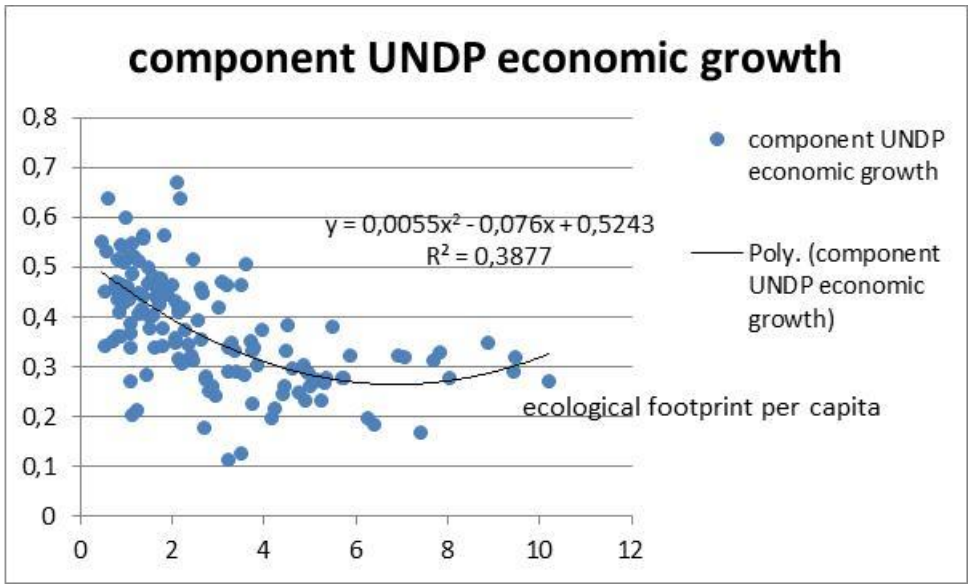
Graph 3b: ecological footprint and the general development performance index, based on an equal weighting of the six dimensions, underlying the 26 components



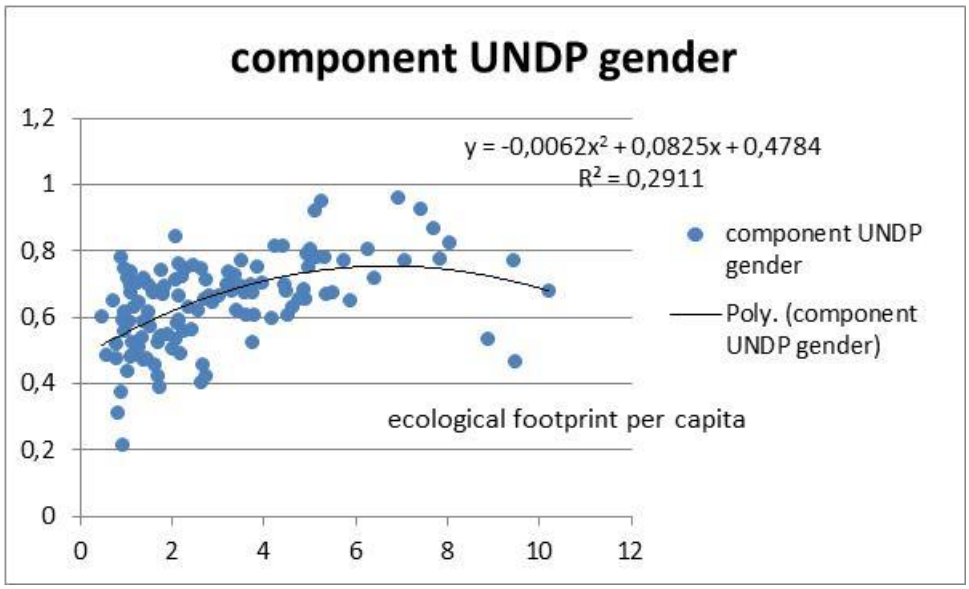
Graph 3c: ecological footprint and democratic performance (6 components combined)



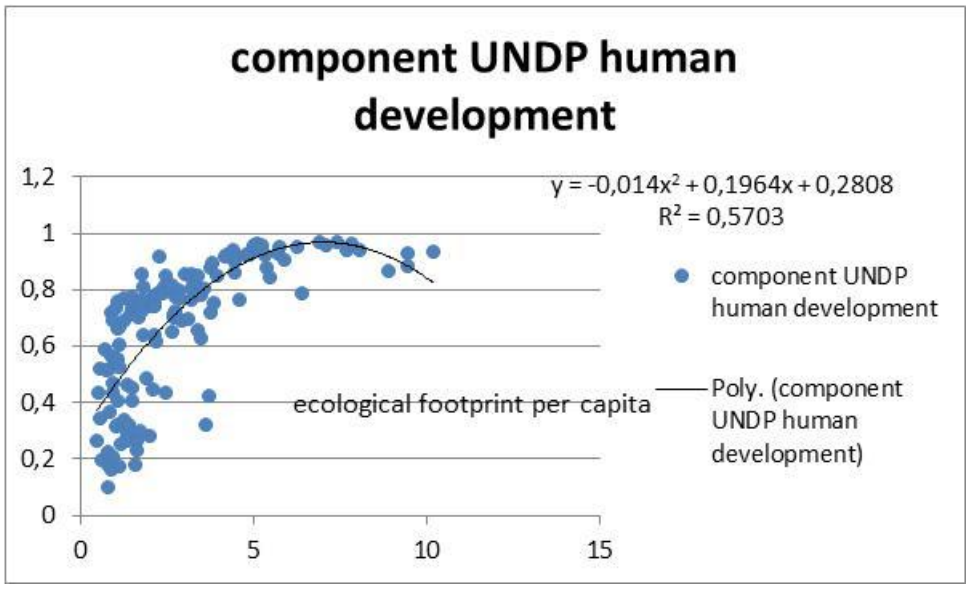
Graph 3d: ecological footprint and economic growth performance (4 components combined)



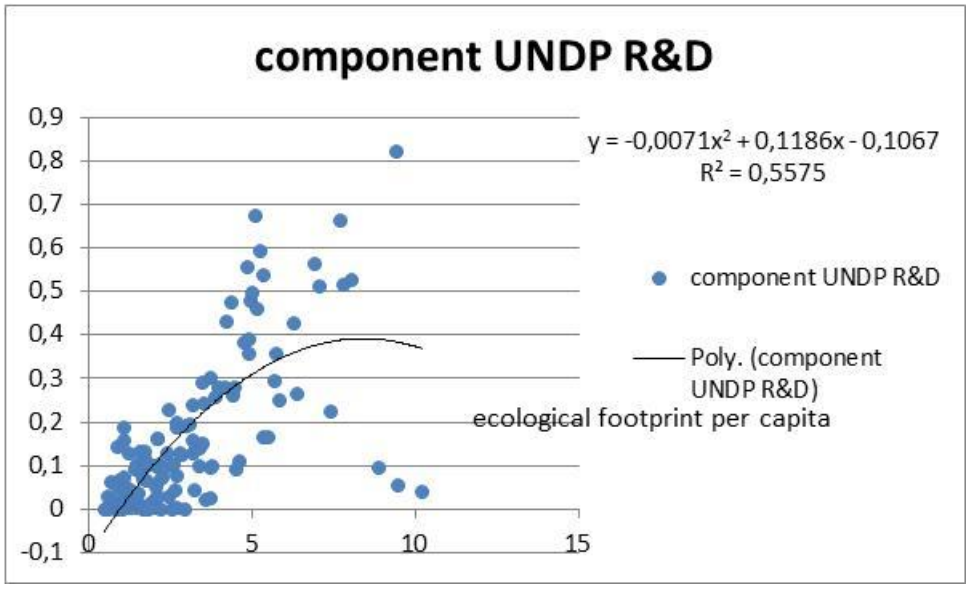
Graph 3e: ecological footprint and gender equality performance (6 components combined)



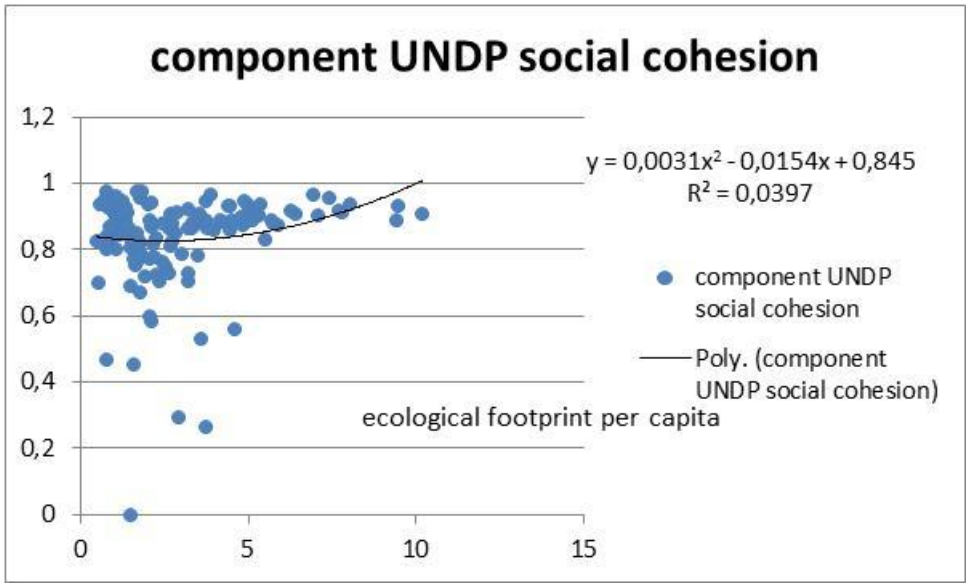
Graph 3f: ecological footprint and human development performance (5 components combined)



Graph 3g: ecological footprint and research and development performance (3 components combined)



Graph 3h: ecological footprint and social cohesion performance (2 components combined)



As we already explained, the hitherto existing calculations of the HPI[31], provided by the Happy Planet Organization, are merely based on simple arithmetical principles.

[31] Although we presume the main contemporary global environment indicators to be known, we refer our readers especially to the very comprehensive Yale/Columbia environmental data series, available at

Following Heintz, 1972 we propose as an alternative method a residual method, and calculate our smart development indicators as the standardized residuals from Graph 3. The standardized residual values are computed as observed minus predicted development outcomes divided by the square root of the residual mean square (see Appendix, Table 1 and 2):

(2) $$SDP_i = (HLYE_i - \hat{HLYE}_i) / \hat{\sigma}$$

High positive outlayers imply a very high smart development performance, while countries below the trend line are the countries with a low smart development performance. Having established a residual-based smart Development Indicator family, we now can look more realistically at the cross-national determinants of smart development performance.

4. Results on the drivers and bottlenecks of 'smart development'

The image of social realities suggested upon a very first inspection of smart development performance values around the globe would suggest a Friedrich August Hayek vision (Hayek, 1945, 1989) of markets, inequality and a free society interacting with one another. There should be no blocks against inequalities in the name of whatever 'social justice', explaining then the phenomenal success of the unequal Latin American societies on the parameters of smart development (see especially, the global rankings of smart development in Table 3 of the Appendix). A the same time, the high-equality performers in global society (quintile share of less than 5.0) with a relatively high per-capita income are at the same time bad performers on the new smart development scales. Notably enough, several of these countries are members of the European Union and traditional developed western welfare states. This very first glance at the data would suggest a complete turn-around from the 'European social model' (Tausch and Ghymers, 2006) in favour of a high-inequality, open to globalization 'Latin American model' or Philippine model as the best way to achieve a good 'smart development' performance. However, such a first glance completely overlooks the massive available evidence about world economic openness and the failure of 'smart development'.

As to multivariate analysis, first preliminary stepwise regression procedures with mean substitution of missing variables revealed a re-current pattern of the importance and predictive capability robustness of the chosen variables among the 26 independent variables with a theoretically well-plausible greater and significant effect on the dependent variables (the six component indicators of development and the overall development performance indicators. The final results were achieved by forward multiple regression based on list wise deletion of missing values, and based exclusively on the significant predictors from the prior preliminary stepwise regressions. We first present, variable by variable, and driver by driver, and bottleneck by bottleneck, the significant results of our multiple regression analyses (standardized regression coefficients and their significance):

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http://sedac.ciesin.columbia.edu/es/esi/ and http://epi.yale.edu/Home . The important new 'grammar' of the global footprint discourse can be found at http://www.footprintnetwork.org/en/index.php/GFN/page/glossary/ .

Table 8: the significant drivers and bottlenecks of smart development

Independent Variable	dependent variable	Beta	error probability
% women in government, all levels (feminist theory, stressing the need to feminize structures of government)	overall smart development index, based on 26 variables, weighted equally	0,185	0,045
% women in government, all levels (feminist theory, stressing the need to feminize structures of government)	Smart democracy	0,196	0,007
% women in government, all levels (feminist theory, stressing the need to feminize structures of government)	Smart gender justice	0,300	0,001
% world population (Amin's five monopolies of power)	Smart human development	0,152	0,061
% world population (Amin's five monopolies of power)	Happy Life Years	0,161	0,060
% world population (Amin's five monopolies of power)	Smart economic growth	0,261	0,002
2000 Economic Freedom Score (its absence is explained either by Amin's critique of rent-seeking seeking in the periphery versus conventional neo-liberal theories of economic growth)	overall smart development index, based on 26 variables, weighted equally	0,336	0,002
2000 Economic Freedom Score (its absence is explained either by Amin's critique of rent-seeking seeking in the periphery versus conventional neo-liberal theories of economic growth)	overall smart development index, based on 26 variables, weighting equally the six component dimensions	0,402	0,000
2000 Economic Freedom Score (its absence is explained either by Amin's critique of rent-seeking seeking in the periphery versus conventional neo-liberal theories of economic growth)	Smart democracy	0,457	0,000
Absolute latitude (Andre Gunder Frank's 'Re-Orient' model)	Smart economic growth	-0,234	0,006
Annual population growth rate, 1975-2005 (%) (Paul Israel Singer's dependency theory)	Smart R&D	-0,253	0,007
Annual population growth rate, 1975-2005 (%) (Paul Israel Singer's dependency theory)	Smart social cohesion	-0,248	0,006
Immigration - Share of population 2005 (%) (Amin's theory about the role of migration)	Smart democracy	-0,348	0,000
military expenditures per GDP (quantitative dependency and peace research approaches)	Happy Life Years	-0,245	0,004
military expenditures per GDP (quantitative dependency and peace research approaches)	Smart gender justice	-0,204	0,018
military expenditures per GDP (quantitative dependency and peace research approaches)	overall smart development index, based on 26 variables, weighted equally	-0,191	0,021
military expenditures per GDP (quantitative dependency and peace research approaches)	overall smart development index, based on 26 variables, weighting equally the six component dimensions	-0,166	0,074

military personnel rate ln (quantitative dependency and peace research approaches)	Smart democracy	-0,221	0,002
MNC outward investments (stock) per GDP (Bornschier's dependency theory, stressing the importance of MNC headquarter status in international society)	Smart R&D	0,479	0,000
Muslim population share per total population (Amin's critique of Islamism, implicitly expecting a negative trade-off with development performance versus Andre Gunder Frank's 'Re-Orient' model, expecting a transfer of growth and productive activities to the global East and South)	Smart gender justice	-0,396	0,000
Muslim population share per total population (Amin's critique of Islamism, implicitly expecting a negative trade-off with development performance versus Andre Gunder Frank's 'Re-Orient' model, expecting a transfer of growth and productive activities to the global East and South)	Smart economic growth	0,313	0,000
Openness-Index, 1990 (export-share per GDP + import-share per GDP) (Amin's conception of the role of the peripheries)	Smart R&D	-0,552	0,000
Openness-Index, 1990 (export-share per GDP + import-share per GDP) (Amin's conception of the role of the peripheries)	overall smart development index, based on 26 variables, weighting equally the six component dimensions	-0,222	0,019
Openness-Index, 1990 (export-share per GDP + import-share per GDP) (Amin's conception of the role of the peripheries)	overall smart development index, based on 26 variables, weighted equally	-0,170	0,048
population density (José Carlos Mariategui's dependency theory)	overall smart development index, based on 26 variables, weighted equally	0,214	0,010
public education expenditure per GNP (human capital approaches in the tradition of the UNDP versus Kalecki/Steindl paradigm versus neo-liberal approaches, featuring a 'crowding out' phenomenon)	Smart social cohesion	-0,270	0,003
public education expenditure per GNP (human capital approaches in the tradition of the UNDP versus Kalecki/Steindl paradigm versus neo-liberal approaches, featuring a 'crowding out' phenomenon)	Smart human development	-0,196	0,024
public education expenditure per GNP (human capital approaches in the tradition of the UNDP versus Kalecki/Steindl paradigm versus neo-liberal approaches, featuring a 'crowding out' phenomenon)	Smart R&D	0,235	0,010
UNDP education index (human capital approaches in the tradition of the UNDP versus Kalecki/Steindl paradigm)	overall smart development index, based on 26 variables, weighted equally	0,198	0,036
UNDP education index (human capital approaches in the tradition of the UNDP versus Kalecki/Steindl paradigm)	Smart human development	0,478	0,000
worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain versus 'new migration	Smart economic growth	-0,262	0,002

theories', underlining the positive effects of worker remittances on migration sending countries)			
worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain versus 'new migration theories', underlining the positive effects of worker remittances on migration sending countries)	overall smart development index, based on 26 variables, weighting equally the six component dimensions	0,177	0,064
worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain versus 'new migration theories', underlining the positive effects of worker remittances on migration sending countries)	overall smart development index, based on 26 variables, weighted equally	0,208	0,016
worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain versus 'new migration theories', underlining the positive effects of worker remittances on migration sending countries)	Smart R&D	0,229	0,017
worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain versus 'new migration theories', underlining the positive effects of worker remittances on migration sending countries)	Smart gender justice	0,241	0,007
worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain versus 'new migration theories', underlining the positive effects of worker remittances on migration sending countries)	Happy Life Years	0,288	0,002
worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain versus 'new migration theories', underlining the positive effects of worker remittances on migration sending countries)	Smart human development	0,352	0,000
Years of membership in the EU, 2010 (Amin's theory about the importance of European integration as a counterweight to US dominance in the world system)	Smart democracy	0,183	0,006

The following independent variables **wield only 'good' and positive effects on smart development:**

- % women in government, all levels (feminist theory; three effects positive; zero effects negative)
- % world population (Amin's five monopolies of power; three effects positive; zero effects negative)

- Economic Freedom Score (Amin's critique of rent-seeking; three effects positive; zero effects negative)
- MNC outward investments (stock) per GDP (Bornschier's dependency theory; one effect positive; zero effects negative)
- population density (José Carlos Mariategui's dependency theory; one effect positive; zero effects negative)
- UNDP education index (Steindl/Kalecki-paradigm; two effects positive; zero effects negative)
- Years of membership in the EU (Amin's theory about the role of integration; one effect positive; zero effects negative)

The **following predictors wielded only negative consequences on smart development:**

- Absolute latitude (Andre Gunder Frank's *'Re-Orient'* model; zero effects positive; one effect negative)
- Annual population growth rate (%) (Paul Israel Singer's dependency theory; zero effects positive; two effects negative)
- Immigration share of total population (%) (Amin's theory about the role of migration; zero effects positive; one effect negative)
- military expenditures per GDP (dependency and peace research approaches; zero effects positive; four effects negative)
- military personnel rate (dependency and peace research approaches; zero effects positive; one effect negative)
- Openness-Index (export-share per GDP minus import-share per GDP) (Amin's conception of the role of the peripheries; zero effects positive, three effects negative)

The following variables wielded mixed results:

- worker remittance inflows as % of GDP (six effects positive; one effect negative)
- Muslim population shares (one effect positive; one effect negative)
- public education expenditure per GNP (one effect positive; two effects negative)

The power, wielded by the predictors

- workers remittances (six positive effects);
- feminization of power structure (three positive effects)
- share of world population (three positive effects)
- economic freedom (three positive effects)
- world economic openness index (three negative effects),
- military expenditures (four negative effects);

seems to be overwhelming.

Table 9 now summarizes our results from the viewpoint of the theories presented in Chapter 2. Only the negative effects, wielded by public education expenditure per GNP on smart social cohesion and on smart human development cannot be properly explained as yet by globalization critical theories, presented above, suggesting rather the existence of strong crowding-out effects of public education expenditures on smart redistribution and smart human development.

Table 9: Results well compatible with a re-formulated globalization critical paradigm

Theory	Independent Variable	dependent variable	Beta	error probability
Andre Gunder Frank	Absolute latitude (Andre Gunder Frank's 'Re-Orient' model)	Smart economic growth	-0,234	0,006
Andre Gunder Frank	Muslim population share per total population (Andre Gunder Frank's 'Re-Orient' model)	Smart economic growth	0,313	0,000
Samir Amin	% world population (Amin's five monopolies of power)	Smart human development	0,152	0,061
Samir Amin	% world population (Amin's five monopolies of power)	Happy Life Years	0,161	0,060
Samir Amin	% world population (Amin's five monopolies of power)	Smart economic growth	0,261	0,002
Samir Amin	2000 Economic Freedom Score (Amin's critique of rent-seeking)	overall smart development index, based on 26 variables, weighted equally	0,336	0,002
Samir Amin	2000 Economic Freedom Score (Amin's critique of rent-seeking)	overall smart development index, based on 26 variables, weighting equally the six component dimensions	0,402	0,000
Samir Amin	2000 Economic Freedom Score (Amin's critique of rent-seeking)	Smart democracy	0,457	0,000
Samir Amin	Immigration - Share of population 2005 (%) (Amin's theory about the role of migration)	Smart democracy	-0,348	0,000
Samir Amin	Muslim population share per total population (Amin's critique of Islamism)	Smart gender justice	-0,396	0,000
Samir Amin	Openness-Index, 1990 (export-share per GDP + import-share per GDP) (Amin's conception of the role of the peripheries)	Smart R&D	-0,552	0,000
Samir Amin	Openness-Index, 1990 (export-share per GDP + import-share per GDP) (Amin's conception of the role of the peripheries)	overall smart development index, based on 26 variables, weighting equally the six component dimensions	-0,222	0,019
Samir Amin	Openness-Index, 1990 (export-share per GDP + import-share per GDP) (Amin's conception of the role of	overall smart development index, based on	-0,170	0,048

	the peripheries)	26 variables, weighted equally		
Samir Amin	worker remittance inflows as % of GDP (Amin's theory about the role of migration)	overall smart development index, based on 26 variables, weighting equally the six component dimensions	0,177	0,064
Samir Amin	worker remittance inflows as % of GDP (Amin's theory about the role of migration)	overall smart development index, based on 26 variables, weighted equally	0,208	0,016
Samir Amin	worker remittance inflows as % of GDP (Amin's theory about the role of migration)	Smart R&D	0,229	0,017
Samir Amin	worker remittance inflows as % of GDP (Amin's theory about the role of migration)	Smart gender justice	0,241	0,007
Samir Amin	worker remittance inflows as % of GDP (Amin's theory about the role of migration)	Happy Life Years	0,288	0,002
Samir Amin	worker remittance inflows as % of GDP (Amin's theory about the role of migration)	Smart human development	0,352	0,000
Samir Amin	Years of membership in the EU, 2010 (Amin's theory about the role of integration)	Smart democracy	0,183	0,006
Volker Bornschier	MNC outward investments (stock) per GDP (Bornschier's dependency theory)	Smart R&D	0,479	0,000
brain drain theories	worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain)	Smart economic growth	-0,262	0,002
feminism	% women in government, all levels (feminist theory)	overall smart development index, based on 26 variables, weighted equally	0,185	0,045
feminism	% women in government, all levels (feminist theory)	Smart democracy	0,196	0,007
feminism	% women in government, all levels (feminist theory)	Smart gender justice	0,300	0,001
José Carlos Mariategui	population density (José Carlos Mariategui's dependency theory)	overall smart development index, based on 26 variables, weighted equally	0,214	0,010
peace research	military expenditures per GDP (dependency and peace research approaches)	Happy Life Years	-0,245	0,004
peace research	military expenditures per GDP (dependency and peace research approaches)	Smart gender justice	-0,204	0,018
peace research	military expenditures per GDP (dependency and peace research approaches)	overall smart development index, based on 26 variables,	-0,191	0,021

		weighted equally		
peace research	military expenditures per GDP (dependency and peace research approaches)	overall smart development index, based on 26 variables, weighting equally the six component dimensions	-0,166	0,074
peace research	military personnel rate ln (dependency and peace research approaches)	Smart democracy	-0,221	0,002
Paul Israel Singer	Annual population growth rate, 1975-2005 (%) (Paul Israel Singer's dependency theory)	Smart R&D	-0,253	0,007
Paul Israel Singer	Annual population growth rate, 1975-2005 (%) (Paul Israel Singer's dependency theory)	Smart social cohesion	-0,248	0,006
Joseph Steindl	public education expenditure per GNP (Steindl/Kalecki-paradigm)	Smart R&D	0,235	0,010
Joseph Steindl	UNDP education index (Steindl/Kalecki-paradigm)	overall smart development index, based on 26 variables, weighted equally	0,198	0,036
Joseph Steindl	UNDP education index (Steindl/Kalecki-paradigm)	Smart human development	0,478	0,000

In the following, we will present, equation by equation, the results of our research. Table 10 shows the significant drivers and bottlenecks of Happy Planet performance, i.e. happy life years in relationship to the ecological footprint of a society used. The z-standardized residuals from Graph 3 are well-explained; our equation is based on 103 countries with complete data. Our equation explains 29% of total variance, the F-value for the entire equation is 9.339, and the error probability is .000. The constant is -124.628 and is significant. There is a clear 'Kuznets' curve at work (see also Stern, 2004). But the shape of the curve contradicts much of the earlier debate on the subject: with rising per capita incomes, problem solving capacities first increase and then decrease. The larger states in the world system, having a larger share of global population, are much better able to achieve a good happy life years performance at relatively low ecological costs, measured in ecological footprints than smaller nations. This clearly contradicts the 'small is beautiful' philosophy in the tradition of Kohr and Schumacher. Military expenditures are a clear additional burden on an ecologically viable happy planet performance, while societies, depending on worker remittances, clearly manage to perform better on this scale than other societies around the globe.

Table 10: the drivers and bottlenecks of Happy Planet performance

Independent Variable	B	standard error	Beta	t-value	error probability
Constant	-124.628	42.647		-2.922	0.004
% world population	0.596	0.313	0.161	1.904	0.060
ln GDP per capita	26.062	10.069	3.136	2.588	0.011
ln GDP per capita ^2	-1.309	0.584	-2.731	-2.241	0.027
military	-1.098	0.376	-0.245	-2.922	0.004

expenditures per GDP					
worker remittance inflows as % of GDP	0.420	0.133	0.288	3.153	0.002
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	29.000	102	9.339	.000	

In a similar fashion, we can establish in Table 11 that in the 101 countries with complete data, smart overall development, as defined in Graph 3a of this work, is explained to 37% by our model. The F-test for the entire equation is 9.392, the error probability is .000. The constant is -2.486 and is significant. The ten countries of the world system, best combining the performance on our 26 development indicators and avoiding ecological footprint at the same time are the Philippines; Sri Lanka; Costa Rica; Sweden; Jamaica; Dominican Republic; Finland; Peru; Netherlands; and Trinidad and Tobago. The ten worst performers on this scale are Sudan; Bosnia and Herzegovina; Central African Republic; United Arab Emirates; Niger; Kuwait; Chad; Zimbabwe; Burundi; and Hong Kong, China (SAR). Feminism in power, economic freedom, population density, the UNDP education index as well as the receipt of worker remittances all significantly contribute towards a smart overall development, while high military expenditures and a high world economic openness are a bottleneck for 'smart overall development'.

Table 11: Drivers and bottlenecks of smart overall development

Independent Variable	**B**	**standard error**	**Beta**	**t-value**	**error probability**
Constant	-2.486	0.533		-4.666	0.000
% women in government. all levels	0.025	0.012	0.185	2.027	0.045
2000 Economic Freedom Score	0.031	0.010	0.336	3.239	0.002
military expenditures per GDP	-0.076	0.032	-0.191	-2.345	0.021
Openness-Index. 1990 (export-share per GDP + import-share per GDP)	-0.004	0.002	-0.170	-2.007	0.048
population density	0.002	0.001	0.214	2.612	0.010
UNDP education index	0.945	0.445	0.198	2.123	0.036
worker remittance inflows as % of GDP	0.027	0.011	0.208	2.459	0.016
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	37.000	100	9.392	.000	

Also, it emerges that the results about the drivers of overall **smart development performance** are similar to the ones, reported in Table 11, if we calculate the overall development performance by **weighting equally its six component indices** and only then calculating the overall final country performance score, and not, unlike in Table 11, being the sum of the equally weighted 26 original component indices (as to the trade-off with ecological footprint, see Graph 3b of this work). Economic freedom, and received worker remittances per GDP again emerge as the 'drivers' of smart development (Table 12), while the bottlenecks of smart overall development performance are again military expenditures per GDP and world economic openness. This time, the adjusted R^2 is 19%, and the equation is based on 102 countries with complete data. The F-test for the entire equation is 6.908, and the equation is significant at the .000-level. The constant is -1.469 and is significant.

Table 12: Drivers and bottlenecks of smart overall development, based on an index, which weights the six dimensions equally

Independent Variable	**B**	**standard error**	**Beta**	**t-value**	**error probability**
Constant	-1.469	0.536		-2.741	0.007
2000 Economic Freedom Score	0.035	0.008	0.402	4.158	0.000
military expenditures per GDP	-0.061	0.034	-0.166	-1.808	0.074
Openness-Index. 1990 (export-share per GDP + import-share per GDP)	-0.005	0.002	-0.222	-2.376	0.019
worker remittance inflows as % of GDP	0.021	0.011	0.177	1.871	0.064
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	19.000	101	6.908	.000	

Table 13 is an invitation to consider the drivers and bottlenecks of **'smart democracy'** (see also Graph 3c of this work). The ten smartest democracies of our globe are Costa Rica; Netherlands; Jamaica; Chile; Sweden; India; Benin; Madagascar; Finland; and Germany; these are the countries of the world system, best combining democratic performance and avoiding ecological footprint. The worst performers are Sudan; Belarus; Kazakhstan; Kuwait; United Arab Emirates; Uzbekistan; Lebanon; Hong Kong, China (SAR); Azerbaijan; and Myanmar. The adjusted R^2 of our equation is 48.6%, and the F-value for the entire equation is 25.743, and the error p for the equation is .000. It is based on 132 countries with complete data. The drivers of smart democracy are feminized structures of government, economic freedom, and years of membership in the European Union. The significant bottlenecks of smart democracy are high military personnel ratios, and a high share of immigrant population. The constant of our equation is -2.037, and it is significant.

Table 13: Drivers and bottlenecks of smart democracy

Independent Variable	B	standard error	Beta	t-value	error probability
Constant	-2.037	0.409		-4.978	0.000
% women in government. all levels	0.029	0.011	0.196	2.753	0.007
2000 Economic Freedom Score	0.041	0.007	0.457	5.826	0.000
military personnel rate ln (MPR+1)	-0.334	0.105	-0.221	-3.162	0.002
Immigration - Share of population 2005 (%)	-0.031	0.007	-0.348	-4.549	0.000
Years of membership in the EU. 2010	0.014	0.005	0.183	2.806	0.006
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	48.600	131	25.743	.000	

Our next Table, Table 14, analyses the drivers and bottlenecks of **'smart economic growth'** combing high economic growth with low rates of ecological footprint per capita (see also Graph 3d of this work). The IMF data for economic growth in 2010 as well as the Happy Planet Organization data on ecological footprint suggest that the 10 best performers were China; Azerbaijan; Botswana; Uzbekistan; Congo (Democratic Republic of the); Bhutan; Sudan; Mongolia; Ethiopia; and Lebanon; while the worst performers with the worst 'cocktail' of slow economic growth in relation to their ecological footprint per capita were Zimbabwe; Moldova; Lithuania; Latvia; Ukraine; Jamaica; Haiti; Armenia; Tajikistan; and Madagascar. Our equation about 'smart growth' is based on 111 countries with complete data, the R^2 is 25.2%, the F-value is 10.243, and the error probability of the entire equation is .000. The constant is 0.195, and it is not significant. Population size in relation to the global population as well as Muslim population share per total population are the significant drivers of smart development in the global system today, while absolute latitude (i.e. countries in the far North and South of the world system) as well as nations depending on worker remittances are the bottlenecks of 'smart growth' today. This again suggests, as we already hinted at in our theoretical introduction above about the theory of Andre Gunder Frank, 1999, the tectonic shifts in the geographical structures of global growth today, away from the countries of the 'North Atlantic arena' towards the nations of the Indian Ocean and the Pacific, which also thwart the smart growth efforts of the countries exporting their workforce to the hitherto existing centres of the global economy.

