ECONOMIC GROWTH AND GROWTH IN HUMAN DEVELOPMENT

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Abstract

Dynamic panel estimates of economic growth using standard measurements of GDP per capita are compared to estimates of a model of growth in the Human Development Index (HDI) developed by the United Nations. The only independent variables that are found to be significantly related to growth in HDI are population, population growth, and the initial level of GDP. The differences in the two models cannot be simply explained as HDI measuring the same effect as GDP. Restricting the sample to only developing countries and estimating the model using the HDI rank order of countries does not significantly alter the results.

Key Words: Human Development Index, Economic Growth, Dynamic Panel Estimates
JEL Classification: F43, O11, O15, O47

1. Introduction

Economists and policy makers have long used GDP per capita as a measure of economic development. The World Bank, for example, classifies countries in various development categories based on their level of GDP per capita. GDP is, at best, an imperfect measure of development. Even adjusted for known problems, such as purchasing power parity adjustments, we know that it does not adequately measure the concept of development. Many alternatives have been suggested to better measure development. Among these alternatives, the Human Development Index (HDI), developed by the UN, is very prominent. The UN has changed the way the HDI is calculated several times since introducing it in 1990 making it difficult to track changes in HDI over years. As a result, most studies of HDI have focused on cross-sectional analysis. The UN now publishes values for HDI that are consistent for several years. With this fuller data set, it is possible to study the behavior of HDI not only across countries but also over time.[1]

One of the main ways that GDP per capita has been studied is to estimate empirically models of the determinants of economic growth. In that tradition, this paper will compare a model of growth using both growth in GDP per capita and growth in HDI as the dependent variable. If HDI is indeed measuring something different than GDP, the model should show different effects of the independent variables. If there are no differences in the estimates of these two models, though, this might question how much new information is contained in HDI relative to GDP per capita.

A third possibility, of course, is that HDI is an attempt to capture in a single measure a very complex idea (Human Development Capabilities). Even if the HDI fully captured this concept it may well be that no model can capture the determinants

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[1] The UN made major changes to the way both the variables used to construct the index and the methodology used to generate the index from these variables. See Klugman, et al (2011) for a description of these changes and an explanation for their use.

of growth in Human Development. The HDI may still be very useful even if it is not possible to model the determinants of HDI growth in the same way the models of economic growth have been developed.

2. The Growth Model

There is a large literature estimating economic growth using GDP per capita. Rather than attempt a survey of this literature I use the results of Moral-Benito (2012). This study brings some clarity to these varying results by attempting to find independent variables that the data suggests are robust estimates of economic growth. Specifically, Moral-Benito (2012) uses a Bayesian averaging of maximum likelihood estimates extended to the context of panel data. Using a sample of 73 countries for the years 1960 – 2000 (divided into eight 5 year periods), Moral-Benito considered 35 possible variables. The results indicate that 13 variables could be considered robust in the sense that their posterior inclusion probabilities are higher than their prior inclusion probabilities. These thirteen variables are listed in Table 1.

Table 1-Growth Model Variables: Definitions and Sources

Variable	Source	Definition
Growth	PWT	Growth of GDP per capita (PPP adjusted US$)
Initial GDP	PWT	Log of GDP per capita (PPP adjusted US$) for first year
Pop	PWT	Population in thousands for first year
Pop Growth	PWT	Average growth rate of population
Urban	WDI	Fraction of population living in urban areas for the first year
Openness	PWT	Exports plus Imports as a share of GDP for the first year
Invest Share	PWT	Investment as a share of GDP for the first year
Govt Share	PWT	Government consumption as a share of GDP for the first year
Invest Price	PWT	Average investment price level
Life Expect	WDI	Life expectancy at birth for the first year
Political Rights	FH	Index of political rights from 1 (high) to 7 for the first year
Civil Liberties	FH	Index of civil liberties from1 (high) to7 for the first year
Air Distance	Gallup	Log of Minimum Kilometers from New York, Rotterdam, or Tokyo
Landlocked	Gallup	Dummy for landlocked countries
PWT. Penn World Tables 7.1. Available: http://pwt.econ.upenn.edu.		
WDI. World Development Indicators. Available: http://data.worldbank.org.		
FH. Freedom House. Available: http://www.freedomhouse.org.		
Gallup: Gallup, el al (2001). Available: http://www.cid.harvard.edu/ciddata/ciddata.html.		