Table 14: Drivers and bottlenecks of smart economic growth (2010)

Independent Variable	B	standard error	Beta	t-value	error probability
Constant	0.195	0.178		1.092	0.277
% world population	0.099	0.031	0.261	3.149	0.002
Absolute latitude	-0.013	0.005	-0.234	-2.817	0.006
worker remittance inflows as % of GDP	-0.035	0.011	-0.262	-3.108	0.002
Muslim population share per total population	0.009	0.002	0.313	3.717	0.000
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	25.200	110	10.243	.000	

Table 15 of our study analyses the drivers and bottlenecks of **smart gender justice.** We are comparing the given amount of gender equality in a society with the amount of resources (ecological footprint), needed to sustain it (see Graph 3e). The global best performers on this equation, how to achieve a maximum of gender justice with a minimum of ecological footprint, are the Philippines; South Africa; Finland; Norway; Mozambique; Sweden; Iceland; Kyrgyzstan; Sri Lanka; and Uganda. The worst balance sheet on this item of combing 'lilac' gender policies and 'green' issues (minimizing ecological footprint per capita) are Yemen; Saudi Arabia; United Arab Emirates; Turkey; Pakistan; Chad; Iran; Kuwait; Korea (Republic of); and Egypt. Our equation, based on the 93 countries with complete data, explains 39% of total variance, achieves an F-value of 15.712 and an error probability of the entire equation of .000. The insignificant constant has the value of -0.034. Women in government and worker remittances per GDP are the significant drivers of smart gender justice, while high military expenditures and the Muslim population share per total population are the major variables, to be interpreted as 'bottlenecks' of smart gender justice.

Table 15: Drivers and bottlenecks of smart gender justice

Independent Variable	B	standard error	Beta	t-value	error probability
Constant	-0.034	0.213		-0.161	0.873
% women in government. all levels	0.044	0.013	0.300	3.364	0.001
military expenditures per GDP	-0.087	0.036	-0.204	-2.403	0.018
worker remittance inflows as % of GDP	0.035	0.013	0.241	2.764	0.007
Muslim population share per total	-0.010	0.003	-0.396	-4.153	0.000

population					
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	39.000	92	15.712	.000	

Table 16 looks at the drivers and bottlenecks of **'smart human development'.** Which are the countries best combining the task of a maximum of 'human development' with a minimum of ecological footprint per capita (see also Graph 3f of this work)? The ten best practice countries on this scale are Jamaica; Philippines; Cuba; Sri Lanka; Costa Rica; Vietnam; Dominican Republic; Indonesia; Colombia; and Moldova; while all the worst performers are located in the African continent, comprising the following countries: Botswana; Namibia; Central African Rep,; Burkina Faso; Niger; Sierra Leone; Zimbabwe; Mali; Angola; and Chad. Our equation explains 29.9% of the total variance of 'smart development' and is based on the analysis of the 115 countries with complete data; the F-value is 13.183 and the error p of the entire equation is .000. The constant, which is significant, has a value of -1.657. The drivers of 'smart human development' are the share of a country's population in world population, indicating the relative size of a nation, the UNDP education index, measuring the levels of education in a given country, and worker remittance inflows as % of GDP. The bottleneck of 'smart human development' is constituted by the crowding-out effect of public education expenditures on human development.

Table 16: Drivers and bottlenecks of smart human development

Independent Variable	**B**	**standard error**	**Beta**	**t-value**	**error probability**
Constant	-1.657	0.348		-4.760	0.000
% world population	0.055	0.029	0.152	1.894	0.061
public education expenditure per GNP	-0.097	0.042	-0.196	-2.283	0.024
UNDP education index	2.437	0.430	0.478	5.666	0.000
worker remittance inflows as % of GDP	0.044	0.010	0.352	4.461	0.000
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	29.900	114	13.183	.000	

Table 17 analyses the drivers and bottlenecks of **smart R&D performance.** The equation is based on 93 countries with complete data, the R^2 is 33%, the F-value is 10.058, and the error probability of the entire equation is .000. The constant, which is not significant, is 0.326. The drivers of smart R&D performance, combining the R&D record with a minimum of ecological footprint (see also Graph 3g of this work), are the dominant position of a country on the global markets, expressed in the indicator multinational corporation outward investments per GDP, the public education expenditure, and worker remittance inflows as a % of GDP. The significant bottlenecks against a smart R&D performance are population

pressure (the annual population growth rate) and world economic openness. According to our indicator, the best performing countries are the United States (because of its overwhelming performance in tertiary education and research, its high ecological footprint notwithstanding); Sweden; New Zealand; Finland; Israel; United Kingdom; Netherlands; Norway; Switzerland; and Kyrgyzstan. The worst performers are: United Arab Emirates; Luxembourg; Kuwait; Namibia; Botswana; Cyprus; Bosnia and Herzegovina; Macedonia; Uruguay; and the Czech Republic.

Table 17: Drivers and bottlenecks of smart R&D

Independent Variable	**B**	**standard error**	**Beta**	**t-value**	**error probability**
Constant	0.326	0.327		0.998	0.321
Annual population growth rate. 1975-2005 (%)	-0.248	0.089	-0.253	-2.782	0.007
MNC outward investments (stock) per GDP	0.043	0.009	0.479	4.731	0.000
Openness-Index. 1990 (export-share per GDP + import-share per GDP)	-0.014	0.002	-0.552	-5.473	0.000
public education expenditure per GNP	0.136	0.051	0.235	2.646	0.010
worker remittance inflows as % of GDP	0.050	0.021	0.229	2.438	0.017
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	33.000	92	10.058	.000	

Our last result is presented in Table 18. It features on the preconditions of **'smart social cohesion',** combining a relatively high social cohesion with a relatively low ecological footprint (see also Graph 3h). Our equation is based on an analysis of 120 countries with complete data, the adjusted R^2 is just 8.7%, and the F-value is 6.771; and the error probability of the entire equation is .002. The constant is 0.824 and is significant. There are two significant bottlenecks and no positive drivers of smart social cohesion – annual population growth (population pressure) and the crowding-out effects of public education expenditures per GDP. The best results on our indicator are achieved by several less developed and or (former) communist or left wing regime countries as well as nations with a known record of relatively egalitarian development policies (South Korea), with the entire group comprising: Chad; Uzbekistan; Rwanda; Belarus; Laos; Cuba; Benin; Tajikistan; Korea (Republic of); and Thailand. The worst record of combing social cohesion with low ecological footprints was found in Djibouti; Namibia; Bosnia and Herzegovina; Central African Republic; Sierra Leone; Botswana; Macedonia; Bolivia; South Africa; and Colombia.

Table 18: Drivers and bottlenecks of smart social cohesion

Independent Variable	B	standard error	Beta	t-value	error probability
Constant	0.824	0.206		4.009	0.000
Annual population growth rate. 1975-2005 (%)	-0.152	0.055	-0.248	-2.775	0.006
public education expenditure per GNP	-0.102	0.034	-0.270	-3.013	0.003
memorandum item: statistical properties of the equation	adj R^2	df	F	error probability of the entire equation	
	8.700	119	6.771	.002	

5. Discussion of the results so far

Knight and Rosa, 2011 compared the ecological footprint per capita and average life satisfaction (as a measure of subjective well-being). Based on maximum likelihood estimations, they tested the effects of climate, political, economic, and social factors on EWEB with a sample of 105 countries. Knight and Rosa found a negative quadratic effect of economic development on EWEB, a negative effect of income inequality, and a positive effect of social capital (based on social trust data, contained in the *World Values Survey)*[32].

Our residuals-based reformulation of smart development realistically captures the trade-off between Global Ecological Footprint per capita and development performance and offers to us a better idea about smart development performance at different stages of socio-economic development. Our results show that traditional indicators of economic globalization and also inequality have little influence on smart development performance, but that hitherto neglected elements of dependency and world systems theory gain in importance. This is especially relevant for the socio-economic theory of Samir Amin, but it is also true of the contributions by feminism, peace research, and by other various approaches in the globalization critical tradition, perhaps hitherto neglected here and there, and now summarized in Table 9 of this work. Efficiency tends to increase and then to decrease with rising development levels. Big countries with large population resources perform better on our scales, and military expenditures/personnel rates are a significant block against smart development performance. In a sense, our results also contradict the logic inherent in the 'beautiful', but unfortunately wrong *'small is beautiful'* analysis, proposed by Schumacher, 1973a: not the small countries, but the big countries find it easier to have a satisfactory smart development performance in comparison to the ecological footprint, consumed by them. Our research also shows the beneficial effects of migration on the sending countries. Worker remittances have a significant positive effect on the HPI and a host of other smart development indicators. Migration sending countries, as to be expected from Samir Amin's dependency theory, reap substantial benefits from receiving worker remittances, while other indicators of globalization hardly

[32] http://www.worldvaluessurvey.org/

affect the smart development performance. Table 19 now shows the significant standardized regression coefficients, as they emerged from Tables 10 – 18 of this work, again linked to the theories presented in this work:

Table 19: testing of the theories

Independent Variable	dependent variable	Beta
Feminism: % women in government, all levels (feminist theory, stressing the need to feminize structures of government)	overall smart development index, based on 26 variables, weighted equally	0,185
	Smart democracy	0,196
	Smart gender justice	0,300
% world population (Amin's five monopolies of power)	Smart human development	0,152
	Happy Life Years	0,161
	Smart economic growth	0,261
2000 Economic Freedom Score (its absence is explained either by Amin's critique of rent-seeking seeking in the periphery versus conventional neo-liberal theories of economic growth)	overall smart development index, based on 26 variables, weighted equally	0,336
	overall smart development index, based on 26 variables, weighting equally the six component dimensions	0,402
	Smart democracy	0,457
Absolute latitude (Andre Gunder Frank's 'Re-Orient' model)	Smart economic growth	-0,234
Annual population growth rate, 1975-2005 (%) (Paul Israel Singer's dependency theory)	Smart R&D	-0,253
	Smart social cohesion	-0,248
Immigration - Share of population 2005 (%) (Amin's theory about the role of migration)	Smart democracy	-0,348
military expenditures per GDP (quantitative dependency and peace research approaches)	Happy Life Years	-0,245
	Smart gender justice	-0,204
	overall smart development index, based on 26 variables, weighted equally	-0,191
	overall smart development index, based on 26 variables, weighting equally the six component dimensions	-0,166
military personnel rate ln (quantitative dependency and peace research approaches)	Smart democracy	-0,221
MNC outward investments (stock) per GDP (Bornschier's dependency theory, stressing the importance of MNC headquarter status in international society)	Smart R&D	0,479
Muslim population share per total population (Amin's critique of Islamism, implicitly expecting a negative trade-off with development performance versus Andre Gunder Frank's 'Re-Orient' model, expecting a transfer of growth	Smart gender justice	-0,396

and productive activities to the global East and South)		
	Smart economic growth	0,313
Openness-Index, 1990 (export-share per GDP + import-share per GDP) (Amin's conception of the role of the peripheries)	Smart R&D	-0,552
	overall smart development index, based on 26 variables, weighting equally the six component dimensions	-0,222
	overall smart development index, based on 26 variables, weighted equally	-0,170
population density (José Carlos Mariategui's dependency theory)	overall smart development index, based on 26 variables, weighted equally	0,214
public education expenditure per GNP (human capital approaches in the tradition of the UNDP versus Kalecki/Steindl paradigm versus neo-liberal approaches, featuring a 'crowding out' phenomenon)	Smart social cohesion	-0,270
	Smart human development	-0,196
	Smart R&D	0,235
UNDP education index (human capital approaches in the tradition of the UNDP versus Kalecki/Steindl paradigm)	overall smart development index, based on 26 variables, weighted equally	0,198
	Smart human development	0,478
worker remittance inflows as % of GDP (conventional centre-periphery models about the negative consequences of the brain drain versus 'new migration theories', underlining the positive effects of worker remittances on migration sending countries)	Smart economic growth	-0,262
	overall smart development index, based on 26 variables, weighting equally the six component dimensions	0,177
	overall smart development index, based on 26 variables, weighted equally	0,208
	Smart R&D	0,229
	Smart gender justice	0,241
	Happy Life Years	0,288
	Smart human development	0,352
Years of membership in the EU, 2010 (Amin's theory about the importance of European integration as a counterweight to US dominance in the world system)	Smart democracy	0,183

Only the following significant effects highlight the necessity to further develop the paradigm, developed here: the negative, crowding out effects public education expenditures per GDP on smart social cohesion and smart human development, and the negative effects, worker remittance inflows as % of GDP wield on smart economic growth. The impressive list of tests, speaking in favour of the globalization critical paradigm, presented in this work, would suggest to further developing this research approach to questions of 'smart development'.

First of all, the **dependency and world systems paradigm by Samir Amin** comes to my mind. As correctly predicted by Samir Amin, the big countries with huge population resources today are favoured in their smart economic growth, their Happy Life Years, and their smart

human development. As correctly expected by Amin, peripheral rent seeking is a burden and its absence, measured by economic freedom, is an asset among the forces, shaping international development today, especially for smart democracy, and the overall smart development index (both formulations, used in this essay). In addition, Amin correctly stresses the necessity for European integration – and the positive effects of years of EU membership on smart democracy confirm is Euro-optimism. He correctly analyses the enormous transfer of resources from the centre to the periphery, brought about by migration, with the huge statistical observed effects of received worker remittances on smart human development, Happy Life Years, smart gender justice, smart R&D, and both formulations of the smart development index justifying his assumption. Amin's dependency theory correctly predicts the very negative effects of world economic openness on smart development. The huge statistical negative and very uniform effects, to be observed, cannot be simply and easily rejected out of hand: smart R&D and overall smart development (both formulations) are affected negatively by world economic openness. Among the major four founding figures of the 'world systems approach' (Amin, Arrighi, Frank and Wallerstein, 1982) he is the only one to have come up, in addition, with a consistent and far-reaching critique of Islamism, confirmed by the very negative trade-off between Muslim population share and smart gender empowerment.

But in some ways, Amin's paradigm has to be expanded and refined: **Feminism** is an important driver of smart gender justice, smart democracy, and the overall smart development index, based on 26 variables, weighted equally. Feminist approaches, in principle, would be well compatible with Amin's original approach. The **Kalecki/Steindl paradigm** also can be merged with Amin's theory, and it has three significant results to its favour – the positive determination of smart R&D by public education expenditures, and the positive effects of the UNDP education index on smart human development and on overall smart development index, based on 26 variables, weighted equally. Several further strains of dependency/world systems research are confirmed in this essay: **Bornschier's dependency theory** and the importance it attaches to multinational corporation headquarter status, which is confirmed by the positive effect of this variable on smart R&D; and the effect of population density, predicted in **José Carlos Mariategui's dependency theory** on the overall smart development index, based on 26 variables, weighted equally. **Paul Israel Singer's approach to dependency and population dynamics** is confirmed by the significant negative effects of annual population growth rates on smart R&D and smart social cohesion. The following empirical results could be interpreted to be expressions of **Andre Gunder Frank's Re-Orient hypothesis,** 1999 about a fundamental shift in the global production dynamics away from the old centres towards the countries of the Indian and the Pacific Ocean: the significant positive effect of Muslim population share per total population on smart economic growth, and the significant negative effects of absolute latitude on smart economic growth, of immigration - share of population in 2005 on smart democracy (the biggest migration recipients are the countries of the global 'North'), and worker remittance inflows as % of GDP on smart economic growth.

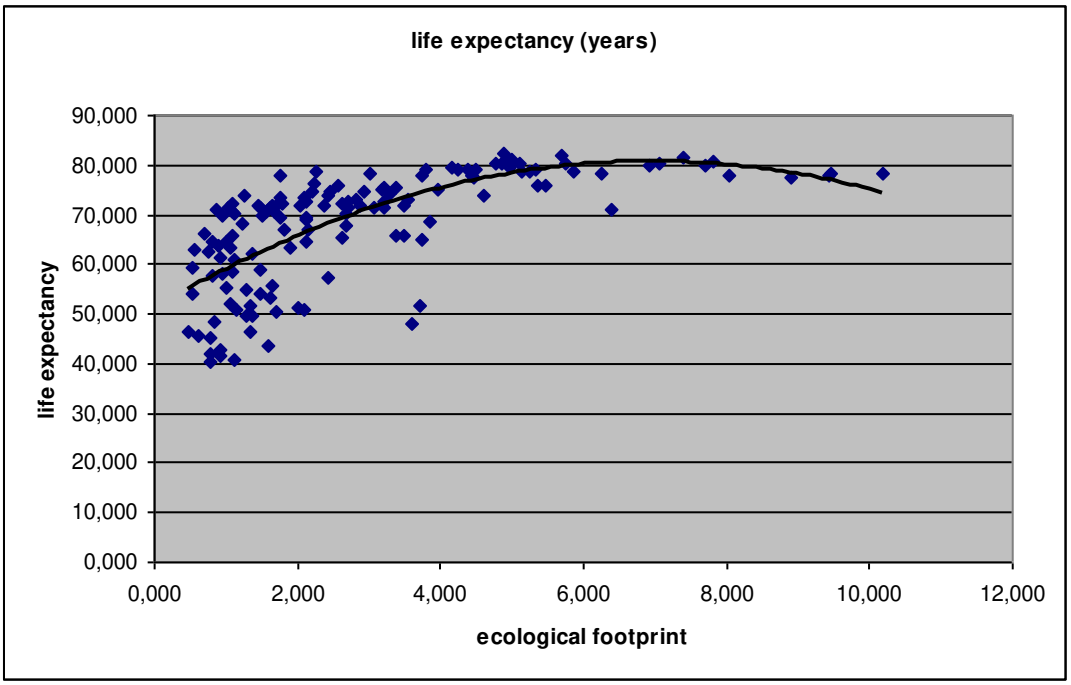
For some other processes, the empirical Amin's five monopolies of power include two elements of military might, the monopoly of technology, supported by military expenditures of the dominant nations, and the monopoly of the military means of mass destruction. But the significant negative effects of military expenditures (on Happy Life Years, smart gender justice, the two formulations of the overall smart development index) or military personnel rates (smart democracy) on smart development rather support the arguments of **quantitative peace research** during the last decades with its apprehensions against very high military spending rates (Auvinen and Nafziger, 1999; Heo, 1998; Mintz and Stevenson, 1995).

As we stated, the real differences with the theories presented here are to be found in the negative effects of public education expenditures on **public education expenditures per GDP** on smart social cohesion and smart human development. In this case, our response can only be to draw the global research community to the essays published by **Blankenau and Simpson,** 2004 and **Sylwester,** 2000, written from the perspective of established economic theory. Blankenau and Simpson, 2004, because, as we already stated, they investigated the public education expenditure-growth relationship in the context of an endogenous growth model in which private and public investment are inputs to human capital accumulation. They could show that the positive direct effect of public education spending on growth can be diminished or even negated when other determinants of growth are negatively affected by general equilibrium adjustments. Blankenau and Simpson showed that the response of growth to public education expenditures may be nonmonotonic. The relationship depends on the level of government spending, the tax structure and the parameters of production technologies. Sylwester, 2000, for his part could demonstrate that although public education expenditures are positively associated with future economic growth, the contemporaneous effect upon growth is negative.

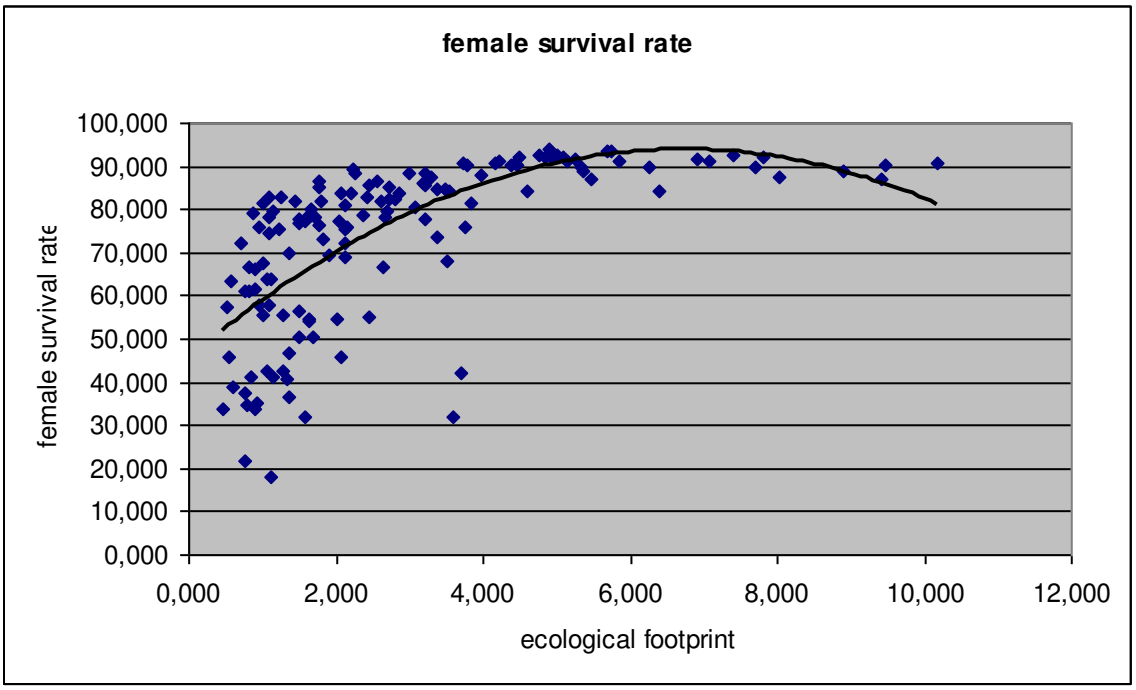
6. Inequality and smart public health development

In the following, we take up a very hotly debated issue, which has been very prominent in recent global public health debate. Following the path-breaking articles by RG Wilkinson, 1992, 1997; and Wilkinson and Picket, 2006, income inequality has a very detrimental effect on life quality. But life quality also depends in a non-linear fashion from environmental data. Already in Graph 2 above we portrayed this trade-off, stating that the non-linear tradeoffs between *'energy consumption and/or environmental strain'* and *'life quality'* were first portrayed in Goldstein, 1985. We already hinted at the fact that social science literature widely uses non-linear functions to depict the trade-off (see Afxentiou, 1990a, 1990b; Anand and Ravillion, 1993; Anson, 1988, 1991; Cheng, 1989; Dixon, 1987; Dixon and Moon, 1986, 1989; Fosu, 2009, 2010a, 2010b, 2010c; Kakwani, 1993, 1995; Khan, 1991; King, 1998; Knight and Rosa, 2011; Mazumdar, 1996, 2000; Moon and Dixon, 1992; Newman and Thomson, 1989; Rudra, 2009; Tausch and Prager, 1993). Following the public health debate contribution in Tausch, 2010 and the social scientific approaches in Fain, et al. 1997; Mostafa, 2010a and 2010b; Mostafa and Nataraajan, 2009; Shandra, 2007a, 2007b, Shandra, Leckband, McKinney and London, 2009, we now portray in Graph 4a-4c the trade-off between ecological footprint and life quality:

Graph 4a: life expectancy and ecological footprint



Graph 4b: female survival rate and ecological footprint



Graph 4c: female survival rate and ecological footprint

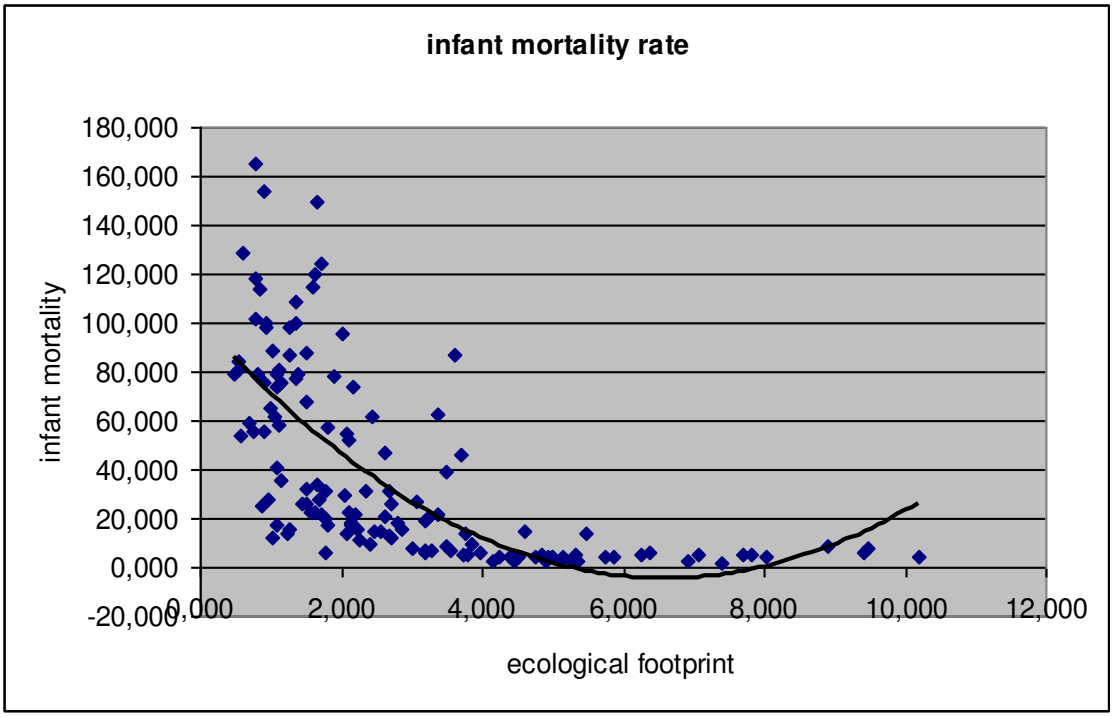


Table 20 portrays the mathematical properties of this trade-off:

Table 20: the trade-off between ecological footprint and life quality

life quality indicator (dependent variable)	Independent variables	Regression coefficient B	Standard error	Beta	T	Error probability
life expectancy	Constant	51,057	1,802		28,330	0,000
	footprint per capita	8,493	1,054	1,623	8,061	0,000
	footprint per capita^2	-0,609	0,118	-1,041	-5,173	0,000
	statistical parameters of the equation	adj R^2	0.488			
		n =	140,000			
		F =	67,222			
		error p =	.000			
female survival	Constant	45,541	3,091		14,735	0,000
	footprint per capita	14,346	1,810	1,643	7,926	0,000
	footprint per capita^2	-1,065	0,202	-1,091	-5,263	0,000
	statistical parameters of the equation	adj R^2	0.463			
		n =	139,000			
		F =	60,508			
		error p =	.000			
infant mortality	Constant	100,458	6,395		15,709	0,000
	footprint per capita	-31,745	3,752	-1,721	-8,461	0,000
	footprint per capita^2	2,401	0,418	1,167	5,740	0,000
	statistical parameters of the equation	adj R^2	0.485			
		n =	138,000			
		F =	65,634			
		error p =	.000			

Our calculations show that inequality, as correctly predicted by R. G. Wilkinson and his school of public health research, has a detrimental effect on life expectancy (smart life expectancy) and on female survival (smart female survival), but that the effect on smart infant mortality reduction does not materialize, once we properly control for the other intervening variables. Let us look first at the statistical results of our research:

Table 21: explaining the z-standardized residuals from ecological footprint and life expectancy (ecologically efficient life expectancy; smart life expectancy)

	Regression coefficient B	Standard error	Beta	T	Error probability
Constant	-1,305	0,521		-2,503	0,014
Membership in the Islamic Conference	-1,606	0,598	-0,735	-2,686	0,009
military expenditures per GDP	-0,084	0,039	-0,194	-2,125	0,037
public education expenditure per GNP	-0,124	0,049	-0,244	-2,554	0,013
UNDP education index	2,529	0,568	0,483	4,450	0,000
worker remittance inflows as % of GDP	0,039	0,014	0,263	2,811	0,006
Muslim population share per total population	0,025	0,007	0,960	3,367	0,001
quintile share income difference between richest and poorest 20%	-0,018	0,010	-0,156	-1,710	0,091

adj. R^2 = 0.364; n = 88; F = 8.108; error p = .000

Table 22: explaining the z-standardized residuals from ecological footprint and female survival rate (ecologically efficient female survival rate, smart female survival)

	Regression coefficient B	Standard error	Beta	T	Error probability
Constant	-1,289	0,512		-2,519	0,014
Membership in the Islamic Conference	-1,573	0,587	-0,714	-2,679	0,009
military expenditures per GDP	-0,075	0,039	-0,174	-1,953	0,054
public education expenditure per GNP	-0,141	0,048	-0,276	-2,960	0,004
UNDP education index	2,582	0,558	0,490	4,627	0,000
worker remittance inflows as % of GDP	0,036	0,014	0,237	2,599	0,011
Muslim population share per total population	0,026	0,007	0,999	3,596	0,001
quintile share income	-0,022	0,010	-0,187	-2,114	0,038

difference between richest and poorest 20%					

adj. R^2 = 0.396; n = 88; F = 9.157; error p = .000

Table 23: explaining the z-standardized residuals from ecological footprint and infant mortality

	Regression coefficient B	**Standard error**	**Beta**	**T**	**Error probability**
Constant	1,420	0,498		2,851	0,006
Membership in the Islamic Conference	0,863	0,571	0,444	1,511	0,135
military expenditures per GDP	0,044	0,038	0,116	1,180	0,241
public education expenditure per GNP	0,080	0,046	0,177	1,724	0,089
UNDP education index	-2,266	0,543	-0,487	-4,175	0,000
worker remittance inflows as % of GDP	-0,043	0,013	-0,327	-3,255	0,002
Muslim population share per total population	-0,012	0,007	-0,506	-1,653	0,102
quintile share income difference between richest and poorest 20%	0,004	0,010	0,036	0,369	0,713

adj. R^2 = 0.267; n = 88; F = 5.522; error p = .000

The **significant negative results of inequality** on the female survival rate (ecologically efficient female survival rate, smart female survival, beta weight -0,187) and on life expectancy (ecologically efficient life expectancy; smart life expectancy, beta weight -0,156) have to be re-iterated. However, we must also observe that **Membership in the Organization of Islamic Cooperation** has a significant negative effect on life expectancy (ecologically efficient life expectancy; smart life expectancy) and on the female survival rate (ecologically efficient female survival rate, smart female survival). This results reflects the existing deficiencies of 'real existing' Muslim countries in the world today, while Muslim societies as such **(share of Muslim population per total population)** have a significant and positive effect on life expectancy (ecologically efficient life expectancy; smart life expectancy) and on the female survival rate (ecologically efficient female survival rate, smart female survival).

The effects of **public education expenditure rates** again confirm their crowding-out effects on life quality, already described in this work (beta weights):

female survival rate (ecologically efficient female survival rate, smart female survival)	-0,276
life expectancy (ecologically efficient life expectancy; smart life expectancy)	-0,244
infant mortality considering ecological footprint	0,177

Similar crowding-out effects are to be observed for **military expenditures per GDP**:

life expectancy (ecologically efficient life expectancy; smart life expectancy)	-0,194
female survival rate (ecologically efficient female survival rate, smart female survival)	-0,174

The **UNDP education index**, as to be expected from the other results of this work, has the following very beneficial significant beta-weights on our smart development indicators:

life expectancy (ecologically efficient life expectancy; smart life expectancy)	0,483
female survival rate (ecologically efficient female survival rate, smart female survival)	0,490
infant mortality considering ecological footprint	-0,487

Last, but not least, the effects of **worker remittances per GDP** are the following:

infant mortality considering ecological footprint	-0,327
life expectancy (ecologically efficient life expectancy; smart life expectancy)	0,263
female survival rate (ecologically efficient female survival rate, smart female survival)	0,237

Thus, the Wilkinson research agenda finds its proper place also in debates about 'smart development', but certainly, the weight of other variables, such as

- Membership in the Islamic Conference
- military expenditures per GDP
- Muslim population share per total population
- public education expenditure per GNP
- UNDP education index
- worker remittance inflows as % of GDP

also has to be properly taken into account.

7. Conclusions

Since all existing major comparative empirical studies on drivers and bottlenecks of environmental quality only touched upon different dependent variables, and not the smart development, this our first international comparative study seems to suggest cautiously that future research efforts in comparative environmental science would be well advised to take the major predictor variables of the present study as well as the environmental plateau curve into account (see also Weede and Kampf, 2002; de Haan, Lundstrom and Sturm, 2006; and Gwartney, Lawson and Holcombe, 1999).

It emerges that the absence of 'rent seeking', **economic freedom** and a free price mechanism, and **worker remittances** are the most important drivers of 'smart development'. Most of the **'small is beautiful'** assumptions of **Schumacherian economics** by contrast do not stand the test of cross-national development accounting and are **squarely contradicted** by our empirical results; with population density and population size always being among the drivers, and not the bottlenecks of 'smart development'.

As correctly predicted by Samir Amin, the **big countries with huge population resources** today are favoured in their smart economic growth, their Happy Life Years, and their smart human development. As correctly expected by Amin, peripheral rent seeking is a burden and its absence, measured by economic freedom, is an asset among the forces, shaping international development today, especially for smart democracy, and the overall smart development index (both formulations, used in this essay). In addition, Amin correctly stressed the necessity for **European integration** – and the positive effects of years of EU membership on smart democracy confirm is Euro-optimism. He correctly analysed the enormous transfer of resources from the centre to the periphery, brought about by **migration**, with the huge statistical observed effects of received worker remittances on smart human development, Happy Life Years, smart gender justice, smart R&D, and both formulations of the smart development index justifying his assumption. Amin's dependency theory correctly predicted the **very negative effects of world economic openness on smart development**. The huge statistical negative and very uniform effects, to be observed, cannot be simply easily rejected out of hand: smart R&D, and overall smart development (both formulations) are affected negatively by world economic openness. Among the major four founding figures of the 'world systems approach' (Amin, Arrighi, Frank and Wallerstein, 1982) he is the only one to have come up, in addition, with a consistent and far-reaching critique of **Islamism**, confirmed by the very negative trade-off between Muslim population share and smart gender empowerment.

We could also show in this book the importance of Feminism, the Kalecki/Steindl paradigm, the multinational corporation headquarter status, population density, population dynamics, Muslim population share per total population, absolute latitude, and migration on 'smart development'. We also investigated the negative effects of public education expenditures on public education expenditures per GDP on smart development.

We are aware that our answers, raised to the questions in this book, are incomplete. But we hope to have provided at least some preliminary guiding posts for further research on this important subject.

Appendix

Appendix Table 1: The dependent variables

democracy	1	Combined Failed States Index
democracy	2	Civil and Political Liberties violations
democracy	3	Corruption avoidance measure
democracy	4	Democracy measure
democracy	5	Global tolerance index
democracy	6	Rule of law
economic growth	7	Crisis Performance Factor
economic growth	8	economic growth IMF prediction growth rate in 2009
economic growth	9	economic growth IMF prediction growth rate in 2010
economic growth	10	economic growth in real terms pc. per annum, 1990-2005
gender	11	closing economic gender gap
gender	12	closing educational gender gap
gender	13	closing health and survivial gender gap
gender	14	closing of global gender gap overall score 2009
gender	15	closing political gender gap
gender	16	gender empowerment index value
human development	17	Infant mortality 2005
human development	18	female survival probability of surviving to age 65 female
human development	19	Human development index (HDI) value 2004
human development	20	Life Expectancy (years)
human development	21	Life Satisfaction (0-10)
R&D	22	Country share in top world 500 Universities
R&D	23	per capita world class universities
R&D	24	tertiary enrollment
social cohesion	25	quintile share income difference between richest and poorest 20%
social cohesion	26	unemployment rate
nonparametric_26 equal weights	27	overall 26 development index
nonparametric, weighting each dimension equally	28	overall 26 development index, based on six dimensions
	29	component UNDP-type index for overall democracy-performance
	30	component UNDP-type index for overall economic growth-performance
	31	component UNDP-type index for overall gender-performance
	32	component UNDP-type index for overall human development-performance
	33	component UNDP-type index for overall R&D-performance
	34	component UNDP-type index for overall social cohesion-performance
	35	% women in government, all levels

	36	% world population
	37	2000 Economic Freedom Score
	38	Absolute latitude
	39	Annual population growth rate, 1975-2005 (%)
	40	comparative price levels (US=1.00)
	41	foreign savings rate
	42	FPZ (free production zones) employment as % of total population
	43	ln GDP per capita
	44	ln GDP per capita ^2
	45	Membership in the Islamic Conference
	46	military expenditures per GDP
	47	military personnel rate ln (MPR+1)
	48	MNC outward investments (stock) per GDP
	49	MNC PEN - stock of Inward FDI per GDP
	50	MNC PEN: DYN MNC PEN 1995-2005
	51	Openness-Index, 1990 (export-share per GDP + import-share per GDP)
	52	population density
	53	public education expenditure per GNP
	54	UNDP education index
	55	worker remittance inflows as % of GDP
	56	Immigration - Share of population 2005 (%)
	57	Muslim population share per total population
	58	net international migration rate, 2005-2010
	59	Years of membership in the EU, 2010
	60	years of membership in EMU, 2010
	61	social security expenditure per GDP average 1990s (ILO)
	62	ecological footprint (g ha /cap)
	63	ecological footprint (g ha /cap)^2

Appendix Table 2: Global smart development

	z_res_overall 26 development index	z_res_overall 26 development index, based on six dimensions	z_res_component UNDP democracy	z_res_component UNDP economic growth	z_res_component UNDP gender	z_res_component UNDP human development	z_res_component UNDP R&D	z_res_component UNDP social cohesion
Sudan	-2,512	-3,117	-2,788	1,650		-1,516	-0,941	
Bosnia and Herzegovina	-2,381	-2,858	-1,304	-1,251		-0,270	-1,536	-3,805
Kuwait	-1,887	-2,552	-2,290	0,693	-1,717	-0,328	-2,514	
Djibouti	-0,705	-2,500	0,185	0,478		-0,853	-0,437	-5,940
Namibia	-1,185	-2,428	-0,260	0,362	-0,013	-2,457	-1,797	-4,061
Central African Republic,	-2,214	-2,410	-0,565	-0,190		-2,382	-0,480	-2,692
Macedonia	-1,396	-1,853	-1,499	0,047	-0,839	-0,760	-1,529	-2,020
Togo	-0,979	-1,830	0,075	-1,201		-0,423	0,255	
Congo (Democratic Republic of the)	-0,850	-1,756	-0,657	1,822		-1,249	0,315	
Lebanon	-1,299	-1,731	-1,842	1,470		-0,339	0,015	
United Arab Emirates	-1,970	-1,725	-2,260	0,211	-2,158	-0,003	-2,816	-0,310
Botswana	-1,075	-1,684	0,524	2,091	-0,787	-3,052	-1,789	-2,127
Sierra Leone	-1,400	-1,617	0,271	0,007		-2,032	0,241	-2,645
Angola	-0,669	-1,543	-0,511	0,053	0,423	-1,811	0,057	
Congo	-0,481	-1,488	0,125	-0,376		-0,242	0,380	
Zimbabwe	-1,750	-1,264	-1,035	-2,819	-0,314	-1,956	-0,004	0,268
Niger	-1,888	-1,257	-0,500	0,306		-2,104	-0,537	-0,029
Chad	-1,827	-1,084	-1,350	0,144	-1,876	-1,749	-0,614	1,071
Estonia	-1,303	-0,972	-0,788	-0,956	-0,319	-1,091	-0,850	0,258
Turkey	-1,134	-0,946	-0,744	-0,902	-2,091	0,100	-0,729	-0,004

Iran	-1,021	-0,934	-1,376	1,002	-1,785	-0,012	-1,341	-0,111
Hong Kong, China (SAR)	-1,528	-0,921	-1,728	0,077		-0,106	-0,400	0,236
Kazakhstan	-1,327	-0,882	-2,334	0,008	0,365	-0,797	-0,614	0,384
Paraguay	-0,519	-0,849	-1,164	0,016	0,195	-0,014	-1,339	-0,894
Burkina Faso	-1,312	-0,817	-0,556	0,784	-1,033	-2,120	-0,850	0,800
Mauritania	-0,643	-0,758	-0,737	0,513	-0,557	-0,733	-0,663	-0,782
Saudi Arabia	-1,064	-0,701	-1,522	-0,096	-2,211	0,718	-0,443	0,271
Cameroon	-1,097	-0,699	-1,098	-0,343	-0,571	-1,220	-0,095	0,221
Russia	-1,324	-0,681	-1,631	-1,070	-0,230	-0,645	0,546	0,399
Haiti	-0,765	-0,632	-0,423	-1,672		0,349	0,388	-0,970
Burundi	-1,598	-0,624	-0,360	-0,660		-1,480	0,142	0,738
Nigeria	-1,092	-0,610	-0,907	-0,198	-0,341	-1,463	-0,181	0,430
Uruguay	-0,508	-0,591	-0,227	1,197	-0,628	-0,574	-1,420	-0,176
Mali	-0,687	-0,559	0,751	0,724	-1,239	-1,889	-0,508	-0,127
Guinea	-1,292	-0,557	-0,553	0,120		-1,047	-0,243	0,603
Belarus	-1,445	-0,537	-2,546	-0,141	0,419	-0,489	0,097	0,960
Greece	-0,612	-0,494	-0,430	0,604	-0,904	-0,273	-0,834	0,113
Syria	-0,427	-0,494	-1,629	0,454	-0,790	0,798	-0,705	-0,384
Czech Republic	-0,564	-0,485	-0,195	0,019	-0,643	-0,337	-1,381	0,602
Malta	-0,404	-0,401	-0,643	0,267	-0,868	0,470	-1,227	0,234
Singapore	-0,643	-0,401	-0,722	-1,257	-1,033	0,386	0,131	0,399
Luxembourg	-0,010	-0,394	0,308	-0,634	0,016	0,713	-2,801	-0,709
Yemen	-0,705	-0,356	-0,401	0,943	-2,996	0,145	0,038	0,020
Mexico	-0,288	-0,297	-0,358	-0,468	-0,564	0,407	-0,983	0,322
Korea (Republic of)	-0,390	-0,293	-0,157	0,164	-1,589	0,376	-1,217	0,833
Azerbaijan	-0,923	-0,260	-1,699	2,893	-1,237	-0,152	-0,129	-0,057
Venezuela	-0,302	-0,240	-0,720	-1,194	0,023	0,484	-0,349	0,155
Ukraine	-0,571	-0,213	-0,542	-2,114	-0,004	0,043	0,314	0,579

Bolivia	0,200	-0,201	0,273	0,332	-0,293	0,037	0,431	-1,748
Ethiopia	-0,626	-0,198	-0,120	1,498	-0,950	-1,593	-0,297	0,701
Cyprus	-0,122	-0,191	0,314	1,022	-1,037	0,214	-1,654	0,345
Egypt	-0,294	-0,158	-0,946	0,463	-1,556	1,053	-0,609	0,174
Mongolia	-0,051	-0,150	0,373	1,579	0,022	-1,043	-0,594	-0,337
Myanmar	-0,799	-0,150	-1,636	1,165		0,274	0,305	0,228
Rwanda	-1,105	-0,129	-0,270	0,548		-1,277	0,202	1,012
Zambia	-0,226	-0,110	0,731	-0,100	-0,162	-1,545	0,254	-0,228
Algeria	-0,151	-0,098	-0,941	0,245	-0,643	0,840	-0,028	-0,461
Albania	0,172	-0,074	-0,216	0,404	-0,661	0,870	-0,465	-0,724
Belize	0,466	-0,052	0,301	0,296	-0,222	0,732	-1,286	-0,543
Guyana	0,372	-0,033	0,100	1,092	0,854	-0,297	-0,967	-0,707
South Africa	0,682	-0,013	1,216	-0,472	2,001	-1,156	-0,086	-1,625
Kenya	-0,287	-0,009	-0,220	-0,158	0,245	-0,966	0,006	0,473
Romania	-0,091	0,009	0,012	-1,035	-0,143	0,274	-0,436	0,607
Croatia	0,105	0,050	-0,057	-0,553	0,128	0,480	-0,614	0,279
Ecuador	0,597	0,055	-0,065	-0,886	0,833	0,874	-1,027	-0,363
Latvia	-0,218	0,069	0,132	-2,330	0,740	-0,094	0,585	0,464
Brazil	0,547	0,076	0,432	-0,351	-0,061	0,783	-0,342	-0,860
Portugal	0,183	0,135	0,926	-0,428	-0,197	-0,088	-0,175	0,162
Pakistan	-0,224	0,146	0,154	-0,359	-2,079	0,567	0,118	0,669
Italy	-0,010	0,183	0,262	-0,481	-0,658	0,173	0,714	0,392
Uganda	-0,127	0,204	-0,740	1,444	1,261	-1,262	-0,261	0,598
Malaysia	0,099	0,205	0,031	-0,596	-0,679	0,853	-0,088	0,365
Laos	-0,435	0,209	-1,066	0,788		0,519	-0,091	0,939
Armenia	0,034	0,216	0,095	-1,643	-0,964	1,129	0,362	0,253
Lithuania	0,059	0,224	0,564	-2,577	0,517	0,229	0,343	0,670
Slovakia	0,332	0,226	0,432	0,161	-0,037	0,312	-0,587	0,247
Spain	0,204	0,240	0,323	0,058	0,226	0,029	0,130	0,143
Iceland	0,389	0,248	0,837	-1,138	1,598	0,024	-1,379	0,392
Uzbekistan	0,046	0,310	-1,931	1,830	0,796	0,315	-0,727	1,055
Tanzania	0,222	0,311	0,508	0,890	0,606	-1,455	-0,153	0,592
Colombia	0,880	0,347	0,058	-0,755	0,612	1,404	0,198	-1,137
Poland	0,233	0,349	0,255	0,733	-0,040	0,058	0,236	0,191

Benin	0,010	0,351	1,383	-0,079	-1,054	-0,921	0,081	0,896
Ireland	0,417	0,381	0,618	-0,794	0,489	-0,044	0,564	0,333
Japan	0,104	0,384	0,889	-0,609	-0,705	0,193	0,462	0,744
Panama	0,765	0,396	0,492	1,456	0,194	0,555	-0,346	-0,720
Cambodia	0,228	0,398	0,045	-0,337	0,067	-0,117	0,109	0,752
Slovenia	0,174	0,410	0,606	0,430	-0,392	0,138	-0,018	0,671
Hungary	0,280	0,410	0,986	-0,467	-0,172	0,015	0,137	0,575
Bulgaria	0,375	0,422	0,376	-0,981	0,498	0,398	0,201	0,397
Jordan	0,232	0,425	-0,467	0,519	-0,558	1,033	0,474	-0,023
Ghana	0,559	0,437	1,006	0,865	0,285	-0,560	-0,342	0,033
Guatemala	0,694	0,471	0,392	-0,538	-0,123	1,204	-0,154	-0,171
Tunisia	0,584	0,497	-0,027	0,798	-0,555	1,143	0,156	-0,249
Israel	0,218	0,528	-0,155	0,204	-0,416	0,135	2,179	0,211
Senegal	0,476	0,537	1,064	0,113	0,099	-0,378	-0,219	0,581
Honduras	0,847	0,577	0,376	-0,359	0,604	0,866	-0,128	-0,040
Madagascar	0,638	0,595	1,378	-1,269	1,024	-0,445	-0,038	0,412
Georgia	0,433	0,602	0,207	-0,708	-0,702	1,162	1,240	-0,226
Nicaragua	0,728	0,611	0,338	-0,396	0,850	0,756	-0,471	0,433
China	0,438	0,626	-1,255	3,239	-0,380	0,893	-0,093	0,391
Morocco	0,581	0,632	0,119	0,450	-0,688	1,164	0,238	0,093
Nepal	0,689	0,649	0,922	-0,174	-0,539	0,583	0,344	0,026
France	0,650	0,662	0,812	0,060	0,492	0,132	0,711	0,271
El Salvador	1,137	0,681	0,834	-0,908	0,751	1,180	0,108	-0,531
Canada	0,610	0,682	0,682	0,632	0,179	-0,066	1,140	0,109
Australia	0,598	0,698	0,542	0,689	0,276	0,025	1,080	0,013
Belgium	0,692	0,730	0,793	-0,063	0,369	0,119	1,217	0,293
Mozambique	0,591	0,737	0,934	0,580	1,791	-1,545	0,032	0,732
Argentina	0,998	0,764	0,509	-0,684	1,020	1,084	0,743	-0,462
Denmark	0,792	0,821	0,865	0,059	0,736	-0,085	1,162	0,135
Malawi	0,932	0,848	1,309	0,696	0,773	-0,646	0,448	-0,080
Chile	1,240	0,866	1,678	0,826	-0,038	0,697	0,062	-0,295
Bhutan	0,608	0,879	0,295	1,677		0,619	-0,037	0,710
Thailand	0,732	0,879	0,894	-0,825	0,348	0,670	0,406	0,831

United Kingdom	0,777	0,881	0,918	-0,120	0,361	-0,017	1,832	0,364
Trinidad and Tobago	1,385	0,943	1,122	0,241	1,232	0,750	-0,729	0,304
Austria	0,835	0,982	1,041	0,053	0,151	0,242	1,441	0,669
Tajikistan	0,749	0,988	-0,185	-1,399	1,076	1,110	0,769	0,839
Cuba	0,940	0,990	-1,333	0,374	1,230	1,707	0,256	0,910
Germany	1,164	1,009	1,357	-0,981	0,883	0,385	1,387	0,338
Dominican Republic	1,560	1,014	1,149	-0,228	1,015	1,488	0,429	-1,009
Moldova	1,020	1,030	0,781	-2,607	1,223	1,211	0,843	0,630
Kyrgyzstan	0,639	1,058	-0,330	-0,930	1,586	0,789	1,482	0,436
Bangladesh	0,867	1,076	0,518	0,562	-0,344	0,846	0,598	0,711
India	0,976	1,082	1,581	0,962	-1,535	0,754	0,501	0,635
Indonesia	1,047	1,102	0,183	-0,154	0,594	1,480	0,569	0,293
Peru	1,426	1,135	0,885	0,713	0,756	1,105	0,595	-0,383
Vietnam	0,931	1,137	-0,595	0,853	0,678	1,650	0,100	0,830
Switzerland	1,236	1,156	1,309	-0,241	0,636	0,288	1,606	0,595
New Zealand	1,037	1,158	0,681	0,509	1,070	-0,114	2,343	0,052
United States	1,069	1,294	0,516	-0,123	0,583	0,281	3,722	-0,595
Norway	1,264	1,356	0,706	0,658	1,884	0,001	1,613	0,570
Netherlands	1,409	1,369	1,748	-0,627	0,837	0,439	1,688	0,680
Costa Rica	1,949	1,377	1,930	-0,075	1,024	1,670	-0,460	0,084
Jamaica	1,687	1,401	1,703	-2,057	1,210	1,780	0,516	0,191
Finland	1,544	1,509	1,364	-0,531	1,911	0,196	2,312	0,433
Sri Lanka	2,083	1,709	1,261	0,095	1,474	1,699	0,127	0,549
Sweden	1,817	1,838	1,616	-0,120	1,656	0,273	3,077	0,519
Philippines	2,452	1,871	1,324	-1,188	2,119	1,745	1,295	0,239

Appendix Table 3: Partial correlations of smart development – development level constant. Results ordered by dependent variable

dependent variable	variable	partial correlation	Significance	Degrees of freedom
ecological footprint per capita	net international migration rate, 2005-2010	0,573	0,000	133
ecological footprint per capita	population density	-0,302	0,000	133
ecological footprint per capita	Immigration - Share of population 2005 (%)	0,463	0,000	133
ecological footprint per capita	military expenditures per GDP	0,321	0,001	111
ecological footprint per capita	comparative price levels (US=1.00)	0,203	0,019	131
ecological footprint per capita	years of membership in EMU, 2010	-0,188	0,029	133
Smart anti-corruption	2000 Economic Freedom Score	0,254	0,003	131
Smart anti-corruption	population density	0,240	0,005	133
Smart anti-corruption	UNDP education index	-0,235	0,006	133
Smart anti-corruption	MNC outward investments (stock) per GDP	0,245	0,011	104
Smart anti-corruption	MNC PEN - stock of Inward FDI per GDP	0,187	0,030	133
Smart anti-corruption	military expenditures per GDP	-0,187	0,048	111
Smart avoiding high income differences	Absolute latitude	0,290	0,002	106
Smart avoiding high income differences	2000 Economic Freedom Score	-0,294	0,002	111
Smart avoiding high income differences	social security expenditure per GDP average 1990s (ILO)	0,305	0,004	85
Smart avoiding high income differences	Annual population growth rate, 1975-2005 (%)	-0,245	0,009	112
Smart avoiding high income differences	% women in government, all levels	-0,214	0,023	111
Smart avoiding high income differences	MNC PEN - stock of Inward FDI per GDP	-0,203	0,029	113
Smart avoiding high income differences	Muslim population share per total population	0,200	0,033	111
Smart avoiding Infant mortality	worker remittance inflows as % of GDP	0,389	0,000	116
Smart avoiding Infant mortality	UNDP education index	0,387	0,000	133
Smart avoiding Infant mortality	Membership in the Islamic Conference	-0,179	0,037	133

Smart avoiding to be a failed state	military expenditures per GDP	-0,396	0,000	111
Smart avoiding to be a failed state	Immigration - Share of population 2005 (%)	-0,323	0,000	133
Smart avoiding to be a failed state	military personnel rate ln (MPR+1)	-0,290	0,001	132
Smart avoiding to be a failed state	Muslim population share per total population	-0,246	0,004	132
Smart avoiding to be a failed state	% women in government, all levels	0,244	0,004	132
Smart avoiding to be a failed state	Annual population growth rate, 1975-2005 (%)	-0,242	0,005	132
Smart avoiding to be a failed state	Membership in the Islamic Conference	-0,234	0,006	133
Smart avoiding to be a failed state	MNC PEN - stock of Inward FDI per GDP	0,200	0,020	133
Smart avoiding to be a failed state	2000 Economic Freedom Score	0,193	0,026	131
Smart avoiding to be a failed state	MNC outward investments (stock) per GDP	0,194	0,046	104
Smart avoiding unemployment	Muslim population share per total population	-0,299	0,001	118
Smart avoiding unemployment	foreign savings rate	-0,204	0,025	118
Smart avoiding unemployment	military personnel rate ln (MPR+1)	-0,201	0,028	118
Smart avoiding unemployment	public education expenditure per GNP	-0,204	0,029	113
Smart civil and political liberties	Membership in the Islamic Conference	-0,386	0,000	132
Smart civil and political liberties	Muslim population share per total population	-0,405	0,000	131
Smart civil and political liberties	military expenditures per GDP	-0,387	0,000	111
Smart civil and political liberties	military personnel rate ln (MPR+1)	-0,479	0,000	131
Smart civil and political liberties	Immigration - Share of population 2005 (%)	-0,380	0,000	132
Smart civil and political liberties	2000 Economic Freedom Score	0,380	0,000	130
Smart civil and political liberties	% women in government, all levels	0,447	0,000	131
Smart civil and political liberties	net international migration rate, 2005-2010	-0,263	0,002	132
Smart civil and political liberties	Annual population growth rate, 1975-2005 (%)	-0,242	0,005	131
Smart closing economic gender gap	Membership in the Islamic Conference	-0,415	0,000	117
Smart closing economic gender gap	Muslim population share per total population	-0,529	0,000	115

Smart closing economic gender gap	Annual population growth rate, 1975-2005 (%)	-0,442	0,000	116
Smart closing economic gender gap	military personnel rate ln (MPR+1)	-0,316	0,000	117
Smart closing economic gender gap	% women in government, all levels	0,408	0,000	116
Smart closing economic gender gap	UNDP education index	0,446	0,000	117
Smart closing economic gender gap	social security expenditure per GDP average 1990s (ILO)	0,273	0,008	90
Smart closing economic gender gap	MNC outward investments (stock) per GDP	0,225	0,025	97
Smart closing economic gender gap	military expenditures per GDP	-0,213	0,030	102
Smart closing economic gender gap	net international migration rate, 2005-2010	-0,197	0,031	117
Smart closing economic gender gap	public education expenditure per GNP	0,184	0,048	114
Smart closing educational gender gap	Membership in the Islamic Conference	-0,336	0,000	117
Smart closing educational gender gap	UNDP education index	0,679	0,000	117
Smart closing educational gender gap	worker remittance inflows as % of GDP	0,306	0,001	105
Smart closing educational gender gap	Muslim population share per total population	-0,270	0,003	115
Smart closing health and survivial gender gap	% world population	-0,370	0,000	117
Smart closing health and survivial gender gap	population density	-0,250	0,006	117
Smart closing health and survivial gender gap	% women in government, all levels	0,214	0,020	116
Smart closing of global gender gap overall score	Membership in the Islamic Conference	-0,449	0,000	117
Smart closing of global gender gap overall score	Muslim population share per total population	-0,515	0,000	115
Smart closing of global gender gap overall score	Annual population growth rate, 1975-2005 (%)	-0,354	0,000	116
Smart closing of global gender gap overall score	military personnel rate ln (MPR+1)	-0,363	0,000	117
Smart closing of global gender gap overall score	% women in government, all levels	0,416	0,000	116
Smart closing of global gender gap overall score	UNDP education index	0,481	0,000	117
Smart closing of global gender gap overall score	military expenditures per GDP	-0,333	0,001	102

Smart closing of global gender gap overall score	social security expenditure per GDP average 1990s (ILO)	0,338	0,001	90
Smart closing of global gender gap overall score	Immigration - Share of population 2005 (%)	-0,254	0,005	117
Smart closing of global gender gap overall score	public education expenditure per GNP	0,209	0,024	114
Smart closing of global gender gap overall score	net international migration rate, 2005-2010	-0,200	0,029	117
Smart closing political gender gap	military personnel rate ln (MPR+1)	-0,329	0,000	117
Smart closing political gender gap	military personnel rate ln (MPR+1)	-0,329	0,000	117
Smart closing political gender gap	social security expenditure per GDP average 1990s (ILO)	0,344	0,001	90
Smart closing political gender gap	Immigration - Share of population 2005 (%)	-0,307	0,001	117
Smart closing political gender gap	% women in government, all levels	0,298	0,001	116
Smart closing political gender gap	social security expenditure per GDP average 1990s (ILO)	0,344	0,001	90
Smart closing political gender gap	Immigration - Share of population 2005 (%)	-0,307	0,001	117
Smart closing political gender gap	% women in government, all levels	0,298	0,001	116
Smart closing political gender gap	military expenditures per GDP	-0,291	0,003	102
Smart closing political gender gap	military expenditures per GDP	-0,291	0,003	102
Smart closing political gender gap	Muslim population share per total population	-0,264	0,004	115
Smart closing political gender gap	Muslim population share per total population	-0,264	0,004	115
Smart closing political gender gap	Membership in the Islamic Conference	-0,213	0,020	117
Smart closing political gender gap	Membership in the Islamic Conference	-0,213	0,020	117
Smart democracy measure	Membership in the Islamic Conference	-0,450	0,000	127
Smart democracy measure	Muslim population share per total population	-0,452	0,000	127
Smart democracy measure	military expenditures per GDP	-0,362	0,000	106
Smart democracy measure	military personnel rate ln (MPR+1)	-0,395	0,000	126
Smart democracy measure	Immigration - Share of population 2005 (%)	-0,388	0,000	127

Smart democracy measure	2000 Economic Freedom Score	0,361	0,000	125
Smart democracy measure	% women in government, all levels	0,400	0,000	126
Smart democracy measure	net international migration rate, 2005-2010	-0,289	0,001	127
Smart democracy measure	Annual population growth rate, 1975-2005 (%)	-0,257	0,003	126
Smart democracy measure	Openness-Index, 1990 (export-share per GDP + import-share per GDP)	-0,197	0,026	125
Smart economic growth IMF 2010	worker remittance inflows as % of GDP	-0,272	0,003	115
Smart economic growth IMF 2010	Annual population growth rate, 1975-2005 (%)	0,233	0,007	129
Smart economic growth IMF 2010	Muslim population share per total population	0,180	0,040	129
Smart economic growth IMF 2010	net international migration rate, 2005-2010	0,178	0,041	131
Smart economic growth in real terms pc. per annum, 1990-2005	% world population	0,311	0,000	131
Smart economic growth in real terms pc. per annum, 1990-2005	public education expenditure per GNP	-0,305	0,001	122
Smart economic growth in real terms pc. per annum, 1990-2005	social security expenditure per GDP average 1990s (ILO)	-0,291	0,004	94
Smart economic growth in real terms pc. per annum, 1990-2005	worker remittance inflows as % of GDP	-0,231	0,013	114
Smart economic growth in real terms pc. per annum, 1990-2005	MNC PEN - stock of Inward FDI per GDP	0,179	0,039	131
Smart female survival probability of surviving to age 65	worker remittance inflows as % of GDP	0,401	0,000	116
Smart female survival probability of surviving to age 65	public education expenditure per GNP	-0,271	0,002	124
Smart female survival probability of surviving to age 65	MNC PEN - stock of Inward FDI per GDP	-0,173	0,044	133
Smart female survival probability of surviving to age 65	Muslim population share per total population	0,174	0,046	131
Smart gender empowerment	Membership in the Islamic Conference	-0,493	0,000	71
Smart gender empowerment	Muslim population share per total population	-0,490	0,000	69

Smart gender empowerment	military expenditures per GDP	-0,501	0,000	61
Smart gender empowerment	military personnel rate ln (MPR+1)	-0,520	0,000	71
Smart gender empowerment	% women in government, all levels	0,427	0,000	69
Smart gender empowerment	Annual population growth rate, 1975-2005 (%)	-0,344	0,003	70
Smart gender empowerment	Immigration - Share of population 2005 (%)	-0,327	0,005	71
Smart gender empowerment	social security expenditure per GDP average 1990s (ILO)	0,349	0,006	58
Smart gender empowerment	UNDP education index	0,279	0,017	71
Smart global tolerance	social security expenditure per GDP average 1990s (ILO)	0,502	0,000	52
Smart global tolerance	military personnel rate ln (MPR+1)	-0,495	0,000	66
Smart global tolerance	Muslim population share per total population	-0,329	0,006	66
Smart global tolerance	Membership in the Islamic Conference	-0,319	0,008	66
Smart global tolerance	MNC outward investments (stock) per GDP	0,302	0,021	56
Smart global tolerance	public education expenditure per GNP	0,256	0,036	65
Smart happy life years	worker remittance inflows as % of GDP	0,333	0,000	116
Smart happy life years	military expenditures per GDP	-0,204	0,030	111
Smart Human development index	worker remittance inflows as % of GDP	0,409	0,000	116
Smart Human development index	UNDP education index	0,504	0,000	133
Smart Human development index	Annual population growth rate, 1975-2005 (%)	-0,214	0,013	132
Smart Human development index	net international migration rate, 2005-2010	-0,188	0,029	133
Smart Human development index	Membership in the Islamic Conference	-0,178	0,039	133
Smart life expectancy (years)	worker remittance inflows as % of GDP	0,411	0,000	116
Smart life expectancy (years)	public education expenditure per GNP	-0,236	0,008	124
Smart life expectancy (years)	UNDP education index	0,198	0,021	133
Smart life satisfaction	worker remittance inflows as % of GDP	0,281	0,002	116
Smart life satisfaction	military expenditures per GDP	-0,196	0,038	111
smart overall development index	Membership in the Islamic Conference	-0,346	0,000	133

smart overall development index	Muslim population share per total population	-0,326	0,000	132
smart overall development index	military expenditures per GDP	-0,389	0,000	111
smart overall development index	Immigration - Share of population 2005 (%)	-0,336	0,000	133
smart overall development index	military personnel rate ln (MPR+1)	-0,284	0,001	132
smart overall development index	UNDP education index	0,276	0,001	133
smart overall development index	% women in government, all levels	0,268	0,002	132
smart overall development index	Annual population growth rate, 1975-2005 (%)	-0,256	0,003	132
smart overall development index	worker remittance inflows as % of GDP	0,244	0,008	116
smart overall development index	net international migration rate, 2005-2010	-0,215	0,012	133
smart overall development index	2000 Economic Freedom Score	0,200	0,021	131
Smart per capita world class universities	social security expenditure per GDP average 1990s (ILO)	0,351	0,000	96
Smart per capita world class universities	MNC outward investments (stock) per GDP	0,359	0,000	104
Smart per capita world class universities	Openness-Index, 1990 (export-share per GDP + import-share per GDP)	-0,234	0,007	131
Smart per capita world class universities	FPZ (free production zones) employment as % of total population	-0,200	0,020	133
Smart per capita world class universities	public education expenditure per GNP	0,202	0,024	124
Smart per capita world class universities	% women in government, all levels	0,187	0,030	132
Smart rule of law	2000 Economic Freedom Score	0,325	0,000	131
Smart tertiary enrollment	Annual population growth rate, 1975-2005 (%)	-0,439	0,000	119
Smart tertiary enrollment	social security expenditure per GDP average 1990s (ILO)	0,379	0,000	90
Smart tertiary enrollment	Absolute latitude	0,385	0,000	114
Smart tertiary enrollment	UNDP education index	0,439	0,000	120
Smart tertiary enrollment	net international migration rate, 2005-2010	-0,221	0,014	120
Smart tertiary enrollment	worker remittance inflows as % of GDP	0,235	0,015	106
Smart tertiary enrollment	military expenditures per GDP	-0,203	0,037	104
Smart tertiary enrollment	Openness-Index, 1990 (export-share per	-0,190	0,037	118

	GDP + import-share per GDP)			
Smart tertiary enrollment	Membership in the Islamic Conference	-0,188	0,038	120
Smart tertiary enrollment	FPZ (free production zones) employment as % of total population	-0,182	0,045	120

Appendix Table 4: Partial correlations of smart development – development level constant. Results ordered by independent variable

dependent variable	variable	partial correlation	Significance	Degrees of freedom
Smart civil and political liberties	% women in government, all levels	0,447	0,000	131
Smart closing economic gender gap	% women in government, all levels	0,408	0,000	116
Smart closing of global gender gap overall score	% women in government, all levels	0,416	0,000	116
Smart democracy measure	% women in government, all levels	0,400	0,000	126
Smart gender empowerment	% women in government, all levels	0,427	0,000	69
Smart closing political gender gap	% women in government, all levels	0,298	0,001	116
smart overall development index	% women in government, all levels	0,268	0,002	132
Smart avoiding to be a failed state	% women in government, all levels	0,244	0,004	132
Smart closing health and survivial gender gap	% women in government, all levels	0,214	0,020	116
Smart avoiding high income differences	**% women in government, all levels**	**-0,214**	**0,023**	**111**
Smart per capita world class universities	% women in government, all levels	0,187	0,030	132
Smart closing health and survivial gender gap	% world population	-0,370	0,000	117
Smart economic growth in real terms pc. per annum, 1990-2005	% world population	0,311	0,000	131
Smart civil and political liberties	2000 Economic Freedom Score	0,380	0,000	130
Smart democracy measure	2000 Economic Freedom Score	0,361	0,000	125
Smart rule of law	2000 Economic Freedom Score	0,325	0,000	131
Smart avoiding high income differences	**2000 Economic Freedom Score**	**-0,294**	**0,002**	**111**
Smart anti-corruption	2000 Economic Freedom Score	0,254	0,003	131
smart overall development index	2000 Economic Freedom Score	0,200	0,021	131
Smart avoiding to be a failed state	2000 Economic Freedom Score	0,193	0,026	131
Smart tertiary enrollment	Absolute latitude	0,385	0,000	114
Smart avoiding high income differences	Absolute latitude	0,290	0,002	106
Smart closing economic gender gap	Annual population growth rate, 1975-2005	-0,442	0,000	116