To match the availability of data for HDI, this study uses data for these 13 variables for the time period 1980 – 2010. As in Moral-Benito, the model will be estimated in five year increments for a total of 83 countries (six five-year intervals for each of the 83 countries for a total of 498 observations). The countries used in this study are listed in Table 2.

The model is estimated for five-year intervals in order to minimize the serial correlation in the transitory component of the error term of the model.[2] The model

[2] See Durlauf, et al (2005) for a discussion of this issue.

will be estimated using the Arellano and Bond (1998) Dynamic Panel Estimation procedure[3]. This model includes the lagged value of the dependent variable (GDP per capita growth) as a predictor and uses first differences of the independent variables as instruments to control for endogeneity.[4]

Table 2 List of Countries		
Algeria	France*	Nicaragua
Argentina	Gabon	Norway*
Australia*	Gambia	Pakistan
Austria*	Greece*	Panama
Bangladesh	Guatemala	Paraguay
Belgium*	Honduras	Peru
Belize	Hungary	Philippines
Benin	Iceland*	Portugal*
Bolivia	Indonesia	Rwanda
Botswana	Iran	Senegal
Brazil	Ireland*	Sierra Leone
Bulgaria	Italy*	South Africa
Cameroon	Japan*	Spain*
Canada*	Jordan	Sri Lanka
Chile*	Kenya	Sudan
China	Korea*	Sweden*
Columbia	Lesotho	Switzerland*
Congo, DE	Luxembourg*	Syria
Conga, Re	Malaysia	Thailand
Costa Rica	Mali	Togo
Cote d'Ivoire	Malta*	Trinidad and Tobago*
Cyprus*	Mauritania	Tunisia
Denmark*	Mauritius	United Kingdom*
Dominican Republic	Mexico	United States*
Ecuador	Morocco	Uruguay*
Egypt	Mozambique	Venezuela
El Salvador	Netherlands*	Zambia
Finland*	New Zealand*	
*Classified by the World Bank as High Income (2010).		

Results for the model using growth of GDP per capita as the dependent variable are reported in Table 3. Most of the independent variables are statistically significant and have signs consistent with Moral-Benito (2012). Specifically, the results from the estimation indicate that, holding all else constant, the level of GDP

[3] See Seetanah (2006) for a discussion and demonstration of why using this dynamic panel estimation is appropriate for models of economic growth.
[4] The two variables that do not change over time (Distance and Landlocked) are used as instruments without differencing.

per capita at the start of each five-year period is negatively related to the rate of growth over that period. The average price-level of investment is negatively related to economic growth, and the average share of investment spending in GDP is positively related to growth. The population size of a country at the beginning of each five-year period is positively related to growth, but the average growth rate of the population is negatively related to growth. Economies more open to international trade are associated with faster economic growth. The indices of political rights and civil liberties are both marginally significant.[5] Of the two geographic factors, only distance was significant. The variables measuring the percent of GDP spent by government, the percent of the population living in urban areas, and the dummy variable for whether the country is landlocked are all statistically insignificant, though they all have the same signs as the posterior means found in Moral-Benito (2012).

Table 3. Dynamic-Panel Estimates (Arellano and Bond)
Dependent Variable: Growth

Independent Variable	Coefficient	Robust SE	z-statistic	p-value
Initial GDP	-0.5684	0.1079	-5.27	0.000
POP	5.89×10^{-7}	9.87×10^{-8}	5.96	0.000
Pop Growth	-0.4809	0.2390	-2.01	0.044
Urban	-0.0690	0.0563	-1.23	0.220
Openness	0.0003	0.0001	2.41	0.016
Invest Share	0.0008	0.0003	2.48	0.013
Govt Share	-0.0006	0.0008	-0.76	0.449
Invest Price	-0.0001	0.0000	-1.96	0.050
Life Expectancy	0.0019	0.0011	1.76	0.079
Political Rights	0.0045	0.0033	1.33	0.183
Civil Liberties	-0.0062	0.0038	-1.63	0.103
Air Distance	0.0037	0.0065	5.18	0.000
Landlocked	0.0017	0.0020	0.83	0.407
Lagged Dependent	0.0562	0.0481	1.17	0.243
Constant	-0.0283	0.0061	-4.61	0.000
Wald test: (H_0: $\beta_i = 0$ for all i)	χ^2 (df = 12) = 134.41		p-value = 0.000	
Autocorrelation tests: (H_0: no autocorrelation)	AR(2): z = -0.42		p-value = 0.676	
Sargan test (H_0: restrictions valid)	χ^2 (df = 35) = 41.07		p-value = 0.222	

3. The Human Development Index (HDI)

The Human Development Report: 2013 reports HDI (and its components) for 1980, 1990, 2000, 2005, and 2010. In order to estimate a model using the same five-year growth intervals as in Section I, it is necessary to generate, using current methods, the HDI value for the years 1985 and 1995 for all 83 countries in the

[5] The index of political rights is positively related to growth and the index of civil liberties is negatively related. These are the opposite signs that Moral-Benito (2012) finds. These two indexes are highly correlated.

sample. The details of the calculations necessary are given in the "Technical Notes" of *The Human Development Report: 2013*. Briefly, the HDI is composed of three indices: a Health Index, a Knowledge Index, and a Decent Standard of Living Index. The HDI is a geometric mean of these three indices.

The Health Index is based on life expectancy at birth. This data is available for the 83 countries in this study in *World Development Indicators*. The Decent Standard of Living Index is based on the logarithm of Gross National Income per capita measured in purchasing power parity adjusted US dollars (*World Development Indicators*). The Knowledge Index is the geometric mean of two indices: (1) mean years of schooling (Barro and Lee (1994)) and (2) expected years of schooling (UNESCO). Each of these four variables is turned into an index by calculating;

$$I_{ct} = \frac{Value_{ct} - Min.Value}{Max.Value - Min.Value}$$

where c and t indicate country and time period. The geometric mean of the two schooling indices is again normalized as in the equation above in order to form the Knowledge Index. The geometric mean of the three indexes (Health, Standard of Living, and Knowledge) is the Human Development Index.

A Growth Model of HDI

Using the rate of change in HDI for each country over the six five-year periods as the dependent variable, the growth model suggested by Moral-Benito (2012) is again estimated. The results are reported in Table 4. In general, the results from Table 4 show that many of the variables that were found to be significant for GDP growth are statistically insignificant in the model estimating growth in HDI. Specifically, the level of openness of the economy, the share of investment spending in GDP, the price level of investment goods, and the distance from a major port are insignificant in the HDI growth model when all were significant (at a 5% significance level or lower) in the model of GDP growth. The only variables that are significant in GDP and HDI growth are: (1) the initial level of GDP; (2) population; (3) average population growth over the five-year periods; and (4) life expectancy (measured at the beginning of the five-year periods).

The most interesting of the four significant variables in the HDI growth model are population growth and life expectancy. These two variables actually increased in statistical significance compared with the GDP growth model, while the other two variables followed the same pattern as the other variables in the GDP growth model in being less statistically significant in the HDI growth model. In addition, these two variables (population growth and life expectancy) changed signs. Population growth (measured as an average over the five-year periods) is negatively related to growth in GDP per capita but is found to be positively related to HDI growth. Life expectancy

(measured at the beginning of each five-year period) is positively related to GDP per capita growth but is negatively related to HDI growth.

That the coefficient for the initial value of life expectancy is different between the two dependent variables undoubtedly is due to the fact that life expectancy is the variable on which the Health Index (1/3 of the HDI) is based. The fact that this coefficient is negative in the HDI model would seem to be on the same grounds that the coefficient for initial GDP per capita is negative in both the GDP growth model and the HDI growth model. Holding all else constant, countries that are further along in the development process will grow more slowly than countries that are at an earlier stage in the development process. This is the conditional convergence hypothesis. Generally speaking, the argument is that less developed countries can copy advances in technology already developed by more advanced economies, which is cheaper and easier than developing their own technologies[6].