	(%)			
Smart closing of global gender gap overall score	Annual population growth rate, 1975-2005 (%)	-0,354	0,000	116
Smart tertiary enrollment	Annual population growth rate, 1975-2005 (%)	-0,439	0,000	119
Smart democracy measure	Annual population growth rate, 1975-2005 (%)	-0,257	0,003	126
Smart gender empowerment	Annual population growth rate, 1975-2005 (%)	-0,344	0,003	70
smart overall development index	Annual population growth rate, 1975-2005 (%)	-0,256	0,003	132
Smart avoiding to be a failed state	Annual population growth rate, 1975-2005 (%)	-0,242	0,005	132
Smart civil and political liberties	Annual population growth rate, 1975-2005 (%)	-0,242	0,005	131
Smart economic growth IMF 2010	**Annual population growth rate, 1975-2005 (%)**	**0,233**	**0,007**	**129**
Smart avoiding high income differences	Annual population growth rate, 1975-2005 (%)	-0,245	0,009	112
Smart Human development index	Annual population growth rate, 1975-2005 (%)	-0,214	0,013	132
ecological footprint per capita	comparative price levels (US=1.00)	0,203	0,019	131
Smart avoiding unemployment	foreign savings rate	-0,204	0,025	118
Smart per capita world class universities	FPZ (free production zones) employment as % of total population	-0,200	0,020	133
Smart tertiary enrollment	FPZ (free production zones) employment as % of total population	-0,182	0,045	120
Smart avoiding to be a failed state	Immigration - Share of population 2005 (%)	-0,323	0,000	133
Smart civil and political liberties	Immigration - Share of population 2005 (%)	-0,380	0,000	132
Smart democracy measure	Immigration - Share of population 2005 (%)	-0,388	0,000	127
smart overall development index	Immigration - Share of population 2005 (%)	-0,336	0,000	133
ecological footprint per capita	Immigration - Share of population 2005 (%)	0,463	0,000	133
Smart closing political gender gap	Immigration - Share of population 2005 (%)	-0,307	0,001	117

Smart closing political gender gap	Immigration - Share of population 2005 (%)	-0,307	0,001	117
Smart closing of global gender gap overall score	Immigration - Share of population 2005 (%)	-0,254	0,005	117
Smart gender empowerment	Immigration - Share of population 2005 (%)	-0,327	0,005	71
Smart civil and political liberties	Membership in the Islamic Conference	-0,386	0,000	132
Smart closing economic gender gap	Membership in the Islamic Conference	-0,415	0,000	117
Smart closing educational gender gap	Membership in the Islamic Conference	-0,336	0,000	117
Smart closing of global gender gap overall score	Membership in the Islamic Conference	-0,449	0,000	117
Smart democracy measure	Membership in the Islamic Conference	-0,450	0,000	127
Smart gender empowerment	Membership in the Islamic Conference	-0,493	0,000	71
smart overall development index	Membership in the Islamic Conference	-0,346	0,000	133
Smart avoiding to be a failed state	Membership in the Islamic Conference	-0,234	0,006	133
Smart global tolerance	Membership in the Islamic Conference	-0,319	0,008	66
Smart closing political gender gap	Membership in the Islamic Conference	-0,213	0,020	117
Smart closing political gender gap	Membership in the Islamic Conference	-0,213	0,020	117
Smart avoiding Infant mortality	Membership in the Islamic Conference	-0,179	0,037	133
Smart tertiary enrollment	Membership in the Islamic Conference	-0,188	0,038	120
Smart Human development index	Membership in the Islamic Conference	-0,178	0,039	133
Smart avoiding to be a failed state	military expenditures per GDP	-0,396	0,000	111
Smart civil and political liberties	military expenditures per GDP	-0,387	0,000	111
Smart democracy measure	military expenditures per GDP	-0,362	0,000	106
Smart gender empowerment	military expenditures per GDP	-0,501	0,000	61
smart overall development index	military expenditures per GDP	-0,389	0,000	111
Smart closing of global gender gap overall score	military expenditures per GDP	-0,333	0,001	102
ecological footprint per capita	military expenditures per GDP	0,321	0,001	111
Smart closing political gender gap	military expenditures per GDP	-0,291	0,003	102
Smart closing economic gender gap	military expenditures per GDP	-0,213	0,030	102
Smart happy life years	military expenditures per GDP	-0,204	0,030	111
Smart tertiary enrollment	military expenditures per GDP	-0,203	0,037	104

Smart life satisfaction	military expenditures per GDP	-0,196	0,038	111
Smart anti-corruption	military expenditures per GDP	-0,187	0,048	111
Smart civil and political liberties	military personnel rate ln (MPR+1)	-0,479	0,000	131
Smart closing economic gender gap	military personnel rate ln (MPR+1)	-0,316	0,000	117
Smart closing of global gender gap overall score	military personnel rate ln (MPR+1)	-0,363	0,000	117
Smart closing political gender gap	military personnel rate ln (MPR+1)	-0,329	0,000	117
Smart closing political gender gap	military personnel rate ln (MPR+1)	-0,329	0,000	117
Smart democracy measure	military personnel rate ln (MPR+1)	-0,395	0,000	126
Smart gender empowerment	military personnel rate ln (MPR+1)	-0,520	0,000	71
Smart global tolerance	military personnel rate ln (MPR+1)	-0,495	0,000	66
Smart avoiding to be a failed state	military personnel rate ln (MPR+1)	-0,290	0,001	132
smart overall development index	military personnel rate ln (MPR+1)	-0,284	0,001	132
Smart avoiding unemployment	military personnel rate ln (MPR+1)	-0,201	0,028	118
Smart per capita world class universities	MNC outward investments (stock) per GDP	0,359	0,000	104
Smart anti-corruption	MNC outward investments (stock) per GDP	0,245	0,011	104
Smart global tolerance	MNC outward investments (stock) per GDP	0,302	0,021	56
Smart closing economic gender gap	MNC outward investments (stock) per GDP	0,225	0,025	97
Smart avoiding to be a failed state	MNC outward investments (stock) per GDP	0,194	0,046	104
Smart avoiding to be a failed state	**MNC PEN - stock of Inward FDI per GDP**	**0,200**	**0,020**	**133**
Smart avoiding high income differences	MNC PEN - stock of Inward FDI per GDP	-0,203	0,029	113
Smart anti-corruption	**MNC PEN - stock of Inward FDI per GDP**	**0,187**	**0,030**	**133**
Smart economic growth in real terms pc. per annum, 1990-2005	**MNC PEN - stock of Inward FDI per GDP**	**0,179**	**0,039**	**131**
Smart female survival probability of surviving to age 65	MNC PEN - stock of Inward FDI per GDP	-0,173	0,044	133
Smart civil and political liberties	Muslim population share per total population	-0,405	0,000	131
Smart closing economic gender gap	Muslim population share per total population	-0,529	0,000	115

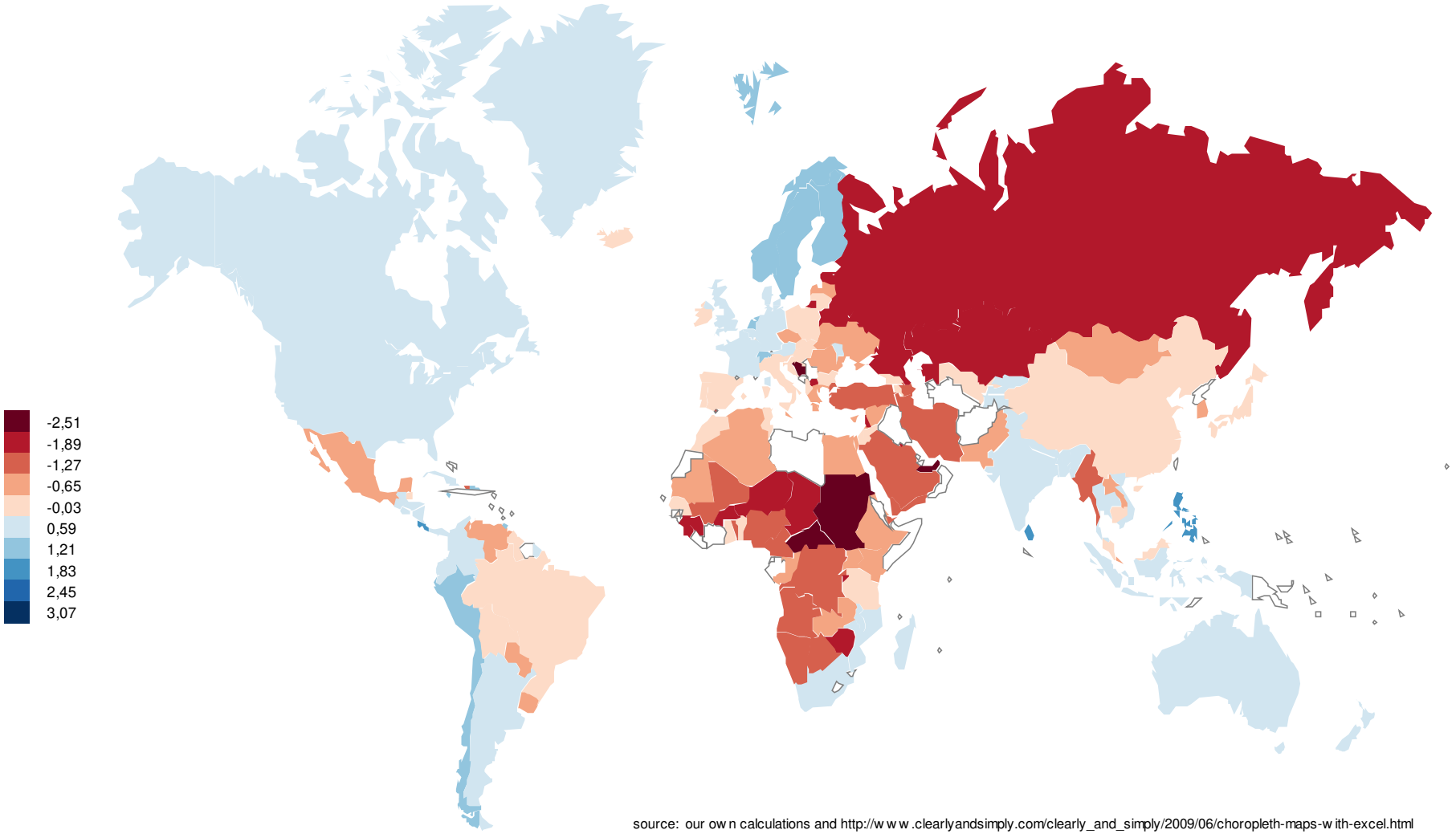
Smart closing of global gender gap overall score	Muslim population share per total population	-0,515	0,000	115
Smart democracy measure	Muslim population share per total population	-0,452	0,000	127
Smart gender empowerment	Muslim population share per total population	-0,490	0,000	69
smart overall development index	Muslim population share per total population	-0,326	0,000	132
Smart avoiding unemployment	Muslim population share per total population	-0,299	0,001	118
Smart closing educational gender gap	Muslim population share per total population	-0,270	0,003	115
Smart avoiding to be a failed state	Muslim population share per total population	-0,246	0,004	132
Smart closing political gender gap	Muslim population share per total population	-0,264	0,004	115
Smart closing political gender gap	Muslim population share per total population	-0,264	0,004	115
Smart global tolerance	Muslim population share per total population	-0,329	0,006	66
Smart avoiding high income differences	Muslim population share per total population	0,200	0,033	111
Smart economic growth IMF 2010	Muslim population share per total population	0,180	0,040	129
Smart female survival probability of surviving to age 65	Muslim population share per total population	0,174	0,046	131
ecological footprint per capita	net international migration rate, 2005-2010	0,573	0,000	133
Smart democracy measure	net international migration rate, 2005-2010	-0,289	0,001	127
Smart civil and political liberties	net international migration rate, 2005-2010	-0,263	0,002	132
smart overall development index	net international migration rate, 2005-2010	-0,215	0,012	133
Smart tertiary enrollment	net international migration rate, 2005-2010	-0,221	0,014	120
Smart closing of global gender gap overall score	net international migration rate, 2005-2010	-0,200	0,029	117
Smart Human development index	net international migration rate, 2005-2010	-0,188	0,029	133

Smart closing economic gender gap	net international migration rate, 2005-2010	-0,197	0,031	117
Smart economic growth IMF 2010	**net international migration rate, 2005-2010**	**0,178**	**0,041**	**131**
Smart per capita world class universities	Openness-Index, 1990 (export-share per GDP + import-share per GDP)	-0,234	0,007	131
Smart democracy measure	Openness-Index, 1990 (export-share per GDP + import-share per GDP)	-0,197	0,026	125
Smart tertiary enrollment	Openness-Index, 1990 (export-share per GDP + import-share per GDP)	-0,190	0,037	118
ecological footprint per capita	population density	-0,302	0,000	133
Smart anti-corruption	population density	0,240	0,005	133
Smart closing health and survivial gender gap	population density	-0,250	0,006	117
Smart economic growth in real terms pc. per annum, 1990-2005	**public education expenditure per GNP**	**-0,305**	**0,001**	**122**
Smart female survival probability of surviving to age 65	**public education expenditure per GNP**	**-0,271**	**0,002**	**124**
Smart life expectancy (years)	**public education expenditure per GNP**	**-0,236**	**0,008**	**124**
Smart closing of global gender gap overall score	public education expenditure per GNP	0,209	0,024	114
Smart per capita world class universities	public education expenditure per GNP	0,202	0,024	124
Smart avoiding unemployment	**public education expenditure per GNP**	**-0,204**	**0,029**	**113**
Smart global tolerance	public education expenditure per GNP	0,256	0,036	65
Smart closing economic gender gap	public education expenditure per GNP	0,184	0,048	114
Smart global tolerance	social security expenditure per GDP average 1990s (ILO)	0,502	0,000	52
Smart per capita world class universities	social security expenditure per GDP average 1990s (ILO)	0,351	0,000	96
Smart tertiary enrollment	social security expenditure per GDP average 1990s (ILO)	0,379	0,000	90
Smart closing of global gender gap overall score	social security expenditure per GDP average 1990s (ILO)	0,338	0,001	90
Smart closing political gender gap	social security expenditure per GDP average 1990s (ILO)	0,344	0,001	90

Smart closing political gender gap	social security expenditure per GDP average 1990s (ILO)	0,344	0,001	90
Smart economic growth in real terms pc. per annum, 1990-2005	social security expenditure per GDP average 1990s (ILO)	-0,291	0,004	94
Smart avoiding high income differences	social security expenditure per GDP average 1990s (ILO)	0,305	0,004	85
Smart gender empowerment	social security expenditure per GDP average 1990s (ILO)	0,349	0,006	58
Smart closing economic gender gap	social security expenditure per GDP average 1990s (ILO)	0,273	0,008	90
Smart closing economic gender gap	UNDP education index	0,446	0,000	117
Smart closing educational gender gap	UNDP education index	0,679	0,000	117
Smart closing of global gender gap overall score	UNDP education index	0,481	0,000	117
Smart Human development index	UNDP education index	0,504	0,000	133
Smart avoiding Infant mortality	UNDP education index	0,387	0,000	133
Smart tertiary enrollment	UNDP education index	0,439	0,000	120
smart overall development index	UNDP education index	0,276	0,001	133
Smart anti-corruption	UNDP education index	-0,235	0,006	133
Smart gender empowerment	UNDP education index	0,279	0,017	71
Smart life expectancy (years)	UNDP education index	0,198	0,021	133
Smart female survival probability of surviving to age 65	worker remittance inflows as % of GDP	0,401	0,000	116
Smart happy life years	worker remittance inflows as % of GDP	0,333	0,000	116
Smart Human development index	worker remittance inflows as % of GDP	0,409	0,000	116
Smart avoiding Infant mortality	worker remittance inflows as % of GDP	0,389	0,000	116
Smart life expectancy (years)	worker remittance inflows as % of GDP	0,411	0,000	116
Smart closing educational gender gap	worker remittance inflows as % of GDP	0,306	0,001	105
Smart life satisfaction	worker remittance inflows as % of GDP	0,281	0,002	116
Smart economic growth IMF 2010	worker remittance inflows as % of GDP	-0,272	0,003	115
smart overall development index	worker remittance inflows as % of GDP	0,244	0,008	116
Smart economic growth in real terms pc. per	worker remittance inflows as % of GDP	-0,231	0,013	114

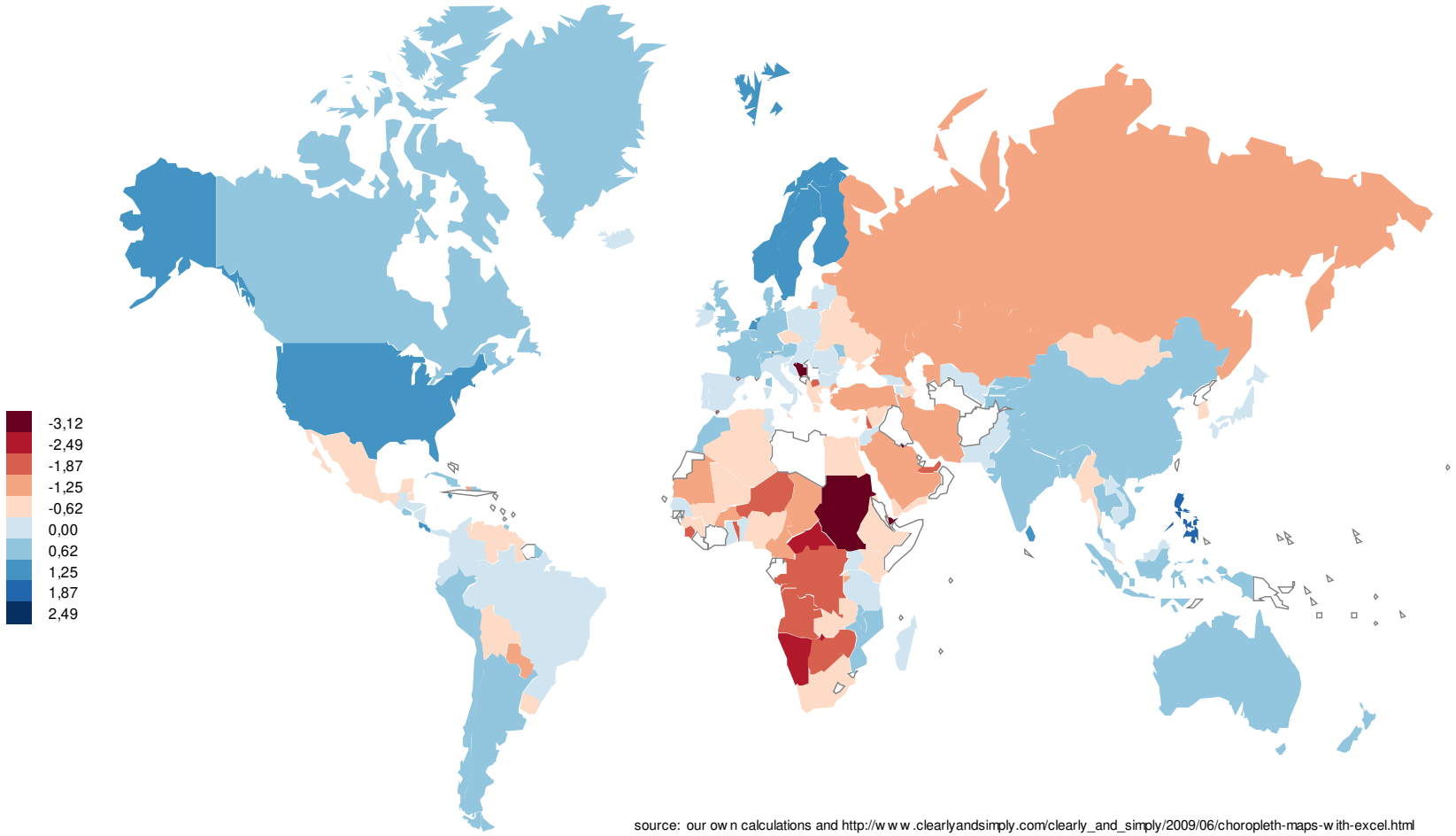
annum, 1990-2005				
Smart tertiary enrollment	worker remittance inflows as % of GDP	0,235	0,015	106
ecological footprint per capita	**years of membership in EMU, 2010**	**-0,188**	**0,029**	**133**

Appendix Map 1 z_res_overall 26 development index



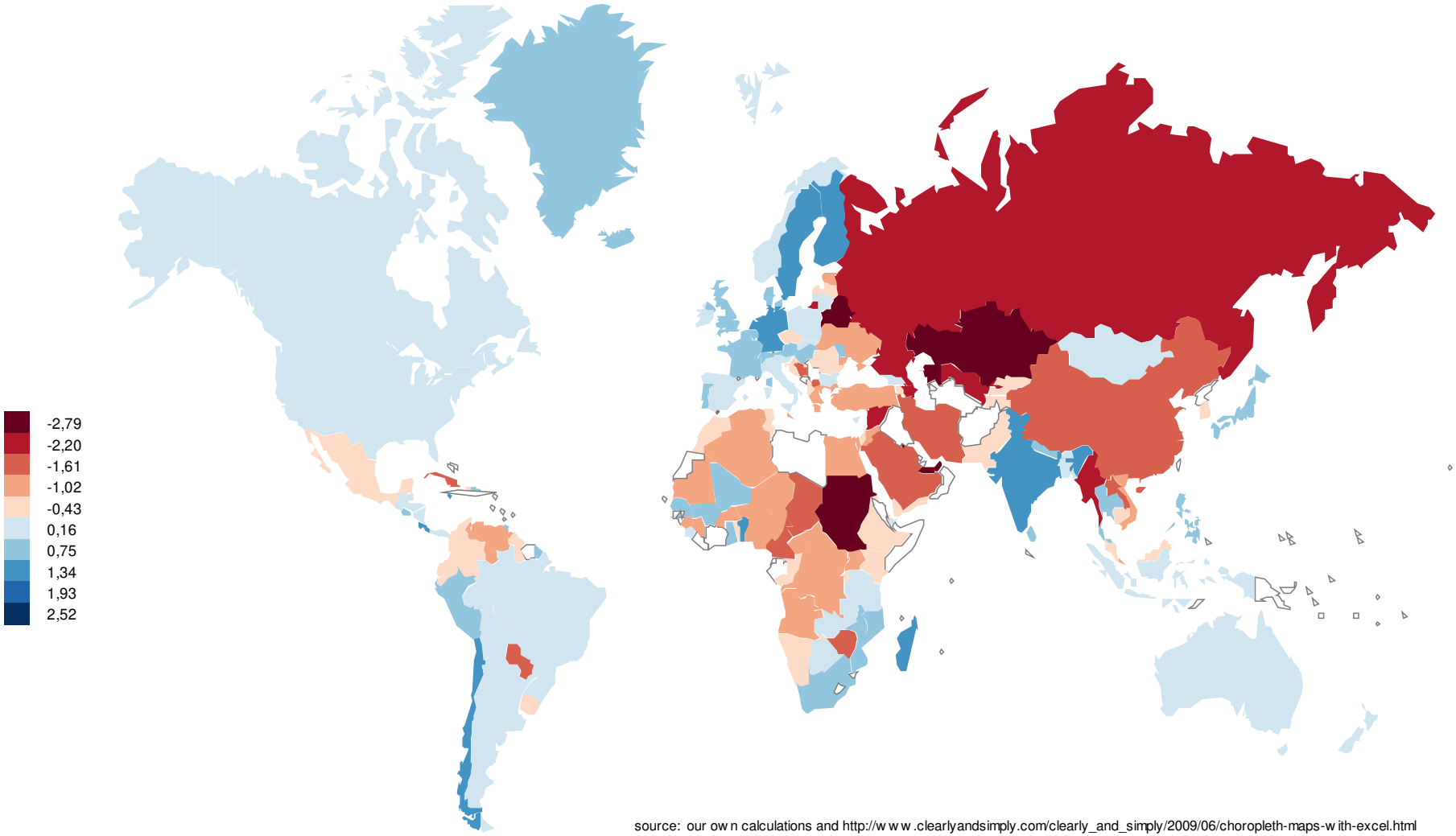
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 2 z_res_overall 26 development index, based on six dimensions



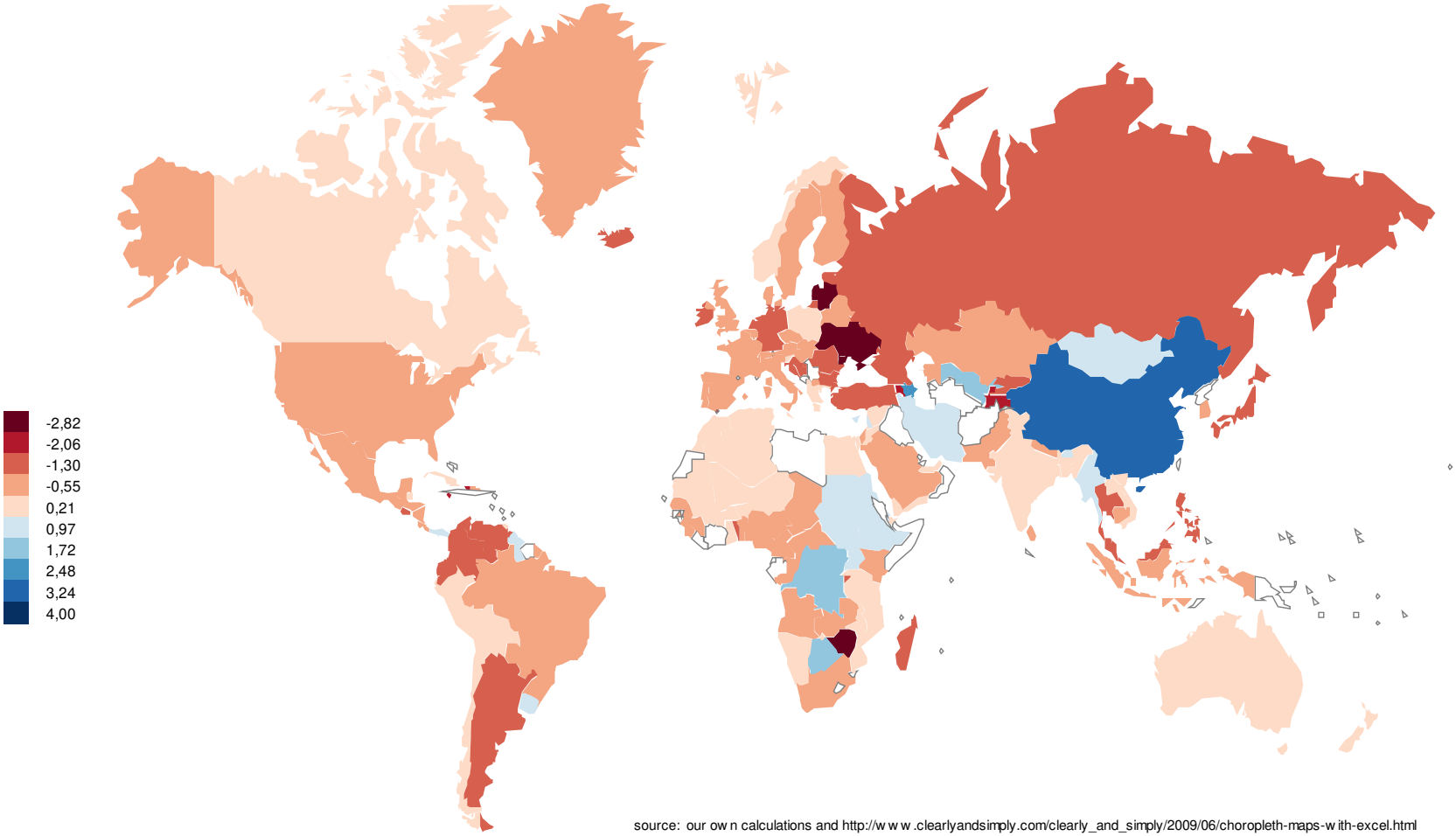
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 3 z_res_component UNDP democracy



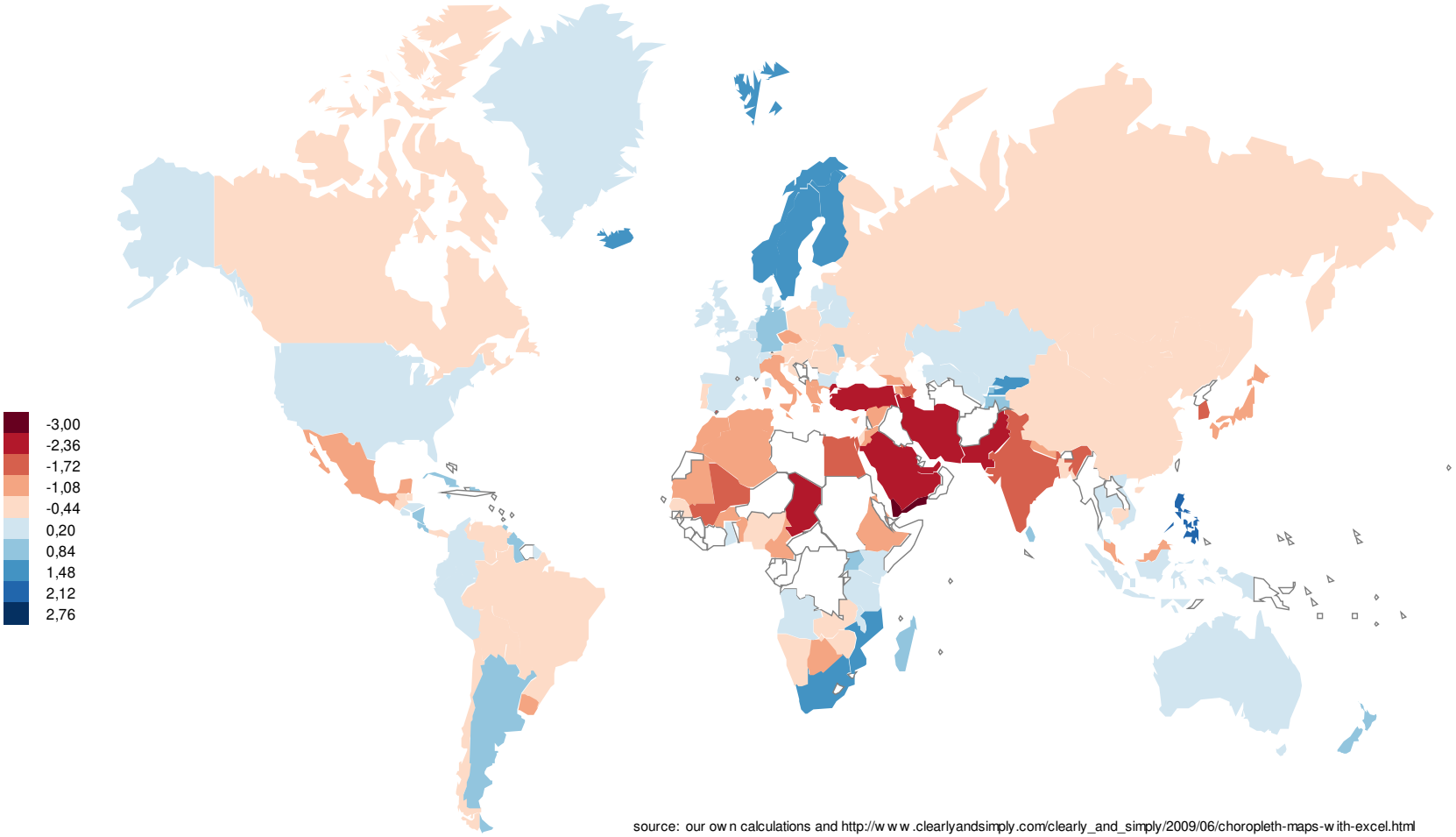
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 4 z_res_component UNDP economic growth



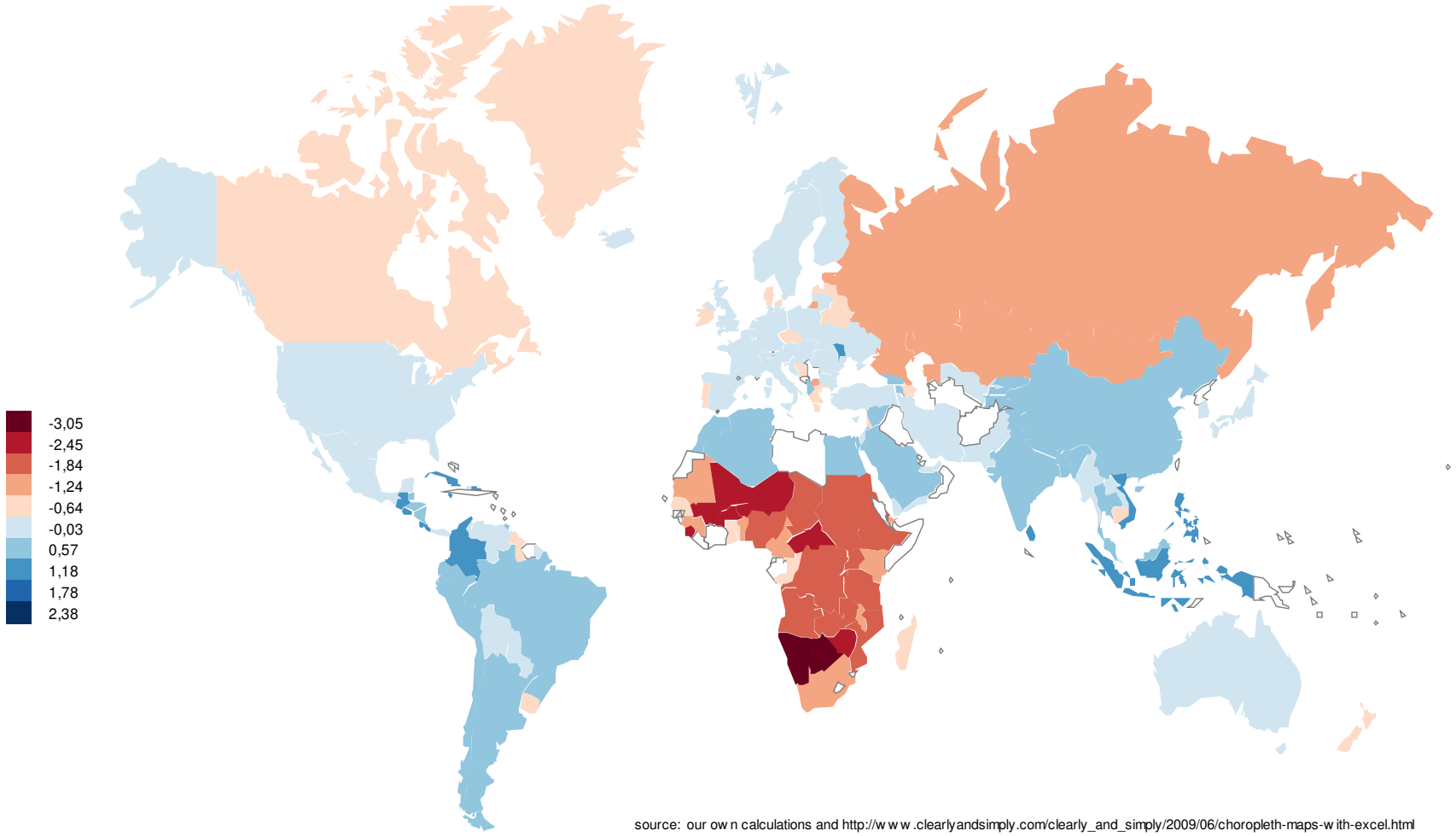
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 5 z_res_component UNDP gender