Table 4. Dynamic-Panel Estimates (Arellano and Bond)
Dependent Variable: Percentage change in HDI

Independent Variable	Coefficient	Robust SE	z-statistic	p-value
Initial GDP	-0.2272	0.0839	-2.71	0.007
POP	$1.59x10^{-7}$	$6.42x10^{-8}$	2.48	0.013
Pop Growth	0.5757	0.1334	4.31	0.0000
Urban	-0.0229	0.0383	-0.60	0.550
Openness	-0.0001	0.0001	-0.96	0.337
Invest Share	0.0003	0.0002	1.51	0.130
Govt Share	-0.0005	0.0005	-1.06	0.287
Invest Price	$-3.07x10^{-6}$	$1.4x10^{-5}$	-0.22	0.827
Life Expectancy	-0.0031	0.0009	-3.58	0.000
Political Rights	-0.0012	0.0014	-0.89	0.372
Civil Liberties	0.0021	0.0017	1.22	0.223
Air Distance	-0.0002	0.0004	-0.41	0.682
Landlocked	0.0009	0.0023	0.38	0.703
Lagged Dependent	0.0521	0.1145	0.45	0.349
Constant	0.0079	0.0044	1.78	0.075
Wald test: (H_0: β_i= 0 for all i)	χ^2 (df = 12) = 81.61		p-value = 0.000	
Autocorrelation tests: (H_0: no autocorrelation)	AR(2): z = 0.70		p-value = 0.485	
Sargan test (H_0: restrictions valid)	χ^2 (df = 35) = 33.63		p-value = 0.534	

In parallel fashion, it can be argued that there are few, if any, changes that highly developed countries can make to increase life expectancy, while there are many relatively inexpensive steps that countries with currently low life expectancy can take to drastically increase life expectancy. Good health, as measured by life expectancy, seems to be an important condition for countries to grow economically (since life expectancy is a significant variable in the GDP growth mode), but high levels of current life expectancy make it difficult for a country to drastically improve its level of good health further.

[6] See Konya and Guisan (2008) for an analysis of convergence using the HDI.

As a test of this explanation for the change in sign, the HDI growth model was re-estimated with all four index components (measured at the beginning of each five-year period) used as pre-determined variables in the model (and dropping initial GDP). As expected, each of the four components used in the construction of HDI (log of GNI per capita, expected years of schooling, mean years of schooling, and life expectancy) have coefficients that are negative and significant (at the 5% level or lower). The only other variables in this model of HDI growth that remain significant are population (positive with a p-value of 0.063) and population growth (positive with a p-value of 0.000).

It is less obvious why the sign of the coefficient of population growth should be negative for GDP growth but positive for HDI growth. As a flow variable, population growth is measured as an average over the five-year periods, while stock variables, such as population, are measured at the beginning of each five-year period. This is consistent with the economic growth literature.[7] One possible explanation for the positive relationship between HDI and population growth may be the relationship between health and fertility. Studies of fertility have found consistently that in the early stages of development increases in health are associated with increasing rates of growth of the population. This occurs because children are more likely to live to adulthood and those already born live longer. At higher levels of development, of course, the rising cost of raising children (and the greater likelihood of children living into adulthood) decreases the number of children each family wishes to have. Early in the development process, though, increases in health (i.e., life expectancy, which is a component of HDI) would be associated with increases in population growth. Thus, this model might be capturing the fact that improvements in health use an increase in life expectancy, leading to HDI growth and, at the same time, improvements in health also lead to increases in population growth rates.[8]

4. Is HDI Growth Different?

From its inception, critics of HDI have questioned the extent to which it provides additional information about relative levels of development (e.g., McGillivray (1991)), given the high and significant correlations among GDP per capita and HDI and its components. If this view is correct, an alternative explanation for the difference in results for estimates of the GDP growth model and the HDI growth model is that the two models are identical except that the HDI growth model is estimated using a dependent variable measured with error.

Let y be the correct dependent variable and y* be the same dependent variable measured with error. The correct model is:

$$y = \alpha + \beta x + \varepsilon$$

If the variable measured with error were used the estimated model becomes

[7] See Caselli et al. (1996).

[8] China is a clear outlier in this data set with regards to population. Estimating both the GDP growth model and the HDI growth model without China changes the value of the coefficient for population in both models but not the significance or sign of any variable.

$$y^* = a + bx + u$$

Where

$$y^* = \varphi y + \delta$$

Assuming that the errors in measurement of y* are uncorrelated with the independent variables x[9] then

$$u = \varphi\varepsilon + \delta$$

From the results of the GDP growth model it is possible to derive estimates of ε. In a similar manner, estimates of φ and δ can be obtained from estimating an equation using HDI growth as the dependent variable and GPD per capita growth as the independent variable. This estimate of u gives us an idea of how much of a change in significance could be expected between the two models if the only difference between them was that HDI growth was simply a poorly measured estimate of GDP per capita.

Applying this simple errors-in-the-dependent-variable model to this data would imply that the standard error of the coefficient estimates would be inflated (and thus the z value for the test of significance to be understated) by 5.5%. Actually comparing the z values from the GDP growth model and the HDI growth model finds that the z values are lower by an average of 27.4%.

The idea that HDI is simply a redundant estimate of GDP per capita is not inconsistent with these findings, but the simple errors-in-the-dependent-variable model used is insufficient to completely explain the results. This analysis suggests that indeed HDI is measuring something different form growth in GDP per capita even if this model is unable to find any statistically significant explanations for growth in HDI. The search for variables that are significantly related to HDI growth could lead to useful insight into the development process, which would differ from the standard economic growth models using GDP per capita growth.

The list of potential variables related to HDI growth (but not GDP per capita growth) is wide and varied. As one possible variable consider development aid. Development aid has generally not been found to be significantly related to GDP per capita growth. This is found to be the case for the model and data set used in this study. When the variable Official Development Aid (net as a percent of GNI, from *World Development Indicators*) is added to the model reported in Table 3, the variable is insignificant (z = -0.74, p-value = 0.458). When added to the model reported in Table 4, using HDI growth as the dependent variable, the variable is also insignificant (z=-0.21, p-value = 0.833). At least in this case, HDI growth is not different than GDP per capital growth (and the lower significance is consistent with the measurement error model).

[9] This is clearly incorrect since we know that the at least two of the independent variables (life expectancy and population growth) are correlated with the difference between y and y*. The assumption of independence is the extreme case and makes it possible to estimate the effect of a pure measurement error.

Table 5. Dynamic-Panel Estimates (Arellano and Bond)
Sample of developing countries (55)
Dependent Variable: Growth

Independent Variable	Coefficient	Robust SE	z-statistic	p-value
Initial GDP	-0.4536	0.1050	-4.32	0.0000
POP	4.56×10^{-7}	1.23×10^{-7}	3.70	0.000
Pop Growth	-0.3907	0.2575	-1.52	0.129
Urban	-0.0499	0.0758	-0.66	0.511
Openness	0.0003	0.0002	1.87	0.062
Invest Share	0.0007	0.0003	2.54	0.011
Govt Share	-0.0004	0.0009	-0.48	0.632
Invest Price	-0.0001	0.0000	-1.66	0.097
Life Expectancy	0.0023	0.0012	1.94	0.056
Political Rights	0.0043	0.0039	1.10	0.272
Civil Liberties	-0.0060	0.0046	-1.30	0.194
Air Distance	0.0035	0.0028	1.25	0.213
Landlocked	0.0020	0.0028	0.74	0.458
Lagged Dependent	0.0013	0.0519	0.02	0.980
Constant	-0.0271	0.0248	-1.09	0.275
Wald test: (H_0: $\beta_i = 0$ for all i)	χ^2 (df = 12) = 79.37		p-value = 0.000	
Autocorrelation tests: (H_0: no	AR(2): z = -0.79		p-value = 0.428	
Sargan test (H_0: restrictions valid)	χ^2 (df = 35) = 38.04		p-value = 0.333	

Another possible explanation for these results is that the sample of countries used for the study of the HDI is too broad. The HDI is not intended to be able to make minor distinctions among already highly developed countries but to highlight differences in development among countries that are still developing. To investigate this possibility the models for GDP per capita growth and growth in HDI have been re-estimated using only countries that are not already highly developed.[10] The results when the data is restricted only to developing countries are reported in Tables 5 and 6.

The changes between Tables 3 and 5 are minor. A few of the variables that were significantly related to GDP growth for the full sample become less significant in the sample restricted to developing countries. Specifically distance from a major port (Air Distance) and the population growth rate are insignificant in the model estimated for only the developing countries. There are, however, no changes in the results for the model of HDI growth when Tables 4 and 6 are compared. In both cases the same four variables (Initial GDP, Population, Population growth, and Life Expectancy) are significant. This is consistent with the hypothesis that the results for the model of HDI growth are being driven by the growth of HDI in the developing countries. It does not

[10] These countries are identified in Table 2.

indicate, though, that the determinants of HDI growth are different from the determinants of GDP growth.

Many of the UN publications that look to the HDI for insight emphasize that it is not the value of the HDI that is important but instead rely on the rank order of countries for insight.