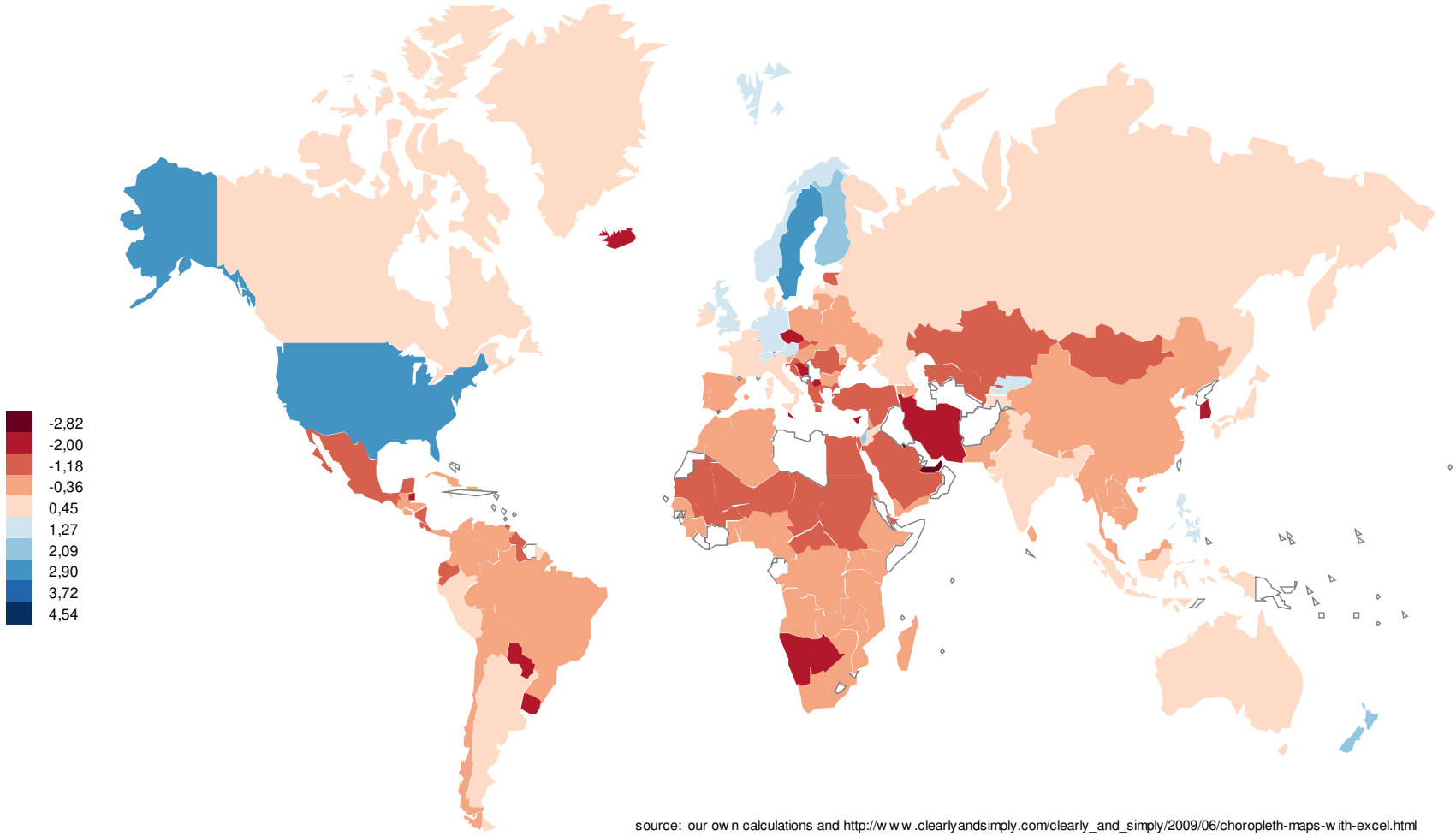
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 6 z_res_component UNDP human development



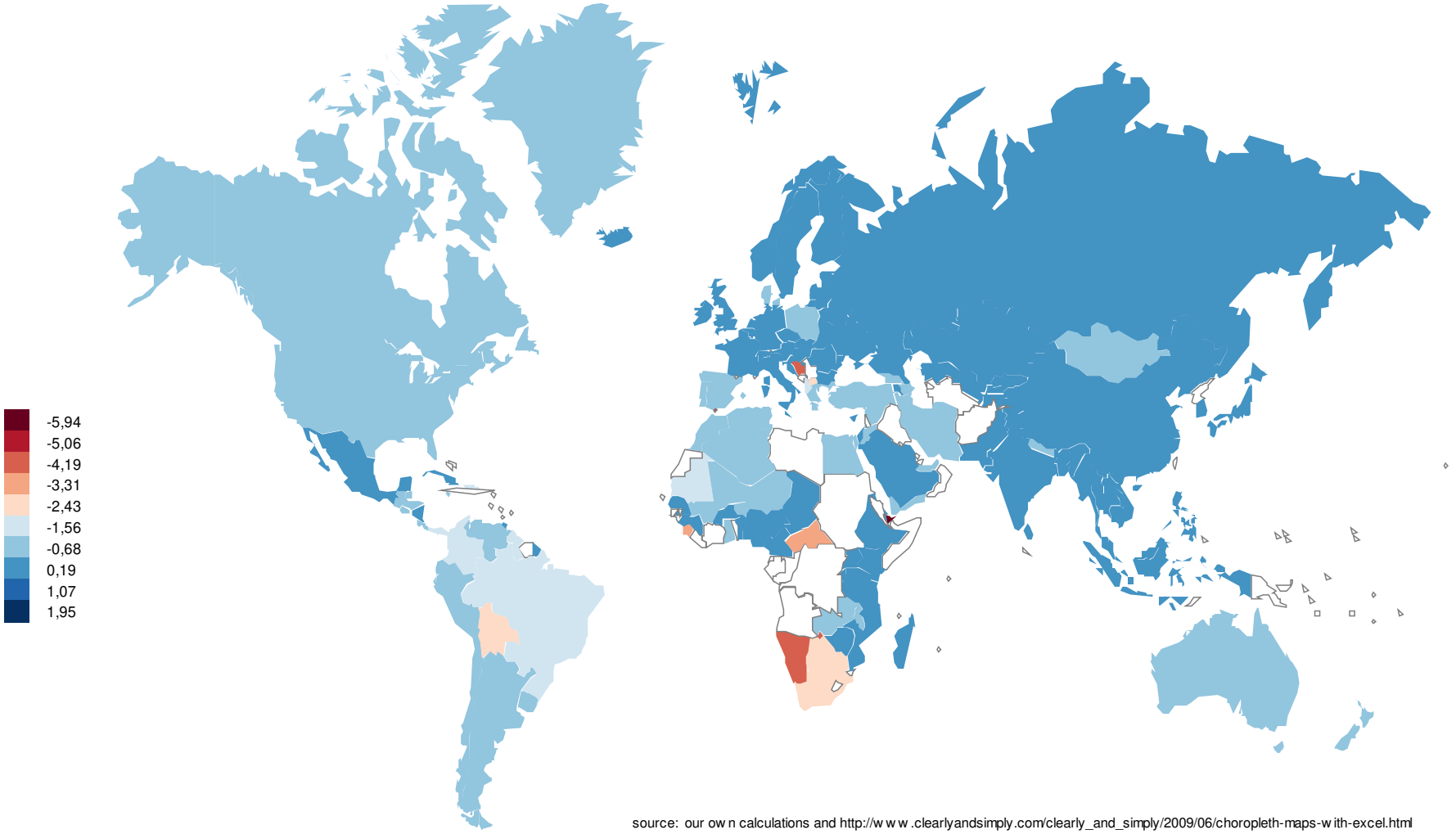
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 7 z_res_component UNDP R&D



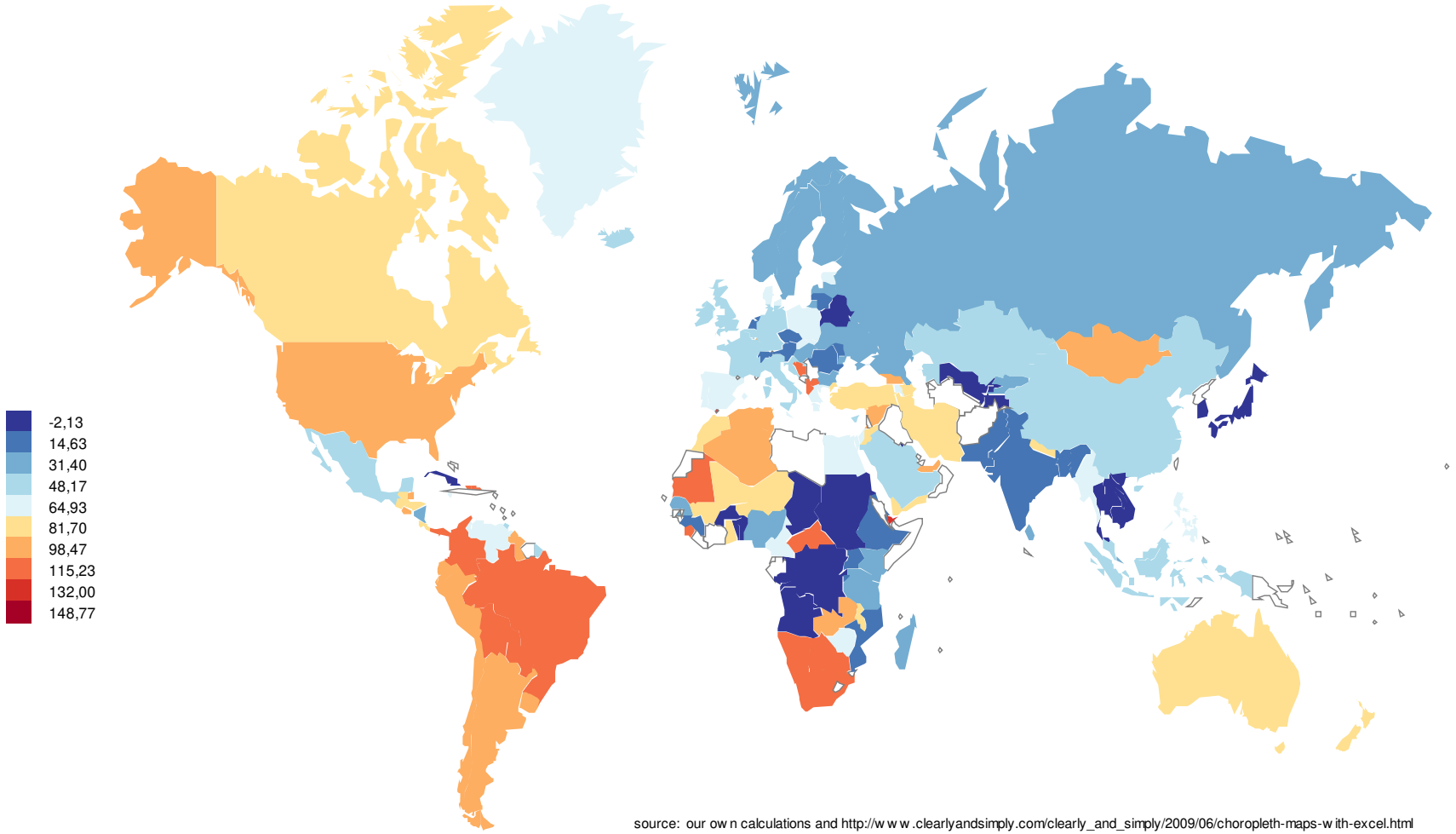
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 8 z_res_component UNDP social cohesion



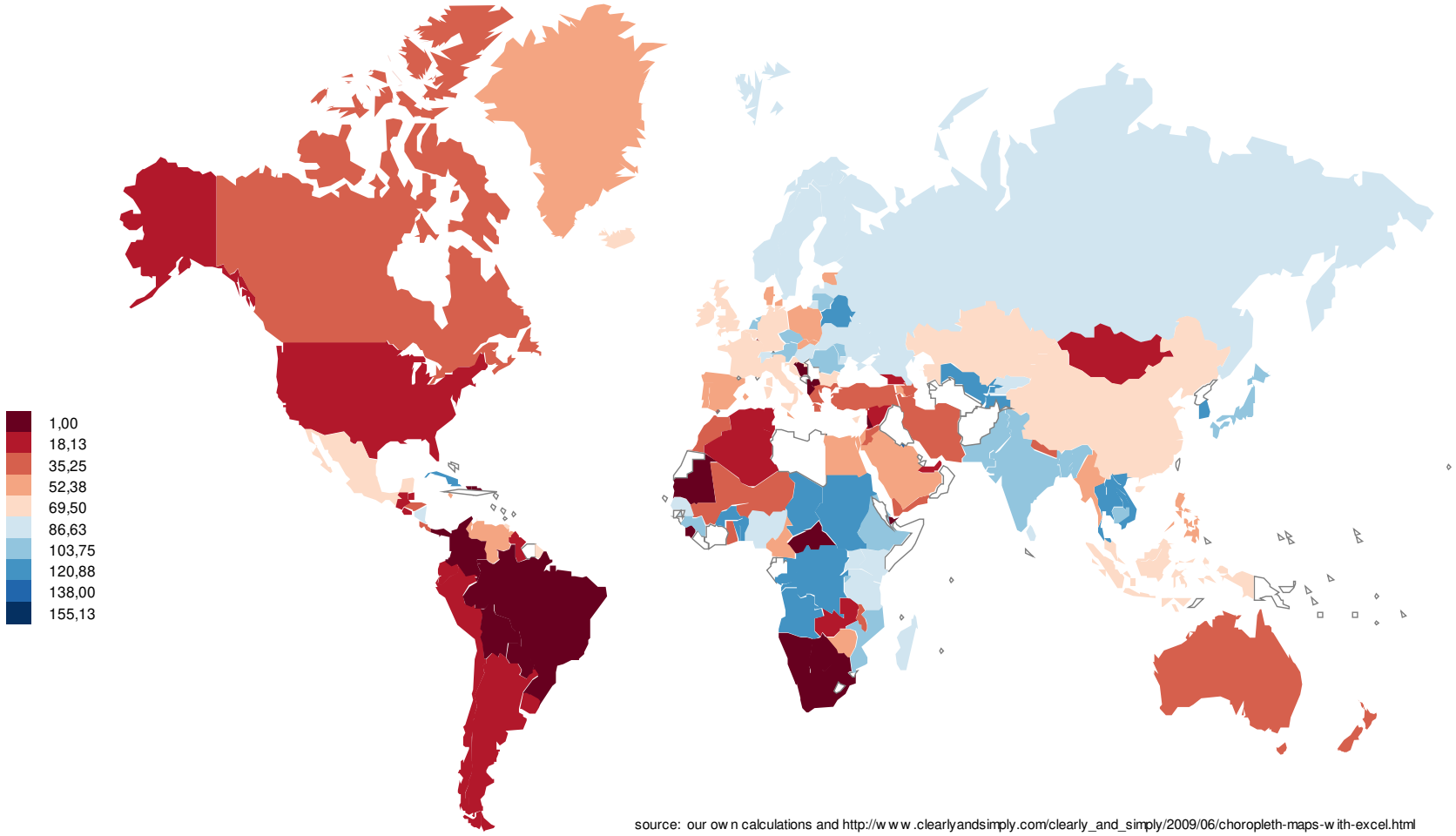
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 9 global rank z_res_component UNDP social cohesion: social justice for footprint



source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 10 how much footprint for social justice? inverted global rank z_res_component UNDP social cohesion: little social justice for lots of footprint. "red sinners" and blue best practice models



source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Table 5: Rankings: global smart development

	smart	smart	smart	smart	smart	smart	smart	smart
	26 development index	26 development index, based on six dimensions	democracy	economic growth	gender	human development	R&D	social cohesion
Philippines	1	1	11	126	1	2	13	69
Sri Lanka	2	3	14	63	9	4	60	37
Costa Rica	3	6	1	76	18	5	101	85
Sweden	**4**	**2**	**5**	**81**	**6**	**61**	**2**	**38**
Jamaica	5	5	3	135	14	1	30	75
Dominican Republic	6	19	16	89	20	7	36	123
Finland	**7**	**4**	**9**	**103**	**3**	**65**	**4**	**42**
Peru	8	13	28	29	28	18	25	108
Netherlands	**9**	**7**	**2**	**108**	**24**	**48**	**7**	**20**
Trinidad and Tobago	10	24	17	55	11	34	116	59
Norway	11	8	37	33	4	81	8	36
Chile	12	28	4	23	66	38	67	104
Switzerland	13	11	12	90	33	57	9	31
Germany	**14**	**20**	**10**	**122**	**21**	**52**	**12**	**56**
El Salvador	15	36	31	118	29	12	63	112
United States	16	9	46	82	38	58	1	114
Indonesia	17	14	68	84	37	8	27	61
New Zealand	18	10	39	41	16	92	3	86
Moldova	19	18	34	139	13	10	19	26

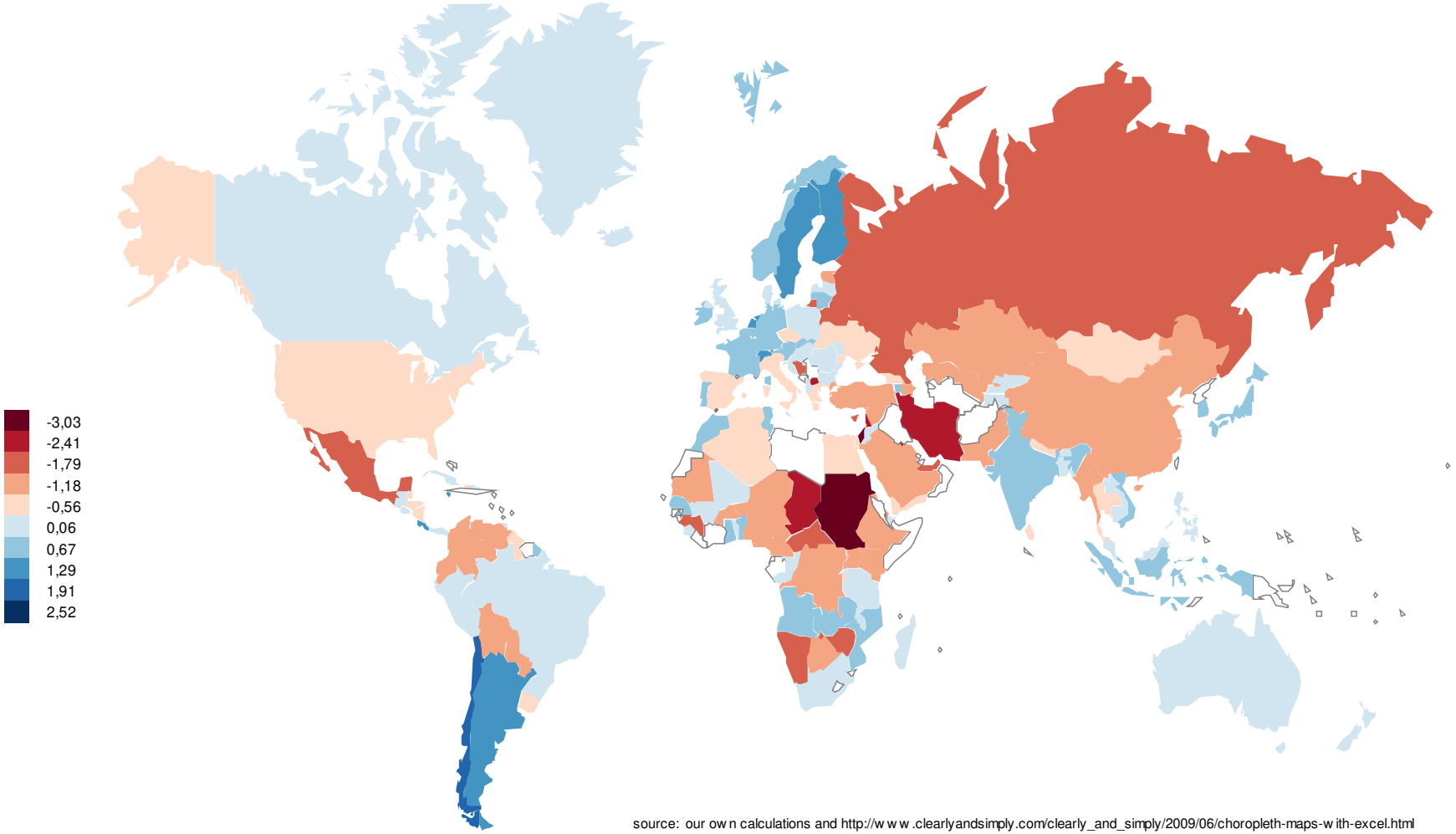
Argentina	20	31	47	111	19	19	21	111
India	21	15	6	18	112	33	31	25
Cuba	22	21	124	48	12	3	46	6
Malawi	23	29	13	30	27	109	34	96
Vietnam	24	12	106	22	32	6	64	11
Colombia	25	60	76	113	34	9	54	124
Bangladesh	26	16	45	37	80	27	24	17
Honduras	27	44	53	95	36	25	83	94
Austria	**28**	**23**	**19**	**69**	**56**	**62**	**11**	**23**
Denmark	**29**	**30**	**29**	**66**	**31**	**88**	**16**	**81**
United Kingdom	**30**	**25**	**25**	**80**	**47**	**85**	**6**	**54**
Panama	31	55	49	11	54	43	95	117
Tajikistan	32	22	86	132	15	17	20	8
Thailand	33	26	26	115	48	39	37	10
Nicaragua	34	41	56	97	23	32	103	43
Guatemala	35	48	52	104	69	11	86	99
Belgium	**36**	**33**	**33**	**75**	**45**	**72**	**15**	**60**
Nepal	37	38	24	86	84	41	41	88
South Africa	38	80	15	101	2	119	78	125
France	**39**	**37**	**32**	**65**	**41**	**71**	**23**	**63**
Kyrgyzstan	40	17	93	119	8	30	10	41
Madagascar	41	43	8	131	17	104	77	45
Canada	42	35	38	34	55	87	17	83
Bhutan	43	27	61	6		40	76	18
Australia	44	34	43	32	50	78	18	90
Ecuador	45	76	82	116	25	23	124	107
Mozambique	46	32	22	36	5	128	70	16
Tunisia	47	47	80	24	85	15	55	103
Morocco	48	39	72	45	96	13	50	84
Ghana	49	49	20	21	49	106	94	87
Brazil	50	74	50	93	68	31	93	120
Senegal	51	45	18	62	58	102	89	33

Belize	52	82	60	52	74	35	127	113
China	53	40	122	1	81	22	81	51
Georgia	54	42	66	112	97	14	14	101
Ireland	**55**	**57**	**40**	**114**	**42**	**86**	**28**	**57**
Iceland	56	63	30	125	7	79	130	49
Bulgaria	**57**	**51**	**54**	**121**	**40**	**50**	**53**	**48**
Guyana	58	81	73	15	22	98	122	115
Slovakia	**59**	**65**	**51**	**59**	**65**	**56**	**107**	**68**
Hungary	**60**	**52**	**21**	**99**	**72**	**80**	**57**	**35**
Poland	**61**	**59**	**65**	**27**	**67**	**74**	**51**	**76**
Jordan	62	50	99	39	87	21	32	92
Cambodia	63	54	77	91	59	93	62	13
Tanzania	64	61	48	20	35	124	85	32
Israel	65	46	84	57	83	70	5	74
Spain	**66**	**64**	**57**	**67**	**52**	**77**	**59**	**80**
Bolivia	67	92	62	50	76	76	35	126
Portugal	**68**	**73**	**23**	**98**	**73**	**89**	**87**	**78**
Slovenia	**69**	**53**	**41**	**46**	**82**	**69**	**74**	**21**
Albania	70	83	88	47	94	24	102	118
Croatia	71	77	81	105	57	46	110	62
Japan	72	56	27	107	98	66	33	14
Malaysia	73	69	78	106	95	26	79	53
Lithuania	**74**	**66**	**42**	**138**	**39**	**63**	**42**	**22**
Uzbekistan	75	62	135	4	26	55	115	2
Armenia	76	67	74	133	105	16	40	67
Benin	77	58	7	77	109	114	66	7
Italy	**78**	**71**	**64**	**102**	**93**	**67**	**22**	**50**
Luxembourg	**79**	**99**	**59**	**109**	**62**	**37**	**139**	**116**
Mongolia	80	88	55	8	61	116	108	106
Romania	**81**	**78**	**79**	**123**	**70**	**59**	**98**	**27**
Cyprus	82	90	58	16	108	64	135	55
Uganda	83	70	112	12	10	122	91	30
Algeria	84	84	116	54	92	28	75	110

Latvia	**85**	**75**	**70**	**137**	**30**	**90**	**26**	**40**
Pakistan	86	72	69	94	118	42	61	24
Zambia	87	85	36	79	71	129	48	102
Kenya	88	79	89	85	51	115	72	39
Mexico	89	97	94	100	88	49	123	58
Egypt	90	89	117	43	113	20	109	77
Venezuela	91	94	109	127	60	45	96	79
Korea (Republic of)	92	96	85	58	114	53	125	9
Malta	**93**	**101**	**107**	**53**	**102**	**47**	**126**	**71**
Syria	94	103	129	44	100	29	114	109
Laos	95	68	119	25		44	80	5
Congo	96	126	71	96		95	39	
Uruguay	97	108	90	13	90	107	132	100
Paraguay	98	117	121	72	53	84	128	121
Czech Republic	**99**	**102**	**87**	**71**	**91**	**100**	**131**	**29**
Ukraine	100	93	102	136	63	75	44	34
Greece	**101**	**104**	**98**	**35**	**103**	**97**	**118**	**82**
Ethiopia	102	91	83	9	104	130	92	19
Singapore	103	100	110	130	107	51	58	47
Mauritania	104	115	111	40	86	110	113	119
Angola	105	127	101	68	43	132	68	
Mali	106	107	35	28	111	133	105	98
Djibouti	107	137	67	42		113	99	133
Yemen	108	98	96	19	122	68	69	89
Haiti	109	111	97	134		54	38	122
Myanmar	110	87	131	14		60	45	72
Congo (Democratic Republic of the)	111	132	108	5		121	43	
Azerbaijan	112	95	132	2	110	94	84	95
Togo	113	133	75	128		103	47	

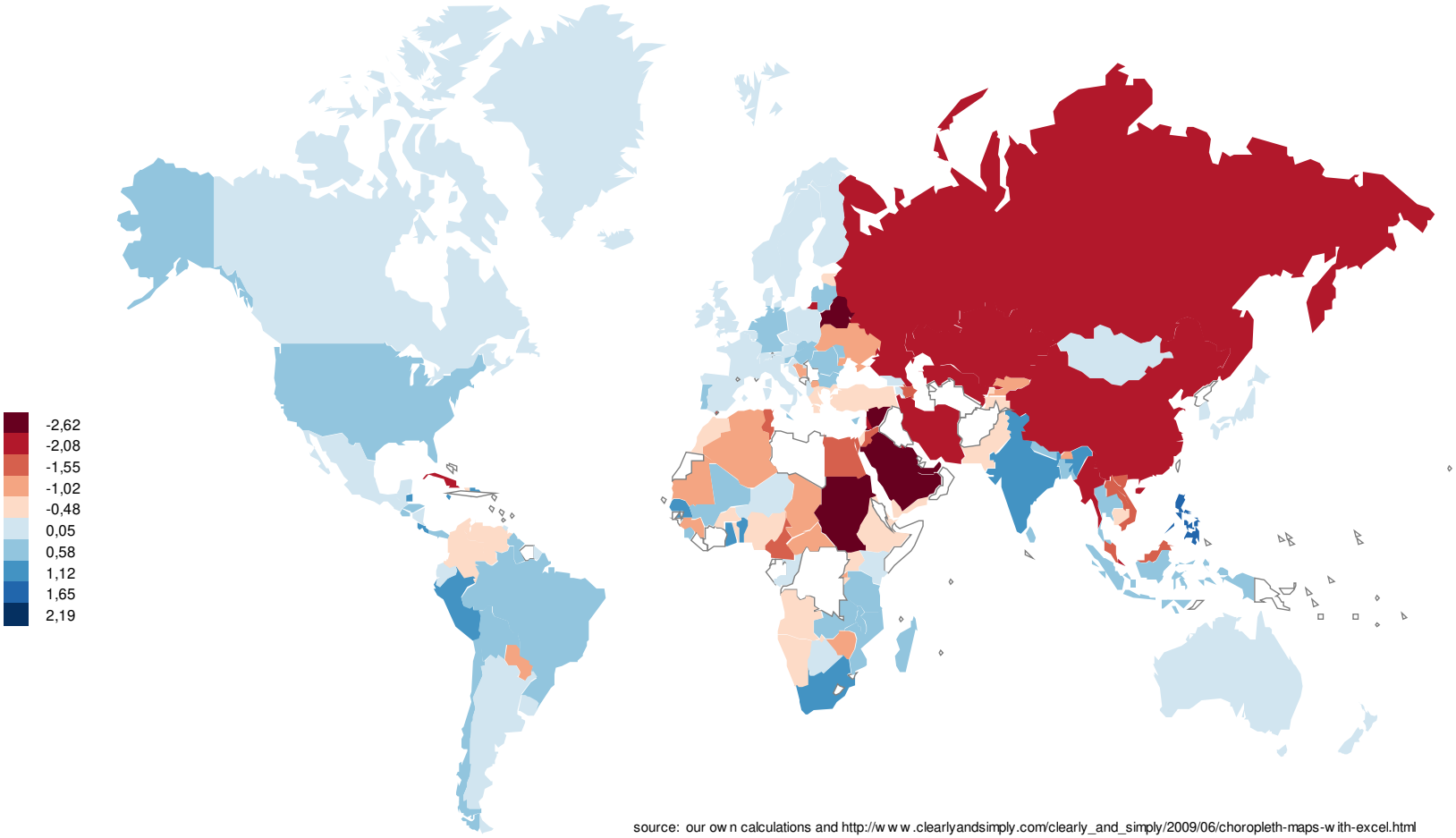
Iran	114	120	126	17	116	83	129	97
Saudi Arabia	115	114	128	78	121	36	100	64
Botswana	116	129	44	3	99	140	136	128
Nigeria	117	109	115	88	79	125	88	44
Cameroon	118	113	120	92	89	120	82	73
Rwanda	119	86	92	38		123	52	3
Turkey	120	121	113	117	119	73	117	91
Namibia	121	136	91	49	64	139	137	132
Guinea	122	106	103	61		117	90	28
Lebanon	123	131	134	10		101	71	
Estonia	**124**	**122**	**114**	**120**	**78**	**118**	**119**	**66**
Burkina Faso	125	116	104	26	106	137	120	12
Russia	126	112	130	124	75	108	29	46
Kazakhstan	127	118	138	73	46	112	111	52
Macedonia	128	134	127	70	101	111	133	127
Sierra Leone	129	128	63	74		135	49	129
Belarus	130	105	139	83	44	105	65	4
Hong Kong, China (SAR)	131	119	133	64		91	97	70
Burundi	132	110	95	110		126	56	15
Zimbabwe	133	125	118	140	77	134	73	65
Chad	134	123	125	60	117	131	112	1
Kuwait	135	138	137	31	115	99	138	
Niger	136	124	100	51		136	106	93
United Arab Emirates	137	130	136	56	120	82	140	105
Central African Republic,	138	135	105	87		138	104	130
Bosnia and Herzegovina	139	139	123	129		96	134	131
Sudan	140	140	140	7		127	121	