Table 6. Dynamic-Panel Estimates (Arellano and Bond)
Sample of developing countries (55)
Dependent Variable: Percentage change in HDI

Independent Variable	Coefficient	Robust SE	z-statistic	p-value
Initial GDP	-0.2682	0.0967	-2.77	0.006
POP	1.99×10^{-7}	9.02×10^{-8}	2.20	0.028
Pop Growth	0.5894	0.1155	5.10	0.000
Urban	-0.0417	0.0458	-0.91	0.362
Openness	-0.0001	0.0001	-0.92	0.358
Invest Share	0.0004	0.0002	1.62	0.105
Govt Share	-0.0005	0.0005	-0.96	0.338
Invest Price	1.24×10^{-6}	1.69×10^{-5}	0.07	0.942
Life Expectancy	-0.0030	0.0007	-4.26	0.000
Political Rights	-0.0010	0.0016	-0.64	0.519
Civil Liberties	0.0022	0.0021	1.02	0.307
Air Distance	-0.0025	0.0016	-1.53	0.126
Landlocked	0.0015	0.0029	0.53	0.599
Lagged Dependent	0.0612	0.1183	0.52	0.605
Constant	0.0280	0.0145	1.93	0.053
Wald test: (H_0: $\beta_i = 0$ for all i)	χ^2 (df = 12) = 93.78		p-value = 0.000	
Autocorrelation tests: (H_0: no autocorrelation)	AR(2): z = 0.66		p-value = 0.507	
Sargan test (H_0: restrictions valid)	χ^2 (df = 35) = 48.08		p-value = 0.069	

Table 7 reports the result of using the growth model variables to model the change in country rank order. Qualitatively, the results are similar to those in Table 4. Both population size (positive) and life expectancy (negative) are significant. For the model of rank order change the growth rate of population is insignificant while investment spending as a share of GDP is significant. These results are marginally more similar to the results reported in Table 3 for GDP growth. The overall results from Tables 4 and 7, though, would indicate that it is difficult to discern a pattern in what factors might lead countries to change their value or ranking in HDI.

Table 7.Dynamic-Panel Estimates (Arellano and Bond)
Dependent Variable: Change in HDI Rank Order

Independent Variable	Coefficient	Robust SE	z-statistic	p-value
Initial GDP	-19.1468	11.9790	-1.60	0.110
POP	0.0003	0.0000	2.58	0.010
Pop Growth	20.8040	16.4510	1.26	0.206
Urban	-8.0537	10.5977	-0.76	0.447
Openness	-0.0057	0.0124	-0.46	0.648
Invest Share	0.0706	0.0255	2.77	0.006
Govt Share	-0.1007	0.0669	-1.51	0.132
Invest Price	0.0017	0.0025	0.66	0.509
Life Expectancy	-0.6851	0.0829	-4.64	0.000
Political Rights	-0.3141	0…18	-0.95	0.344
Civil Liberties	0.4686	0.5463	0.86	0.391
Air Distance	-0.1098	0.0908	-1.21	0.227
Landlocked	0.1297	0.3415	0.38	0.704
Lagged Dependent	-0.0559	0.0805	-0.69	0.488
Constant	1.5280	0.7917	1.93	0.054
Wald test: (H_0: β_i= 0 for all i)	χ^2 (df = 12) = 71.54		p-value = 0.000	
Autocorrelation tests: (H_0: no autocorrelation)	AR(2): z = -0.98		p-value = 0.326	
Sargan test (H_0: restrictions valid)	χ^2 (df = 35) = 28.12		p-value = 0.789	

5. Conclusions

Economists have been studying GDP, GDP per capita, and the growth of GDP per capita for a considerable time. Alternative measures of development such as HDI have been available for a much shorter period and are only now accumulating a complete enough series that we can begin to compare the behavior of these measures to the behavior of the traditional economic measures of GDP. This study is only an early attempt at such a comparison. At this early stage, though, the data that is available would seem to be consistent with the observation that HDI, while an interesting attempt, does not provide much in the way of additional information to GDP per capita--at least not when looking for overall statistical significance.

It may be that HDI allows us to identify countries that take unusual paths of development, at least for a certain time period. In the aggregate, though, evidence indicates that most countries follow similar enough paths of development that Health and Knowledge follow along with Income so that studying just one of these variables (income) tells us more than trying to aggregate all three.

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