Appendix Map 11 Smart avoiding to be a failed state



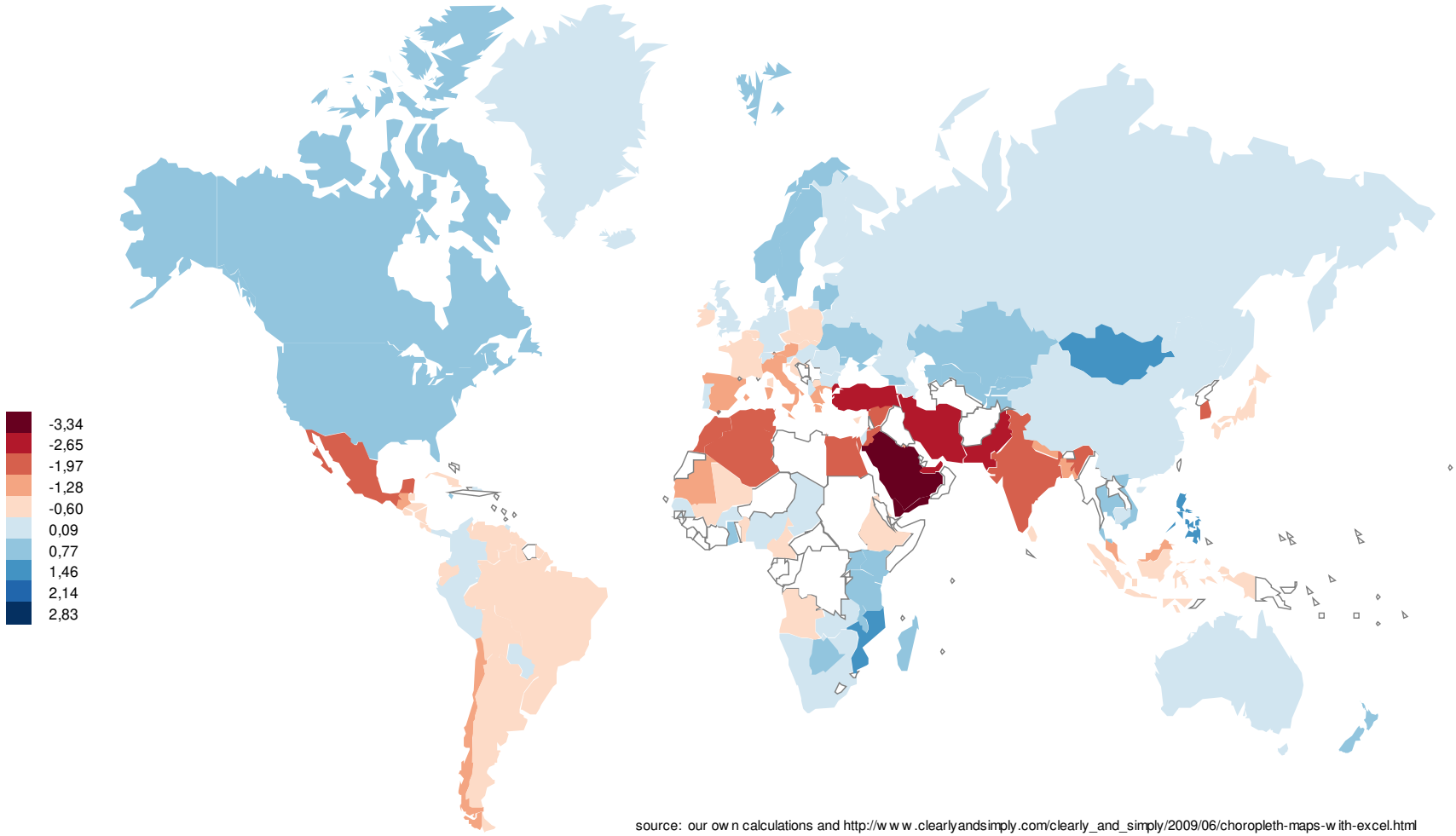
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 12 Smart civil and political liberties



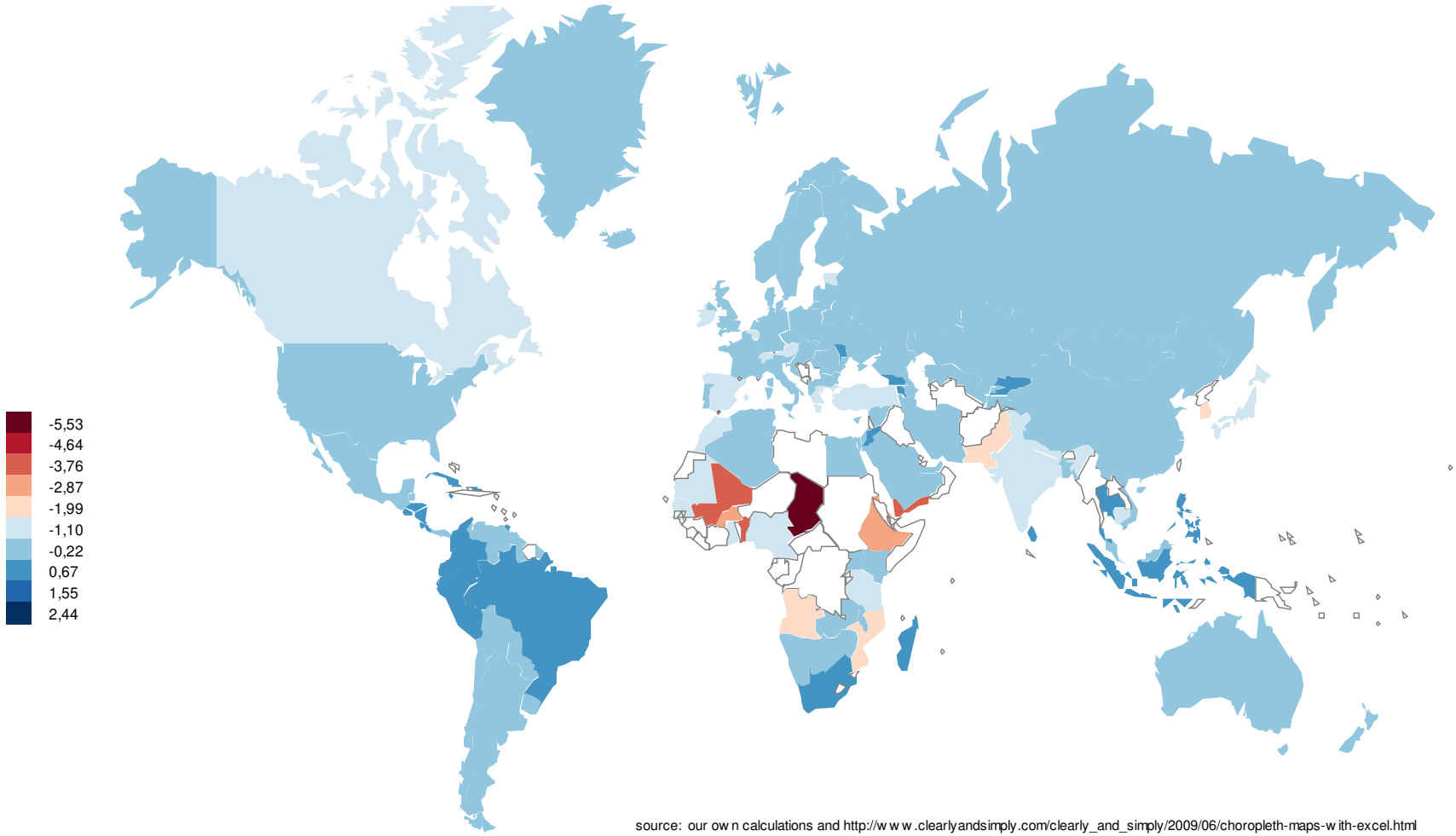
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 13 Smart closing economic gender gap



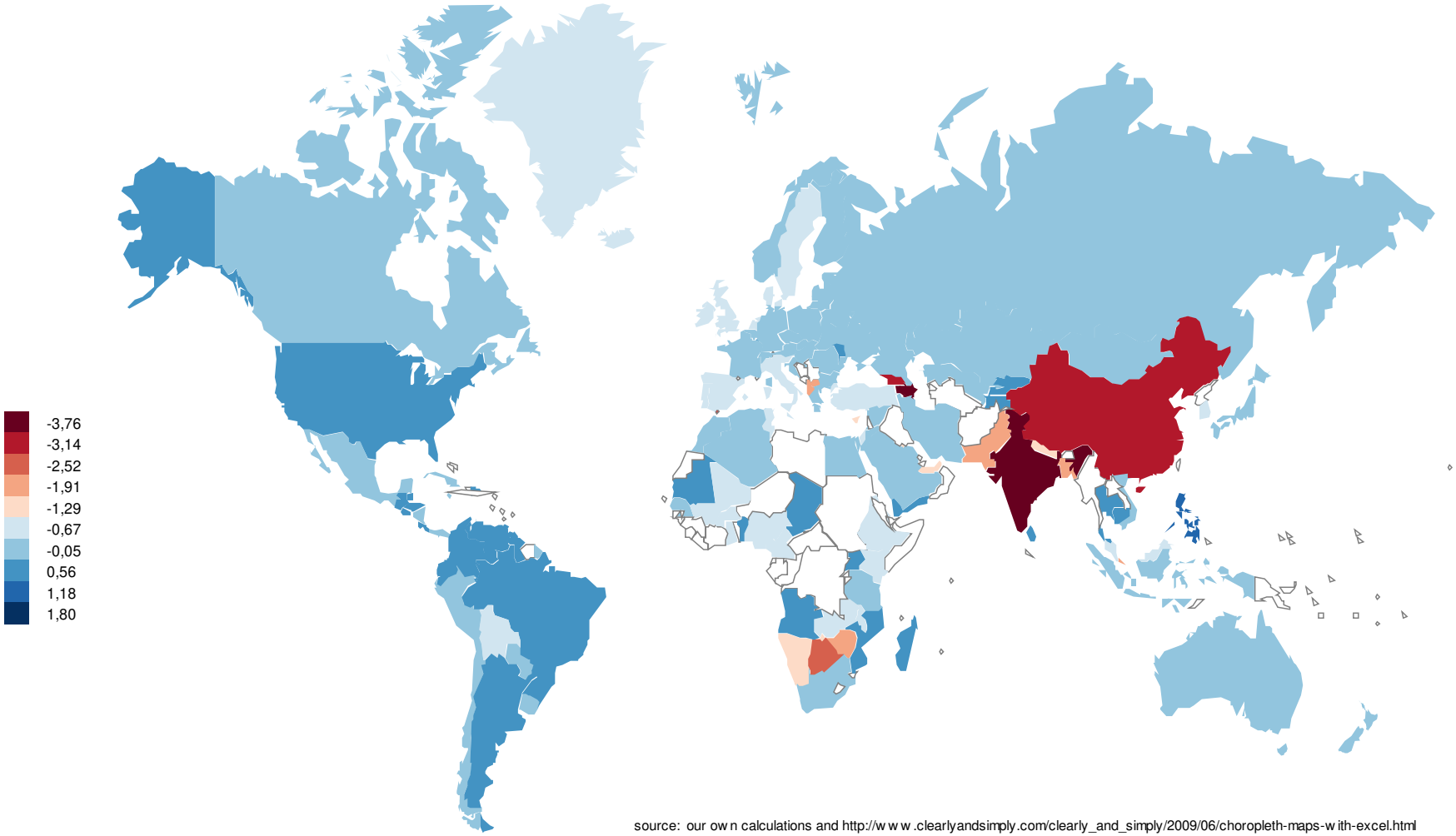
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 14 Smart closing educational gender gap



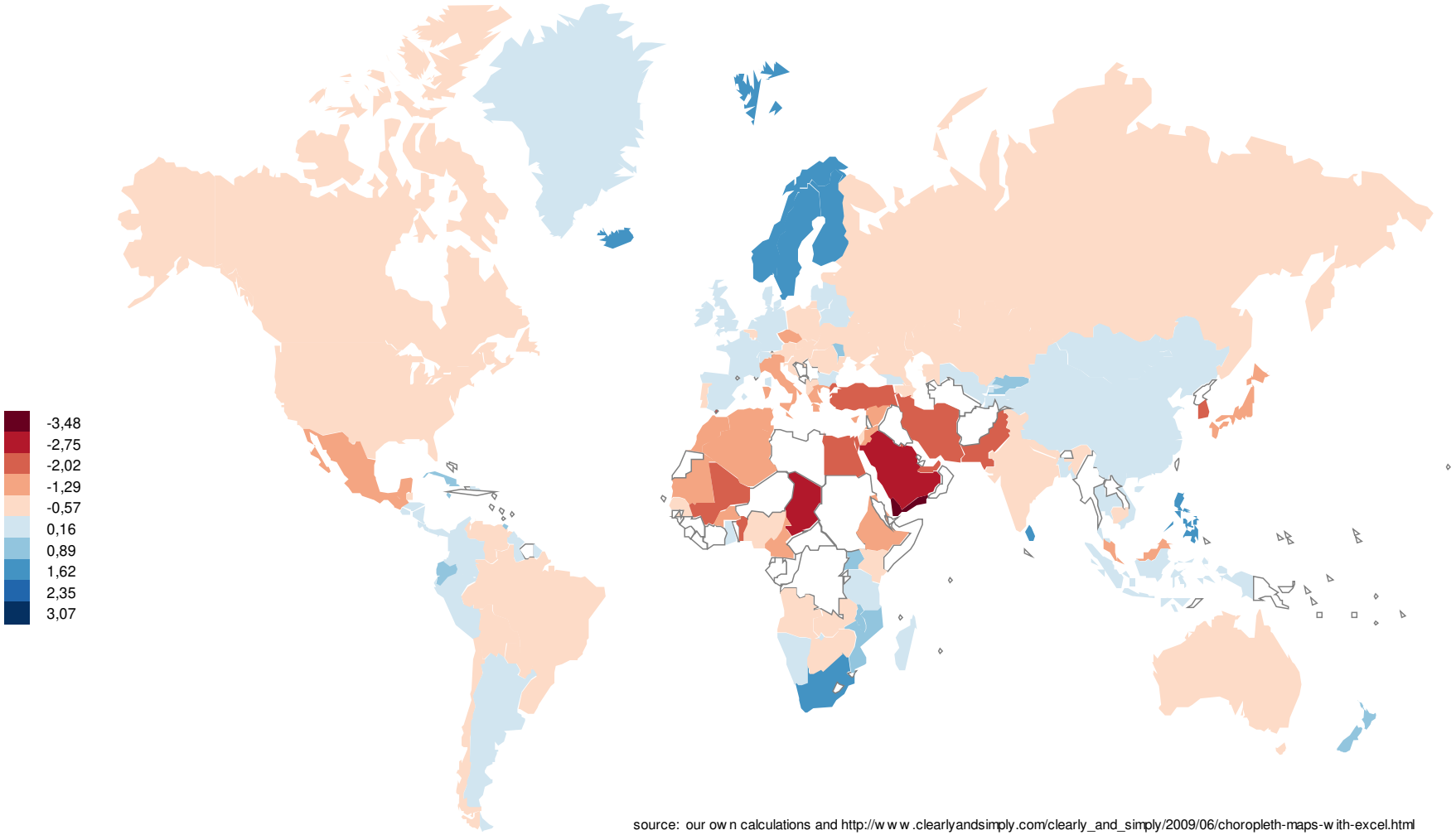
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 15 Smart closing health and survivial gender gap



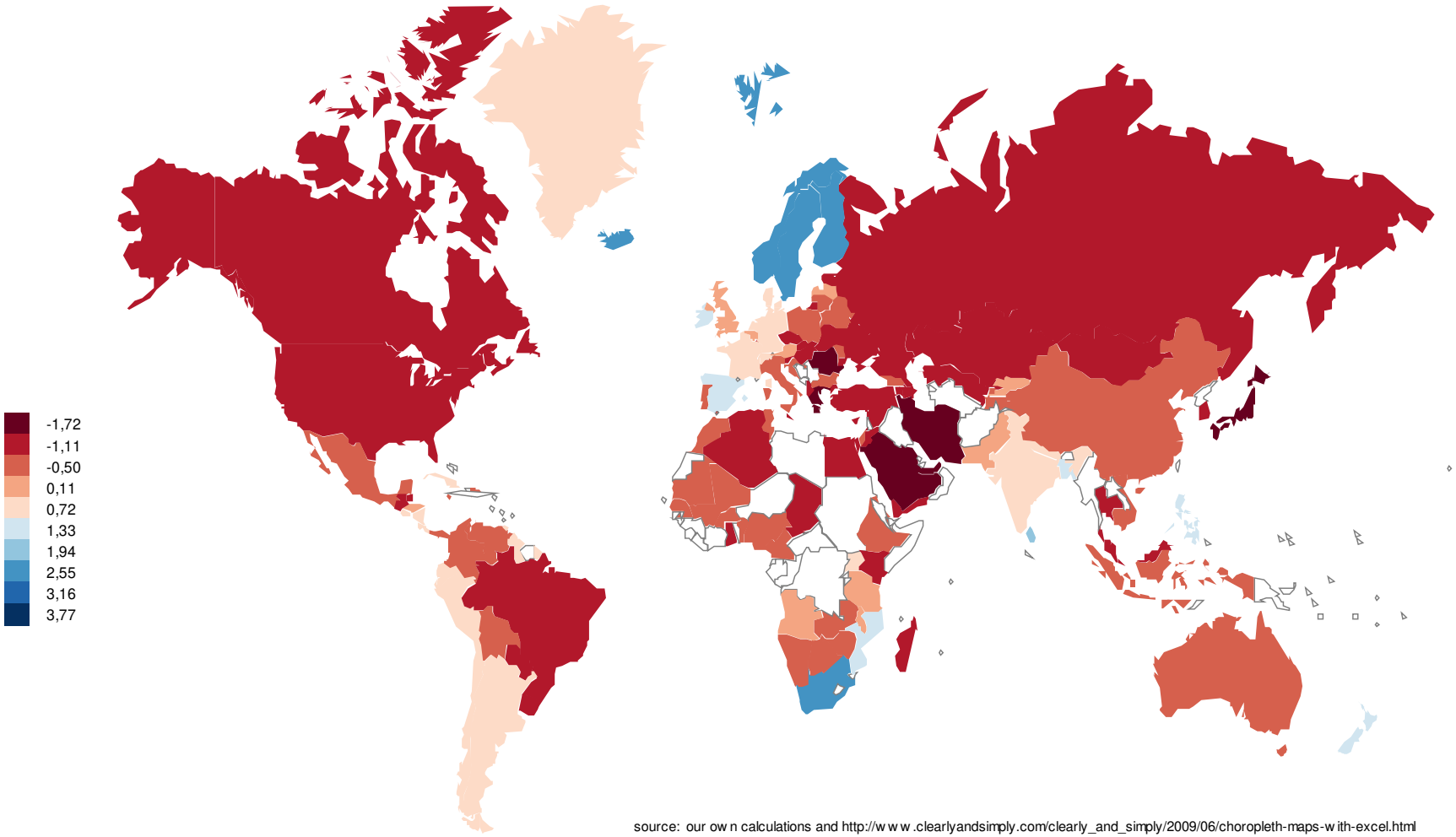
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 16 Smart closing of global gender gap overall score



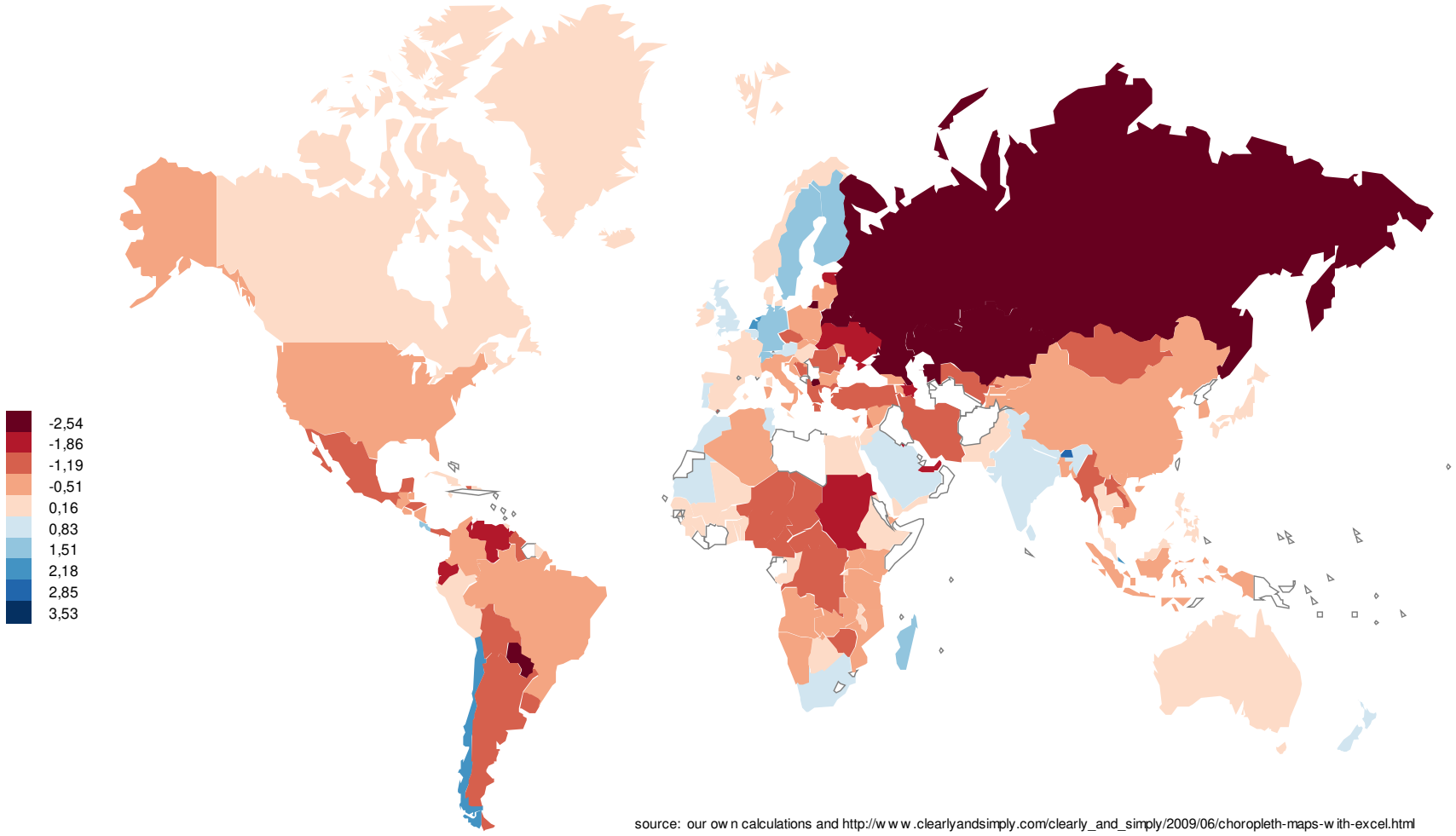
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 17 Smart closing political gender gap



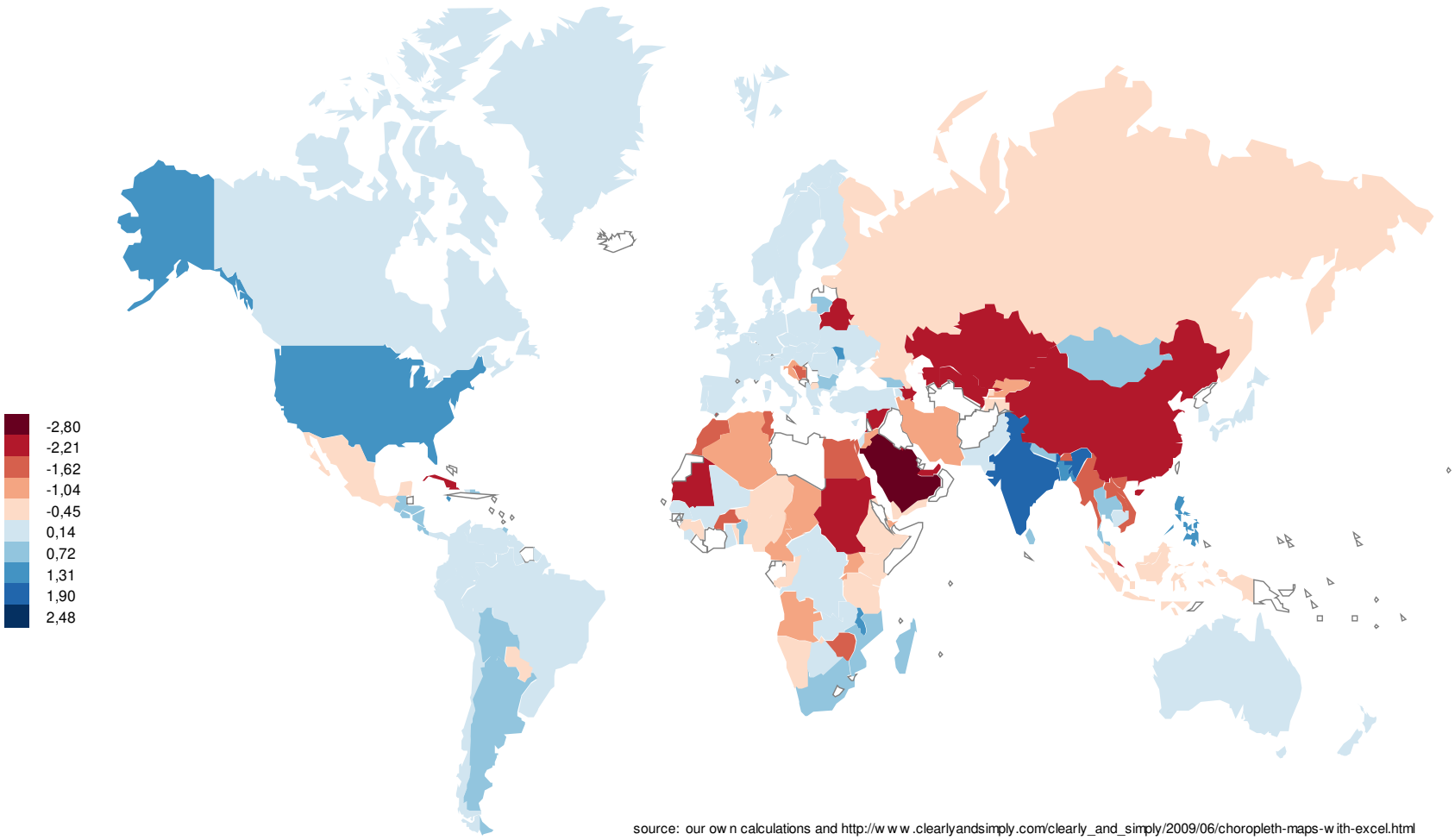
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 18 Smart anti-corruption



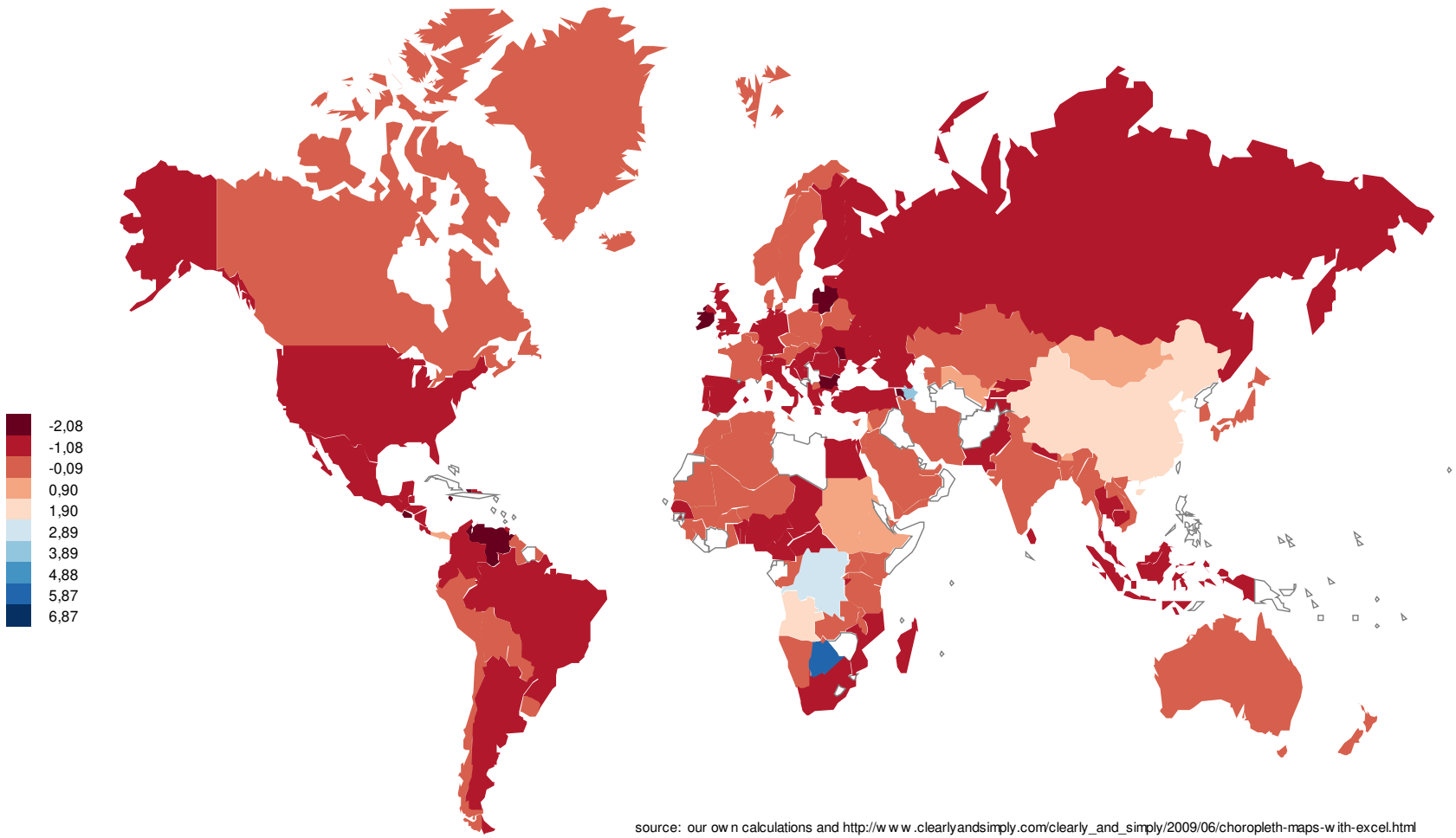
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 19 Smart democracy measure



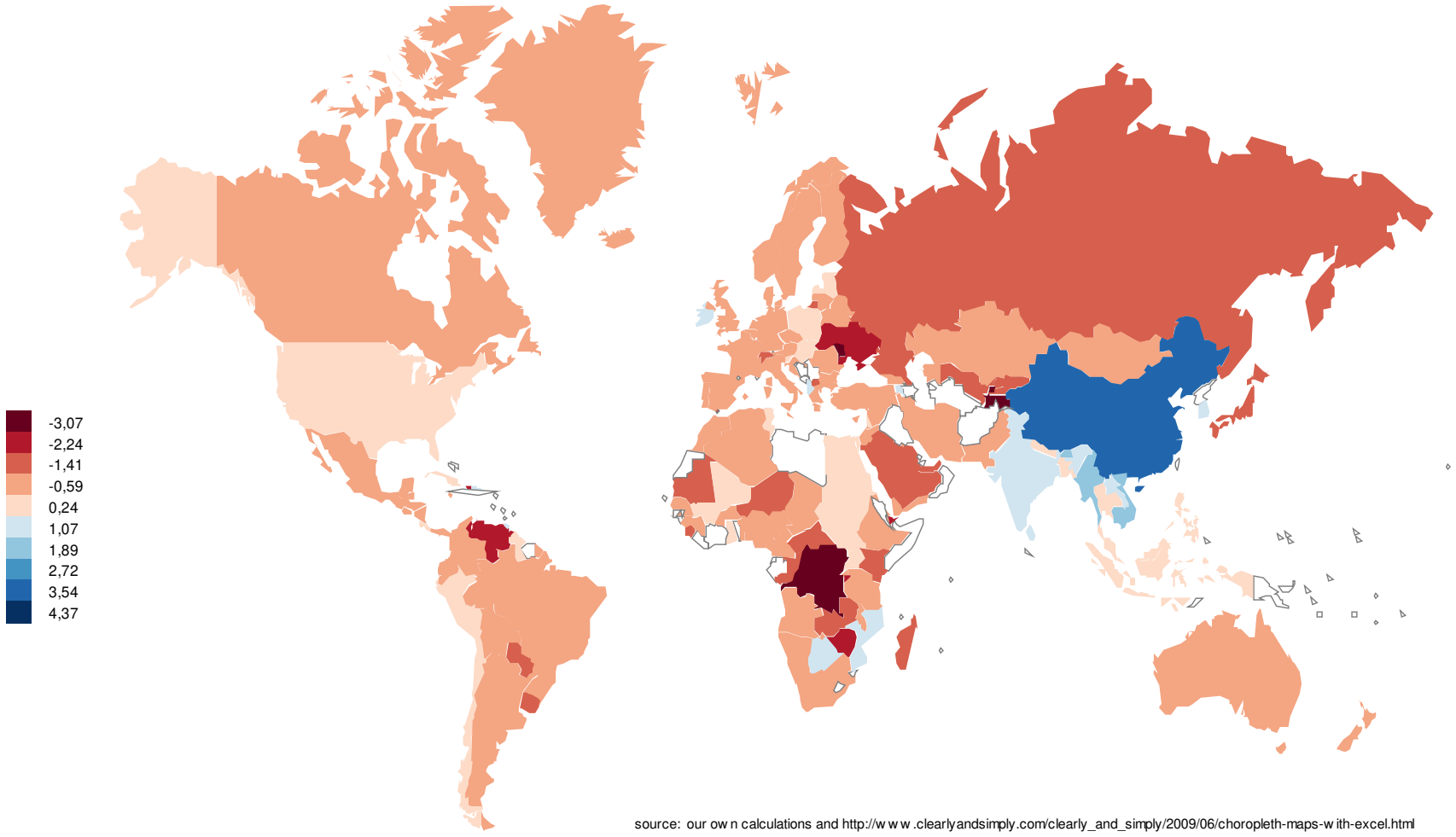
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 20 Smart economic growth IMF 2010



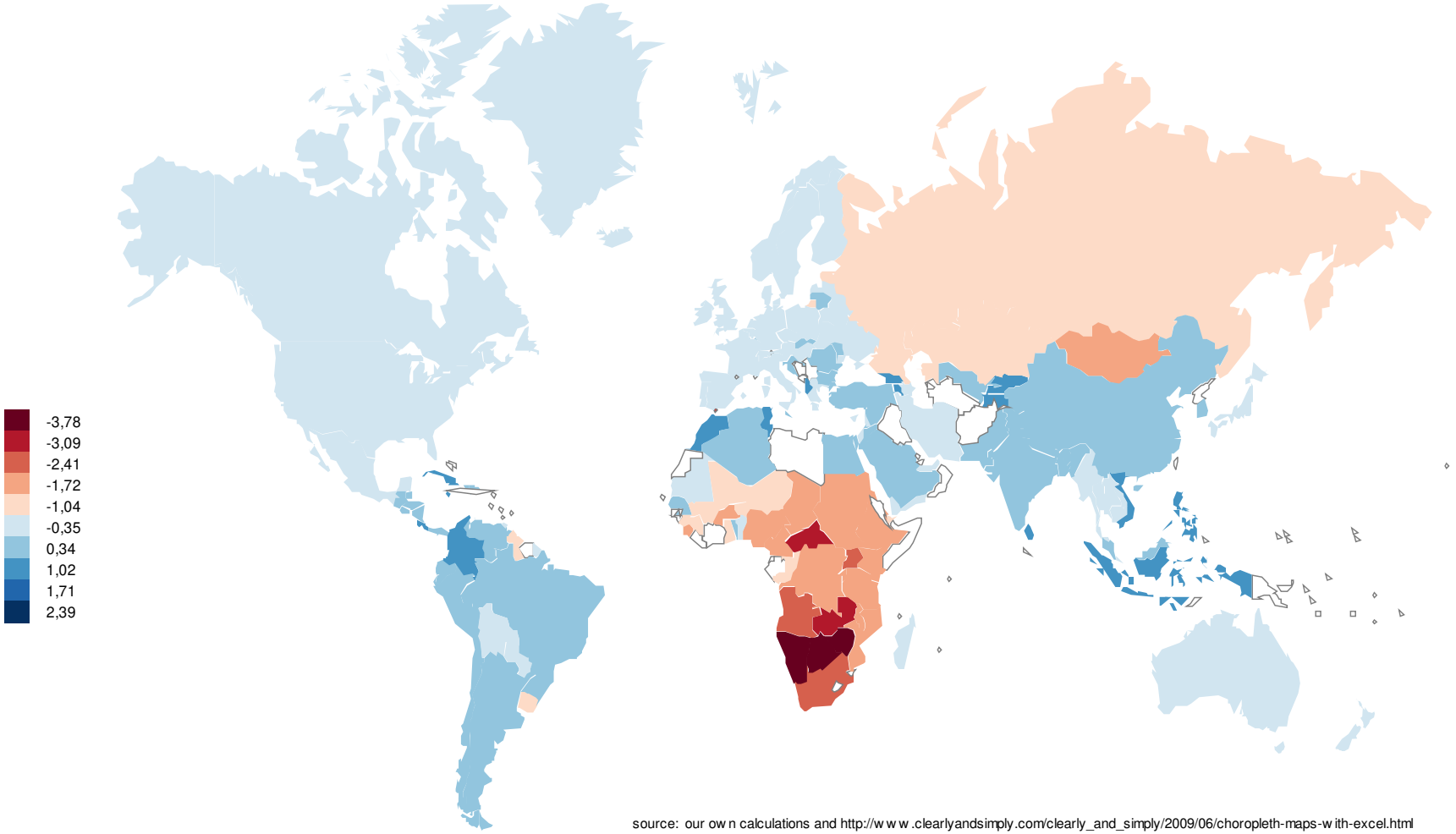
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 21 Smart economic growth in real terms pc. per annum, 1990-2005



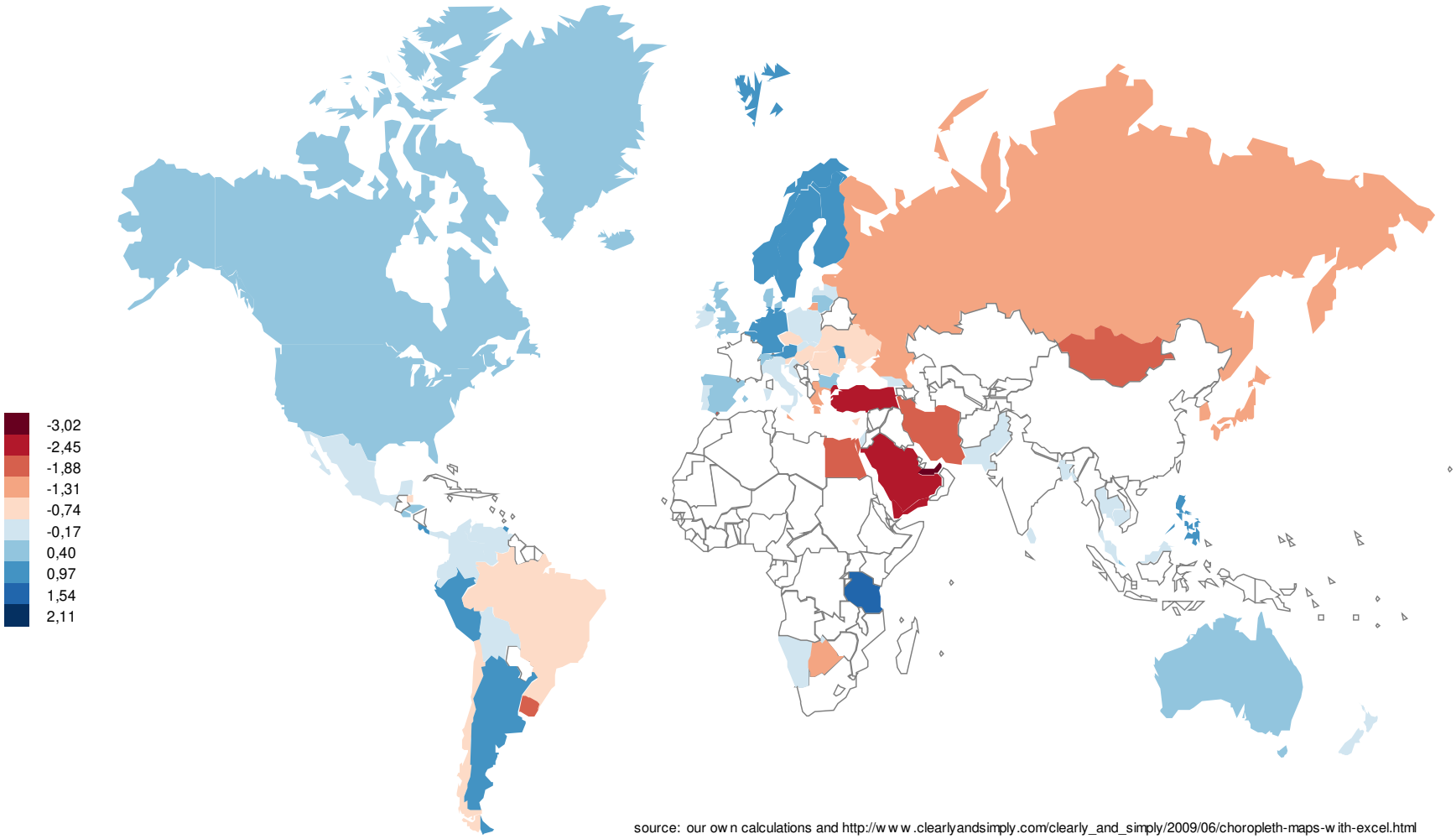
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 22 Smart female survival probability of surviving to age 65



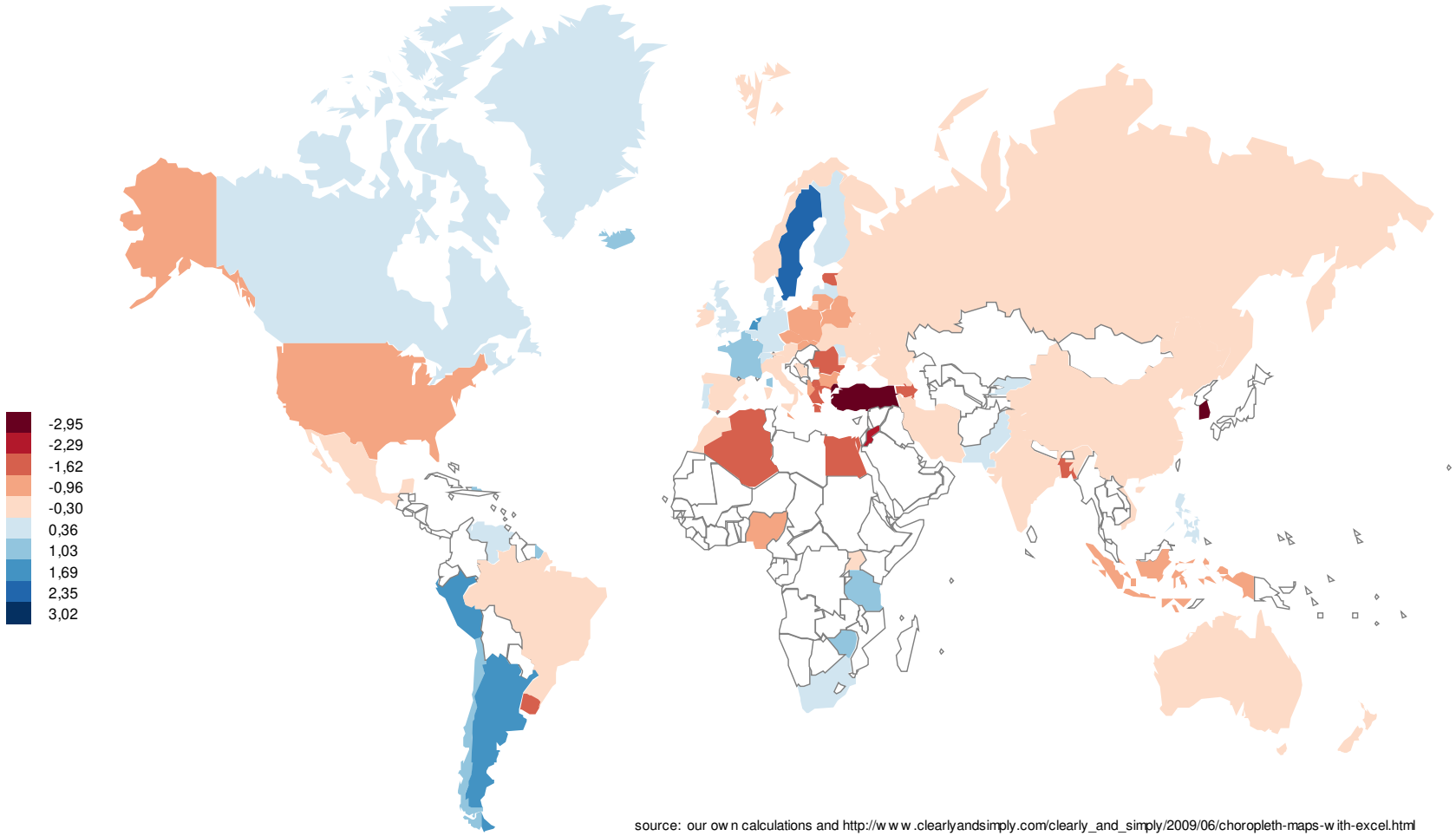
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 23 Smart gender empowerment



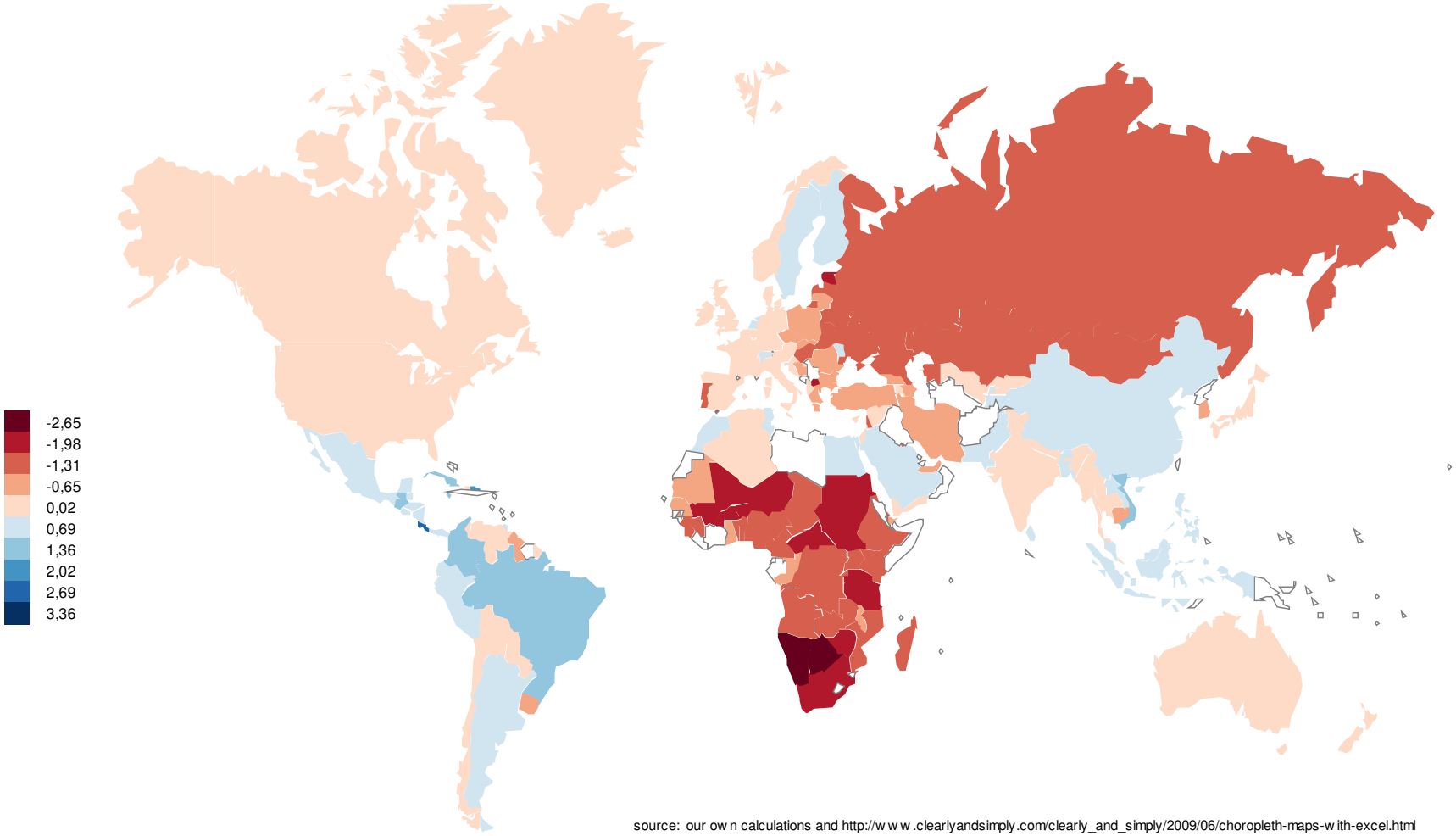
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 24 Smart global tolerance



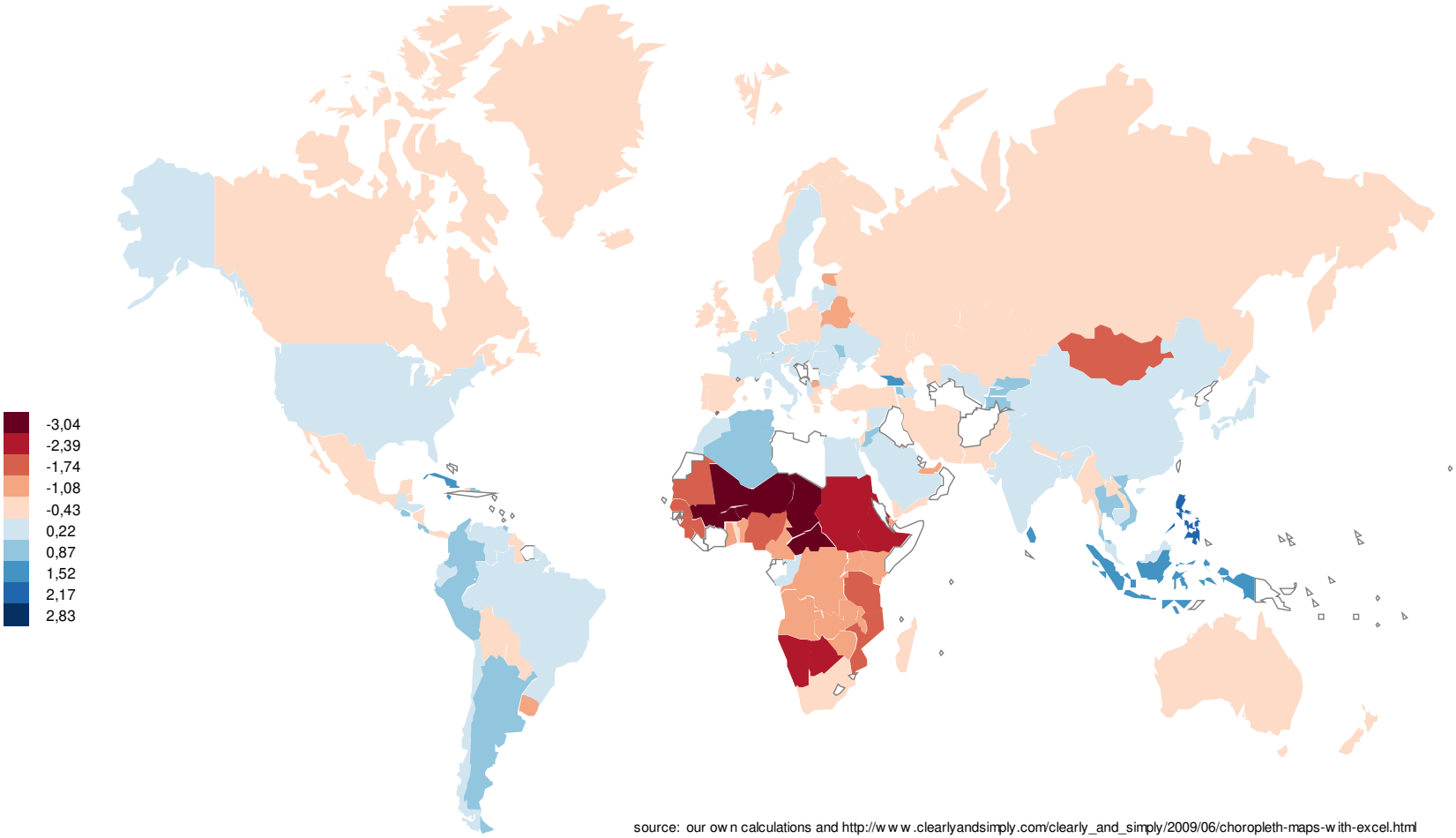
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 25 Smart happy life years



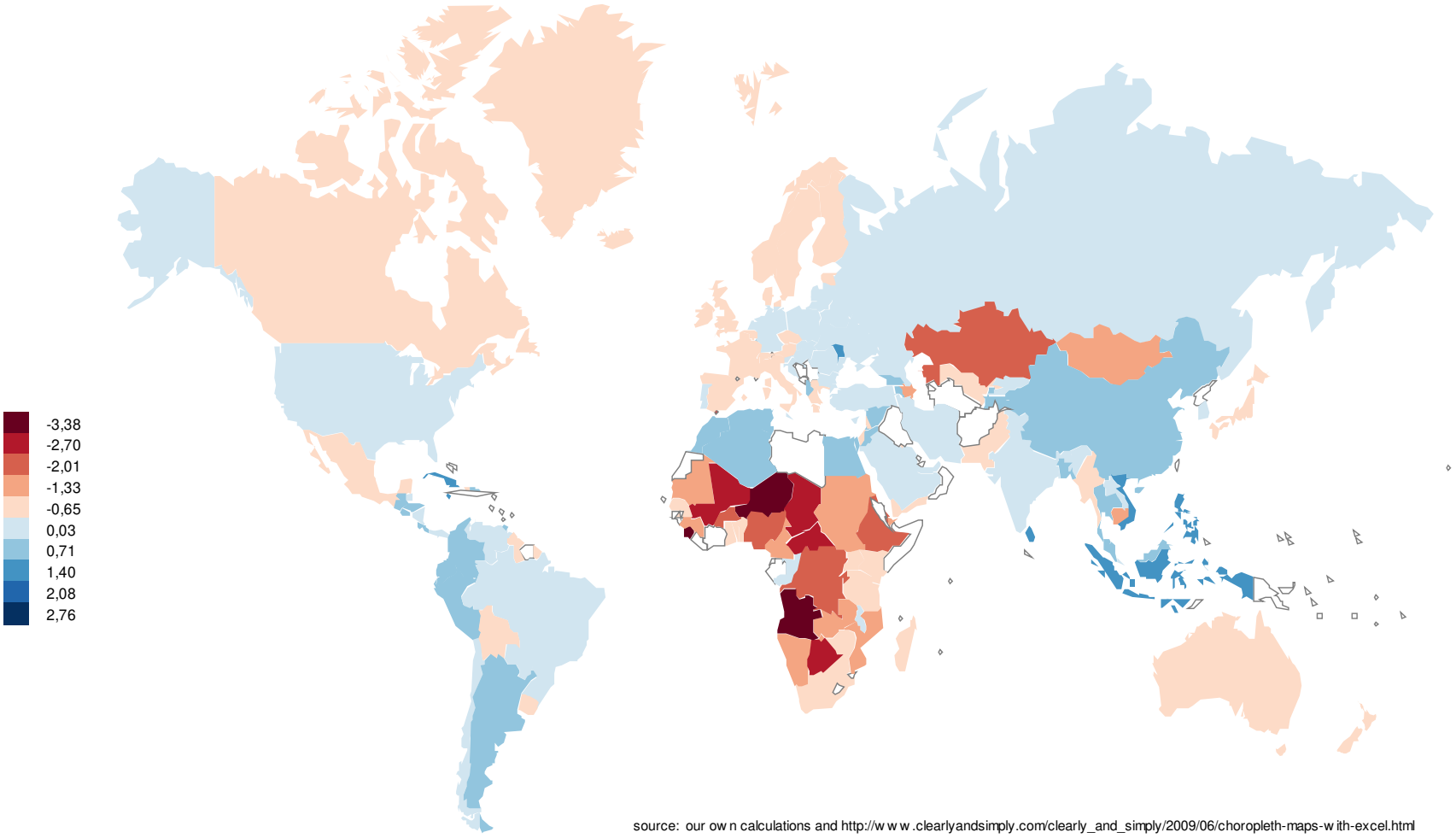
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 26 Smart Human development index



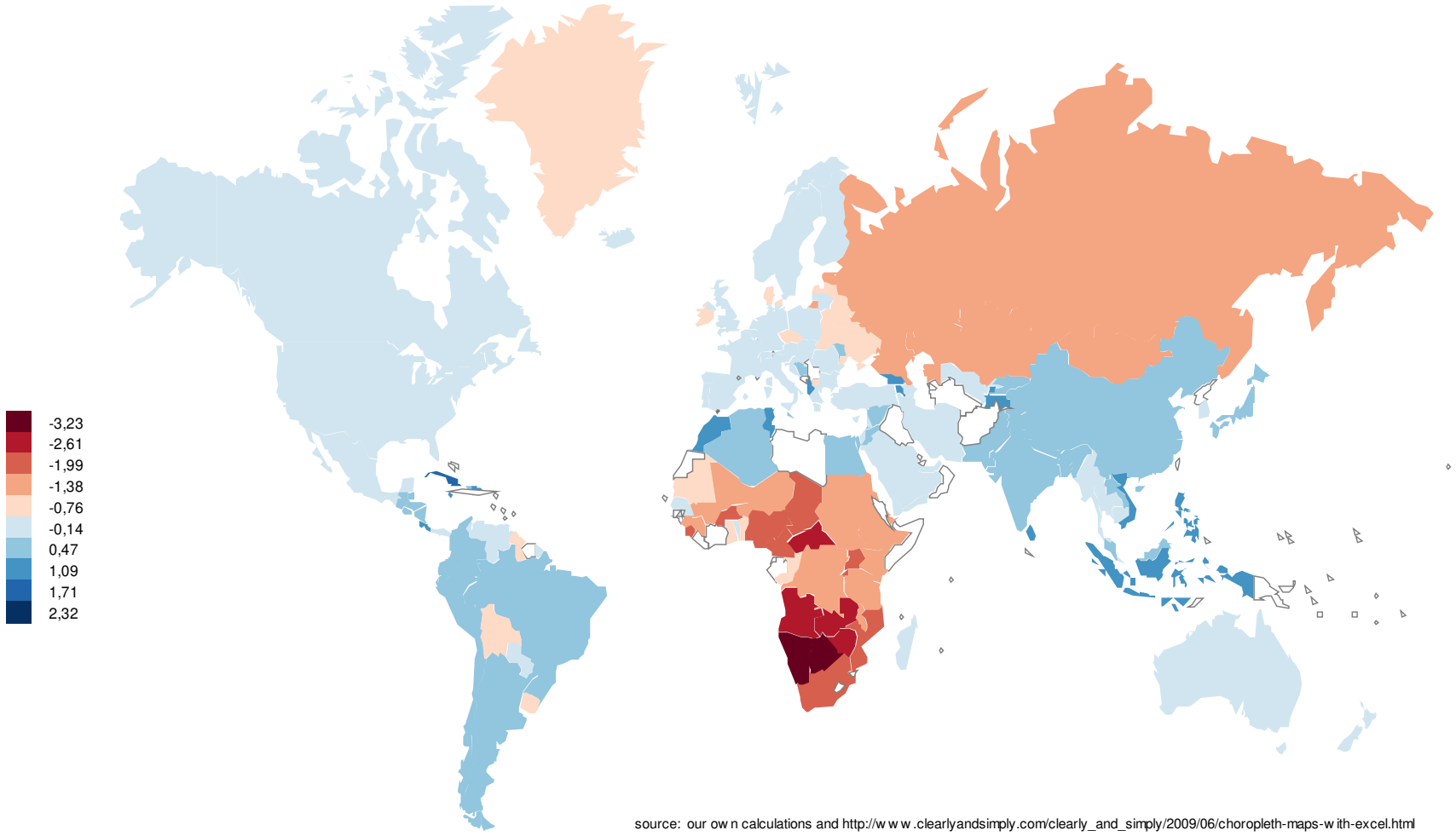
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 27 Smart avoiding Infant mortality



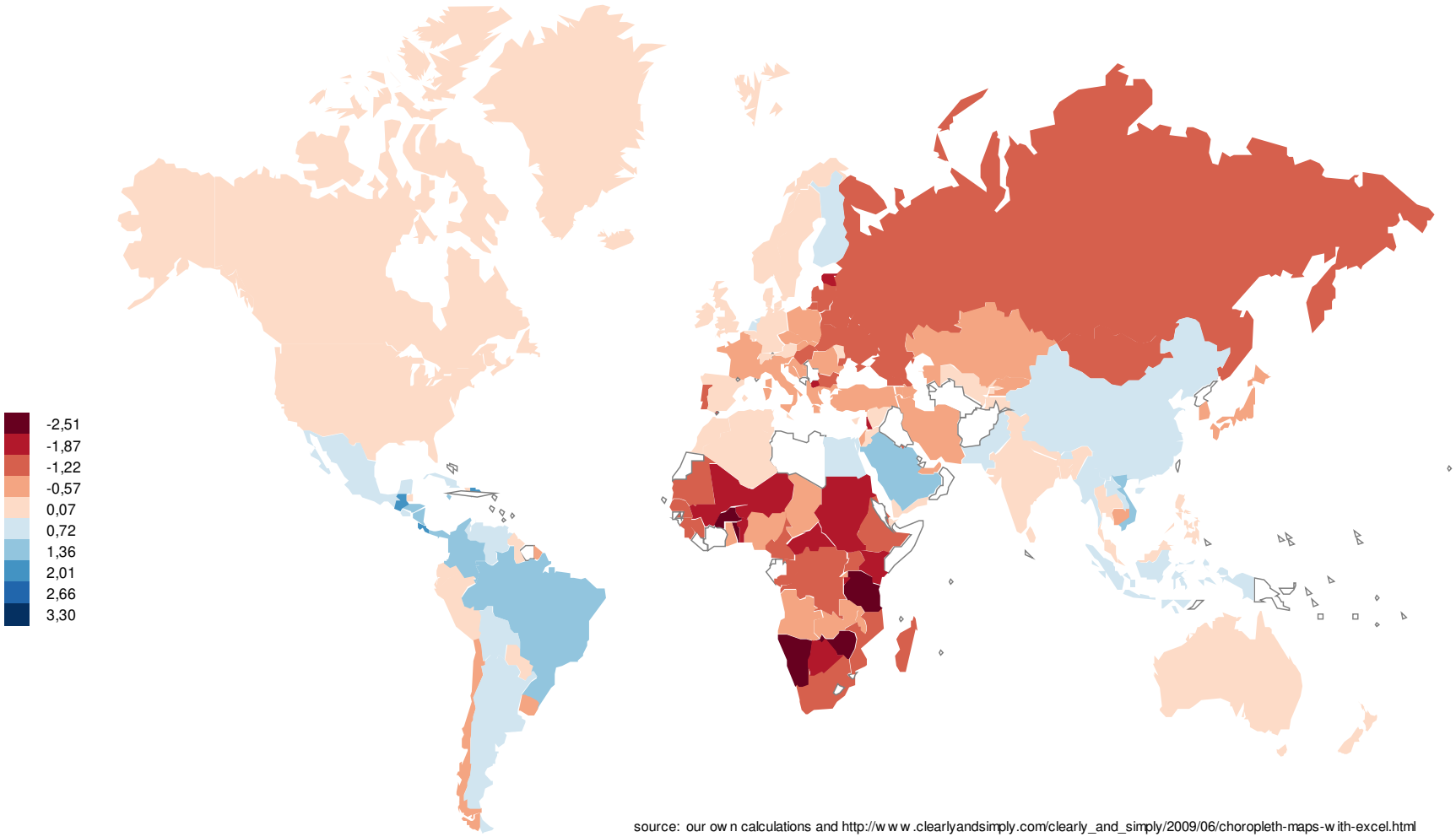
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 28 Smart life expectancy (years)



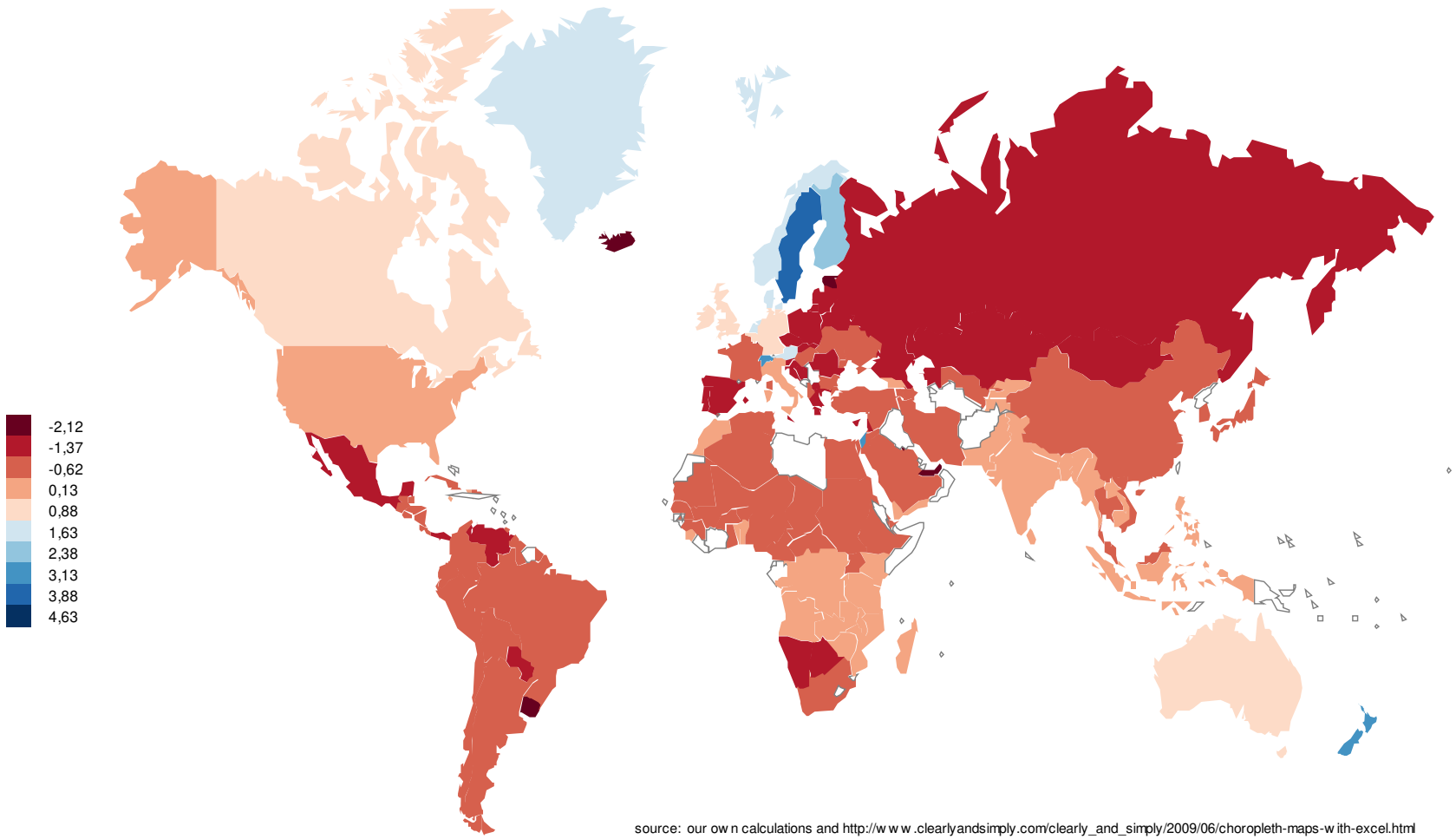
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 29 Smart life satisfaction



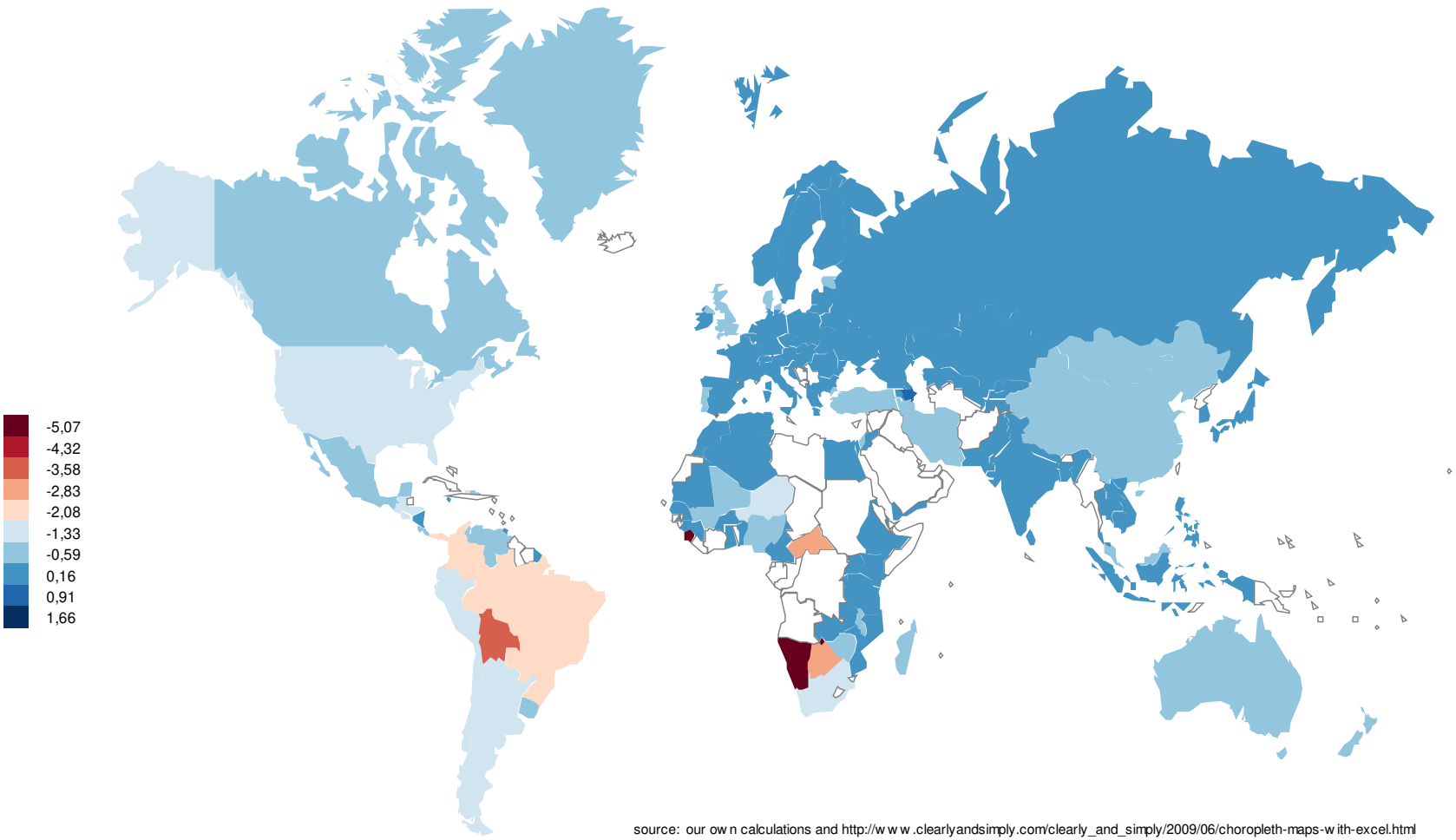
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 30 Smart per capita world class universities



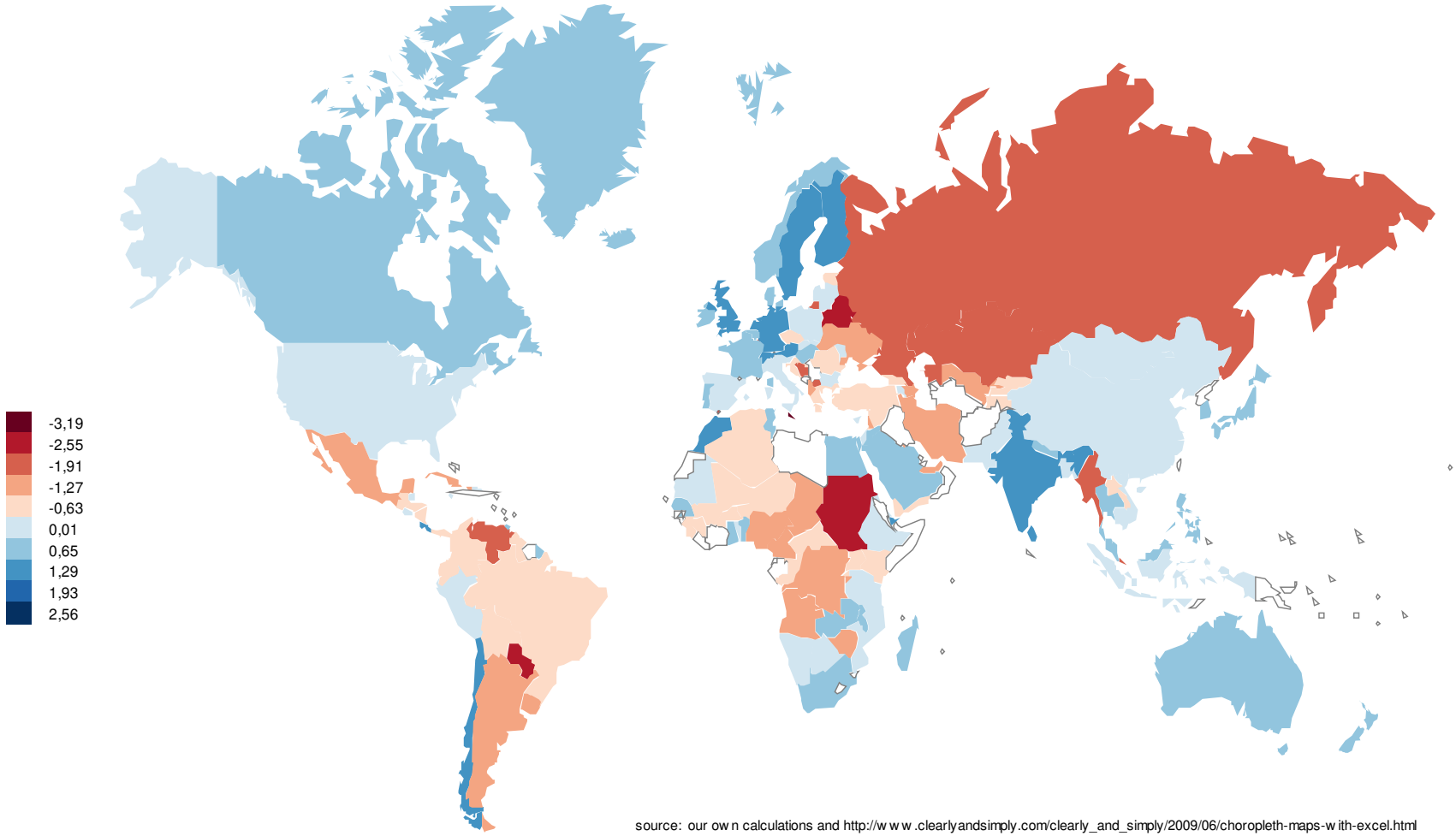
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 31 Smart avoiding high income differences



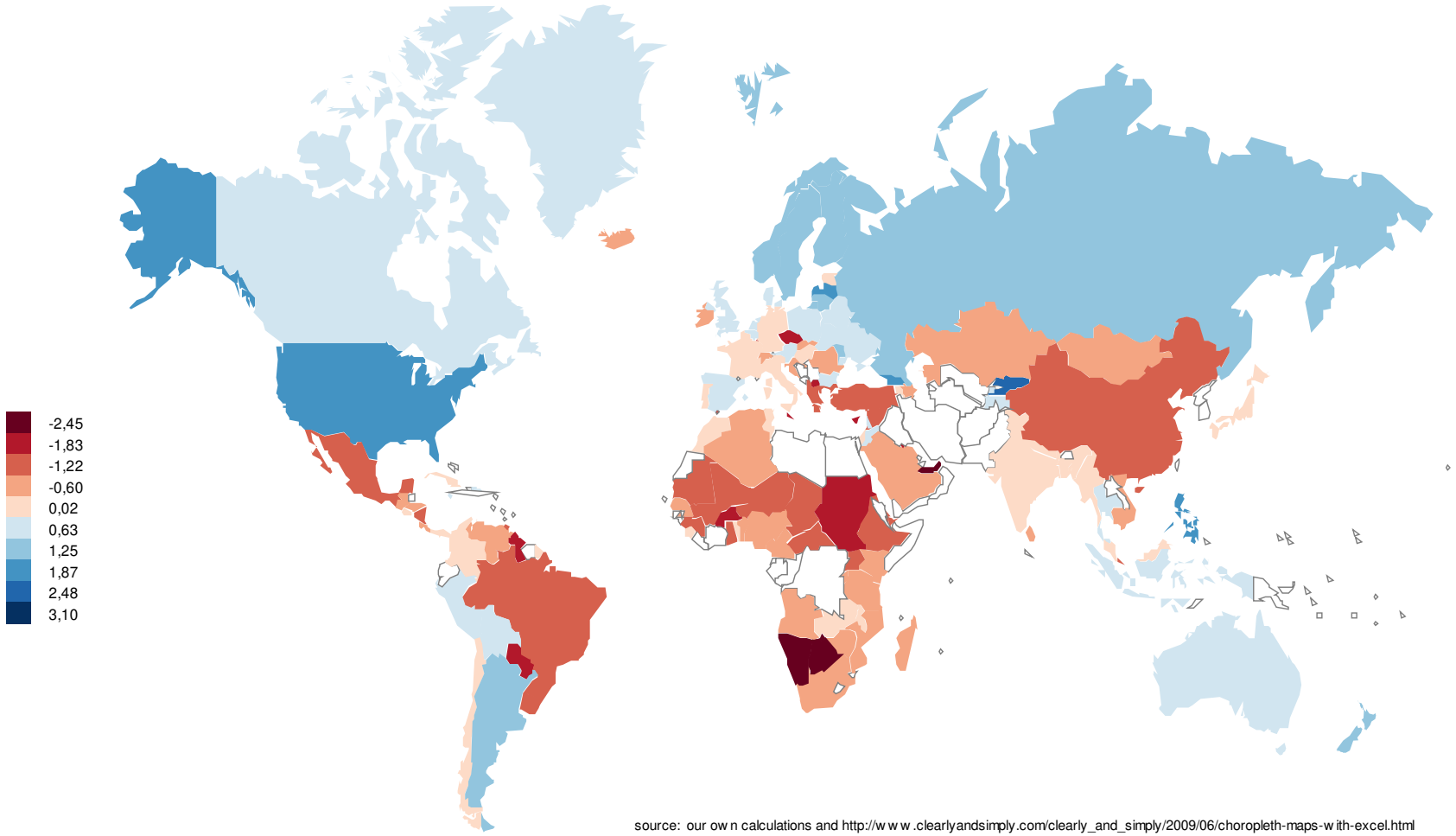
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 32 Smart rule of law



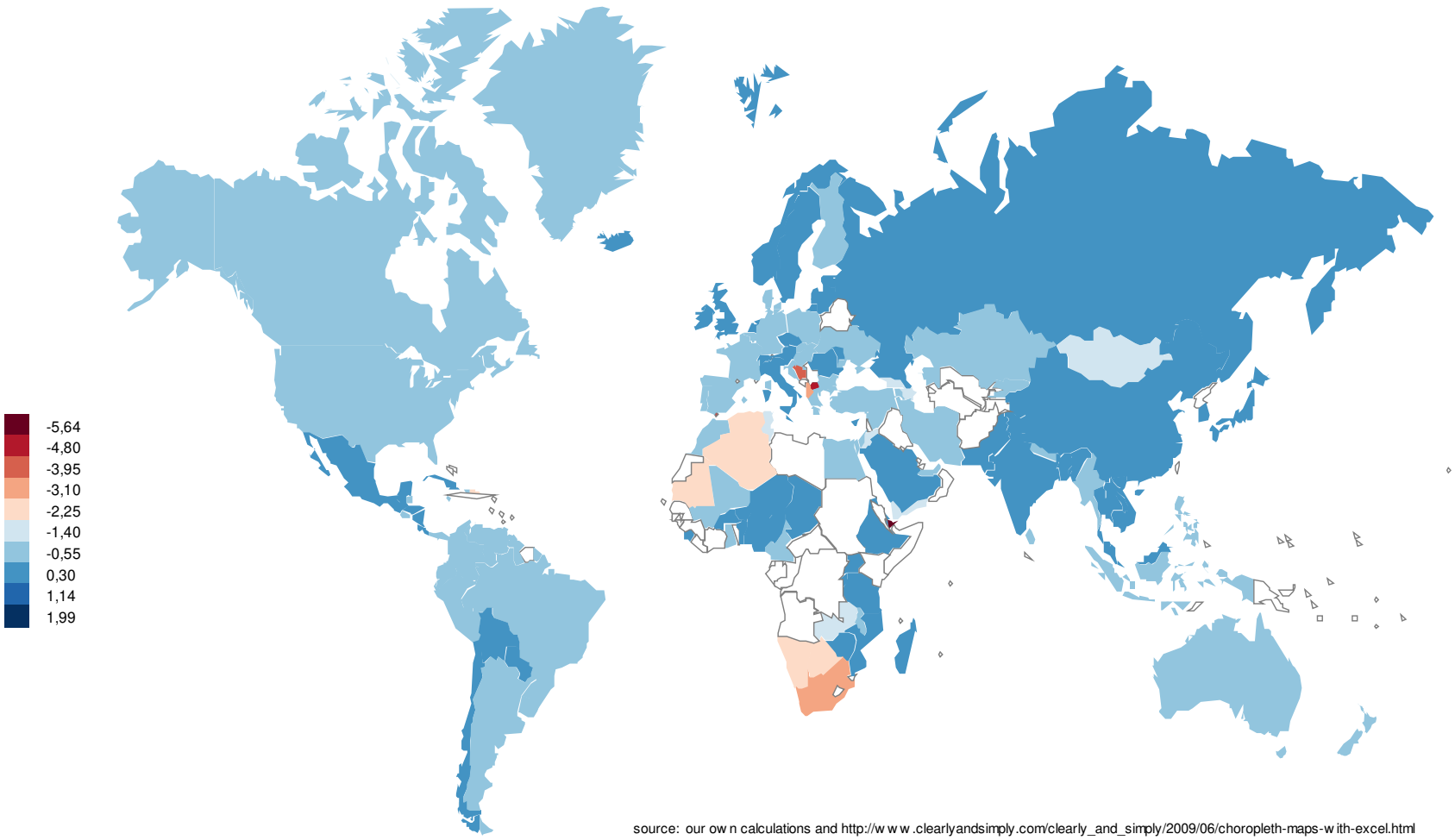
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 33 Smart tertiary enrollment



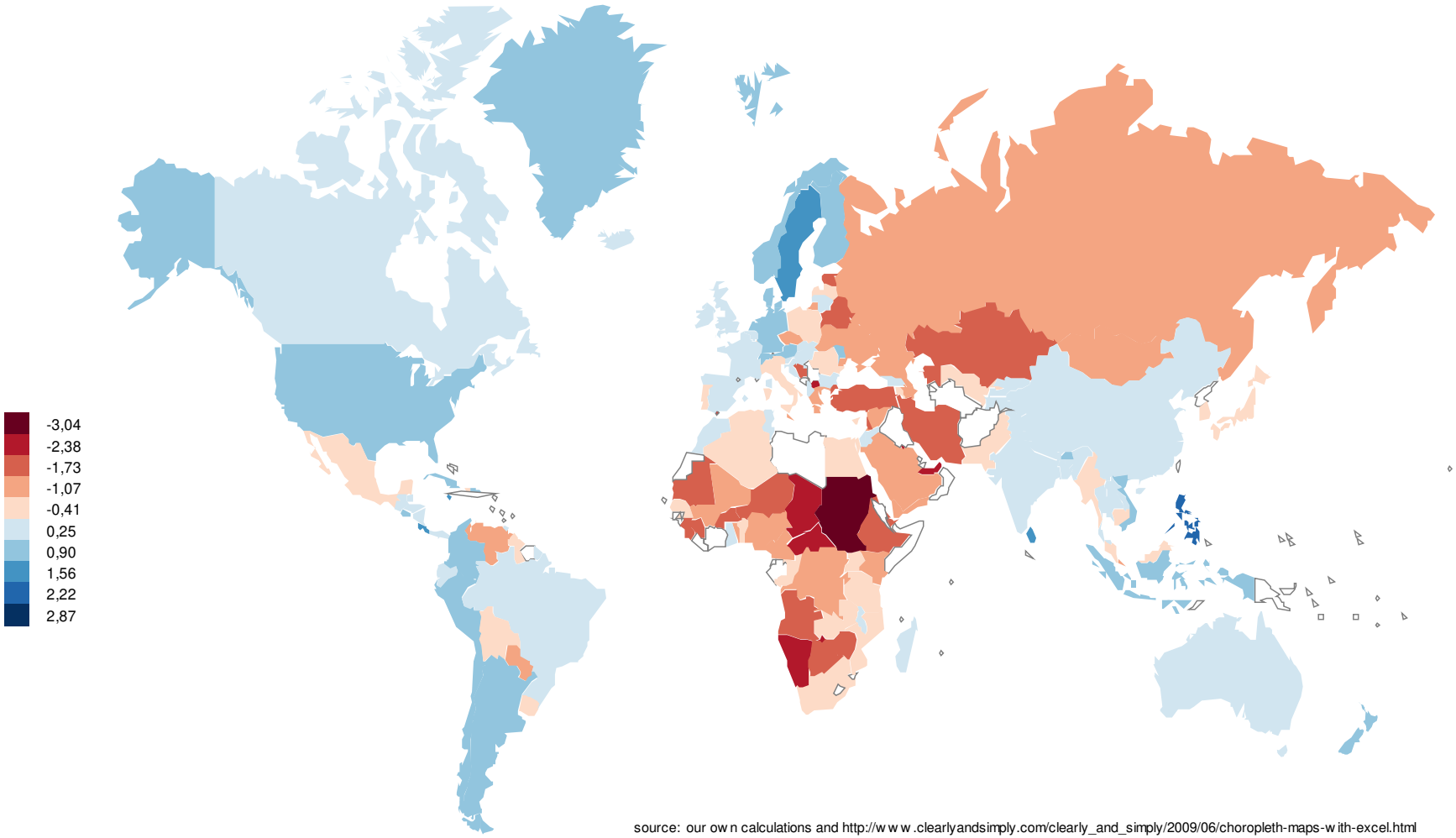
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 34 Smart avoiding unemployment



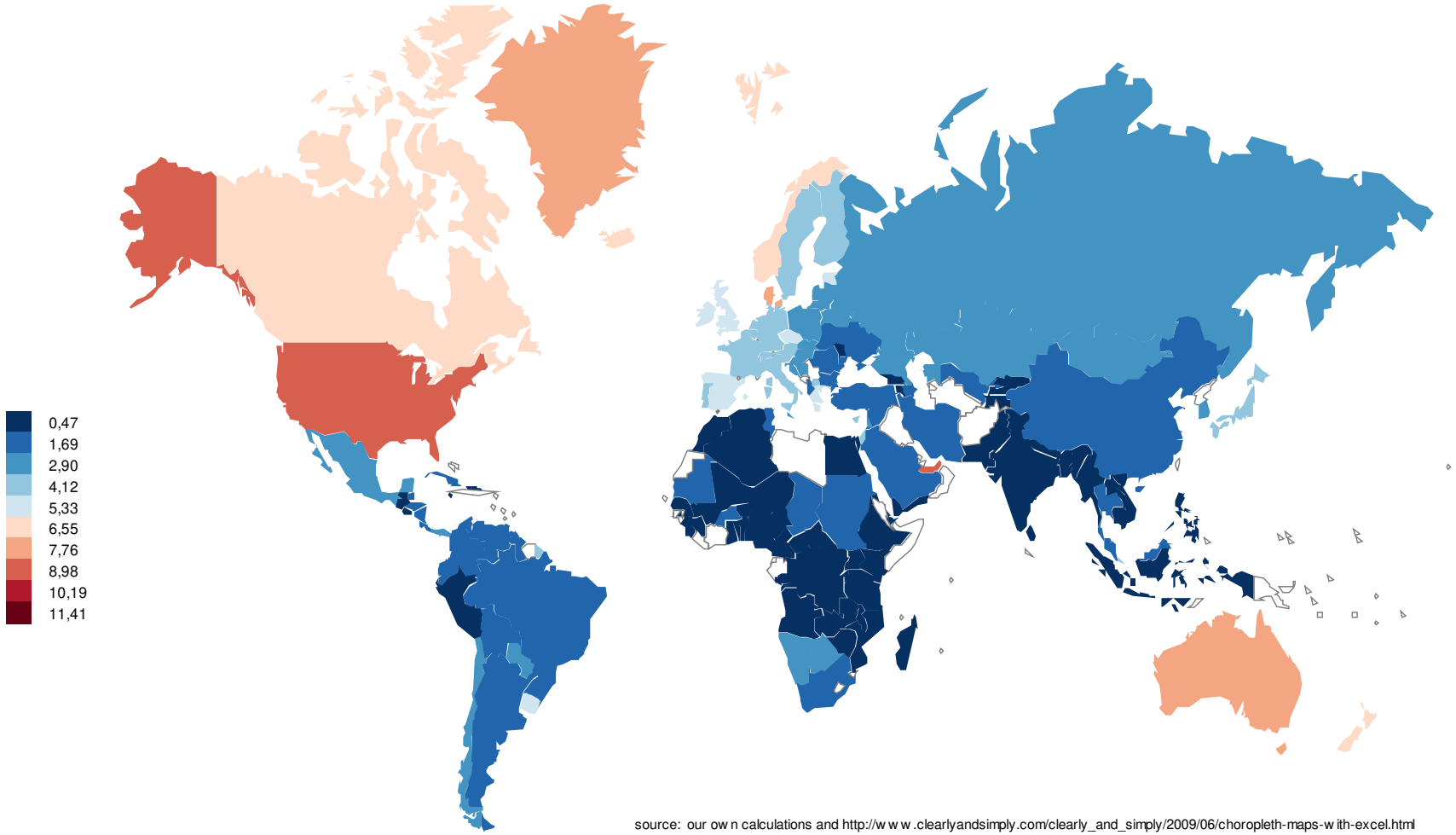
source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 35 smart overall development index



source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Map 36 ecological footprint per capita



source: our own calculations and http://www.clearlyandsimply.com/clearly_and_simply/2009/06/choropleth-maps-with-excel.html

Appendix Table 4: data sources

All the original variables are contained in:

http://www.hichemkaroui.com/?p=2017

and

http://www.hichemkaroui.com/?p=2383#more-2383

This data set combines the most up-to-date data on the social, economic, political, and environmental effects of globalization. The dataset in EXCEL format is freely available and draws on the following sources:

	Variable Label	**Source**
1	Combined Failed States Index	http://www.fundforpeace.org/web/index.php?option=com_content&task=view&id=452&Itemid=900
2	Civil and political liberty violations	ESI Yale Columbia Index http://sedac.ciesin.columbia.edu/es/esi/
3	Closing economic gender gap	World Economic Forum Global Gender Gap Report http://www.weforum.org/en/Communities/Women%20Leaders%20and%20Gender%20Parity/GenderGapNetwork/index.htm
4	Closing educational gender gap	World Economic Forum Global Gender Gap Report http://www.weforum.org/en/Communities/Women%20Leaders%20and%20Gender%20Parity/GenderGapNetwork/index.htm
5	Closing health and survivial gender gap	World Economic Forum Global Gender Gap Report http://www.weforum.org/en/Communities/Women%20Leaders%20and%20Gender%20Parity/GenderGapNetwork/index.htm
6	Closing of global gender gap overall score 2009	World Economic Forum Global Gender Gap Report http://www.weforum.org/en/Communities/Women%20Leaders%20and%20Gender%20Parity/GenderGapNetwork/index.htm
7	Closing political gender gap	World Economic Forum Global Gender Gap Report http://www.weforum.org/en/Communities/Women%20Leaders%20and%20Gender%20Parity/GenderGapNetwork/index.htm
8	Corruption avoidance measure	ESI Yale Columbia Index http://sedac.ciesin.columbia.edu/es/esi/

9	Country share in top world 500 Universities	University of Shanghai http://www.arwu.org/
10	Crisis Performance Factor	calculated from IMF and UNDP. IMF prognosis April 2009
11	Democracy measure	ESI Yale Columbia Index http://sedac.ciesin.columbia.edu/es/esi/
12	Ecological footprint (gha per capita)	Happy Planet Index website http://www.happyplanetindex.org/learn/download-report.html
13	Economic growth IMF prediction growth rate in 2009	IMF http://www.imf.org/external/datamapper/index.php
14	Economic growth IMF prediction growth rate in 2010	IMF http://www.imf.org/external/datamapper/index.php
15	Economic growth in real terms per capita, per annum, 1990-2005	UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
16	Environmental Performance Index (EPI)	EPI Yale Columbia Index http://epi.yale.edu/Home
17	ESI-Index Environment Sustainability Index (Yale Columbia)	Yale/Columbia ESI Index website http://sedac.ciesin.columbia.edu/es/esi/
18	Female survival - probability of surviving to age 65	calculated from UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
19	Gender empowerment index value	UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
20	Global tolerance index	calculated from World Values Survey http://www.worldvaluessurvey.org/
21	Happy life years rs)	Happy Planet Index website http://www.happyplanetindex.org/learn/download-report.html
22	Happy Planet Index, HPI	Happy Planet Index website http://www.happyplanetindex.org/learn/download-report.html
23	Human development index (HDI) value 2004	UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
24	Infant mortality 2005	UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
25	Labour force participation rate of migrants (both sexes)	UNDP HDR 2009 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
26	Life expectancy (years)	Happy Planet Index website http://www.happyplanetindex.org/learn/download-report.html
27	Life satisfaction (0-10)	Happy Planet Index website http://www.happyplanetindex.org/learn/download-report.html
28	Net exports of ecological footprint gha per person	Global footprint network at http://www.footprintnetwork.org/images/uploads/Ecological_Footprint_Atlas_2009.pdf
29	Per capita world class universities	Calculated from the data of this work
30	Quintile share income difference between richest and poorest 20%	UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
31	Rule of law	Yale/Columbia ESI Index website
32	Tertiary enrollment	Nationmaster Sydney http://www.nationmaster.com/index.php

33	Total unemployment rate of immigrants (both sexes)	UNDP HDR 2009 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
34	Unemployment rate	United Nations Statistics http://unstats.un.org/unsd/Demographic/Products/socind/unemployment.htm
35	Cyclones - average number of tropical cyclones per year	http://www.undp.org/cpr/disred/rdr.htm
36	ln (number of people per million inhabitants 1980-2000 killed by natural disasters per year+1)	http://www.undp.org/cpr/disred/rdr.htm
37	Tertiary emigration rate	UNDP HDR 2009 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
38	Droughts - average number of droughts per year	http://www.undp.org/cpr/disred/rdr.htm
39	Earthquakes - average number of earthquakes per year	http://www.undp.org/cpr/disred/rdr.htm
40	Carbon emissions per million US dollars GDP	ESI Yale Columbia Index http://sedac.ciesin.columbia.edu/es/esi/
41	Carbon emissions per capita	ESI Yale Columbia Index http://sedac.ciesin.columbia.edu/es/esi/
42	% women in government, all levels	UNDP HDR 2000 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
43	% world population	calculated from UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
44	2000 Economic Freedom Score	Heritage Foundation http://www.heritage.org/Index/
45	Absolute latitude	Easterly, William, New York University – Stern School of Business, Department of Economics, May 2000 "The Middle Class Consensus and Economic Development", World Bank Policy Research Working Paper No. 2346, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=630718. Data in EXCEL-format still retrievable best from a "google" search, entering the words "easterly POLRIGHTS98" at the site of the http://www.cgdev.org/. The address of the site is given as www.cgdev.org/doc/…/easterly/easterly_consensusdata.xls. Alternatively, a "google search" using the search profile words "easterly_consensusdata.xls" also yields the data set
--46	Annual population growth rate, 1975-2005 (%)	calculated from UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
47	Comparative price levels (US=1.00)	calculated from UNDP (GDP curr/GDP PPP) UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
48	Foreign savings rate	UNDP HDR 2000 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
49	FPZ (free production zones) employment as % of total population	calculated from ILO http://www.ilo.org/public/english/dialogue/sector/themes/epz/epz-db.pdf
50	ln GDP per capita	UNDP HDR 2000 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
51	ln GDP per capita ^2	UNDP HDR 2000 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
52	Membership in the Islamic Conference	OIC http://www.oic-oci.org/

53	Military expenditure per GDP	UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
54	Military personnel rate ln (MPR+1)	US CIA https://www.cia.gov/library/publications/the-world-factbook/geos/us.html
55	MNC outward investments (stock) per GDP	UNCTAD http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. In addition: http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. Furthermore http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. In addition http://www.unctad.org/Templates/Page.asp?intItemID=3198&lang=1 and http://www.unctad.org/en/docs/wir2008_en.pdf and http://www.unctad.org/Templates/Page.asp?intItemID=3277&lang=1
56	MNC PEN - stock of Inward FDI per GDP	UNCTAD http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. In addition: http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. Furthermore http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. In addition http://www.unctad.org/Templates/Page.asp?intItemID=3198&lang=1 and http://www.unctad.org/en/docs/wir2008_en.pdf and http://www.unctad.org/Templates/Page.asp?intItemID=3277&lang=1
57	MNC PEN: DYN MNC PEN 1995-2005	UNCTAD http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. In addition: http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. Furthermore http://www.unctad.org/sections/dite_dir/docs/wir2007_instock_gdp_en.xls. In addition http://www.unctad.org/Templates/Page.asp?intItemID=3198&lang=1 and http://www.unctad.org/en/docs/wir2008_en.pdf and http://www.unctad.org/Templates/Page.asp?intItemID=3277&lang=1
58	Openness-Index, 1990 (export-share per GDP + import-share per GDP)	calculated from UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
59	Population density	https://www.cia.gov/library/publications/the-world-factbook/
60	Public education expenditure per GNP	UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
61	UNDP education index	UNDP Human Development Report Office http://hdr.undp.org/en/statistics/data/
62	Worker remittance inflows as % of GDP	UNDP HDR 2009 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
63	Immigration - Share of population 2005 (%)	UNDP HDR 2009 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
64	Muslim population share per total population	Nationmaster Sydney http://www.nationmaster.com/index.php
65	Net international migration rate, 2005-2010	UNDP HDR 2009 http://hdr.undp.org/xmlsearch/reportSearch?y=*&c=g&t=*&k=
66	Years of membership in the EU, 2010	Website European Commission: http://ec.europa.eu/index_en.htm and EU Scadplus http://europa.eu/legislation_summaries/index.htm, as well as http://www.state.gov/
67	Years of membership in EMU, 2010	Website European Commission: http://ec.europa.eu/index_en.htm and EU Scadplus http://europa.eu/legislation_summaries/index.htm, as well as http://www.state.gov/
68	Social security expenditure per GDP	ILO http://www-ilo-mirror.cornell.edu/public/english/protection/socfas/research/stat/table14.htm

	average 1990s (ILO)	
69	Overall 30 variable development index	calculated from this work
70	Overall 35 variable development index	calculated from this work
71	Overall 35 variable development index, based on 7 dimensions	calculated from this work
72	Avoiding net trade of ecological footprint gha per person	calculated from this work

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