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National symbols, globalization, and the well-being of nations

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**REEPS WORKING PAPER No. 20091****National symbols, globalization, and the well-being of nations****Voxi Heinrich Amavilah**

Abstract: I estimate the effects of national symbols and globalization on the well-being of 88 countries. I find that conventional determinants of production affect national well-being, measured as human development index (HDI). The effects on HDI of national symbols like national flag colors are unstable, while those of globalization are strong, with social globalization having the strongest effect. The results suggest that national symbols are important to national well-being, but nations gain more from global interactions with other nations than from national pride. Even as there is a need for further research to improve upon the results associated with the effects of national symbols, the policy implications of the findings clearly recommend increased investment in material conditions of nations and globalization. **JEL Code:** O43, O57, H77, F43, O11, D31, Z00

Keywords: National identity, national colors, globalization, well-being of nations, human development index (HDI), national flag colors

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1. Introduction

A decent state of well-being, however measured, is the ultimate objective of every economic agent, nations included. While economic anthropologists and others are convinced that the 'problems of production and distribution, of value and economic motivation, of allocation of available means for the realization of desired ends, were universals in human experience' (Herskovitz, 1964, p.7), performance economists continue to ponder the deep causes of, and observed cross-country differences in, human well-being. The continued pondering indicates incomplete knowledge and understanding of the determinants of human well-being.

In this exploratory empirical paper I argue that, besides conventional factors and forces, the well-being of nations depends on national symbols and global interactions. I represent national symbols with national flags and national flag colors, and global interactions with globalization. Then I utilize a simple production function approach to quantify the effects of national symbols and globalization on human well-being in 2007. The assessment sheds additional light on a worthwhile issue. Moreover, in the interactive world we live in, national symbols and globalization seem policy incongruent. For instance, is the preservation of national symbols consistent with global integration? If national symbols and globalization both promote human well-being, what conclusions can policy infer from such a result?

I find that the conventional factors and forces of capital and the growth of labor affect national well-being positively and negatively, respectively. Increased globalization leads to a higher HDI, but different types of globalization have different effects on HDI, with the effect of social globalization being greater than the effect of political globalization, which is in turn greater than the effect of economic globalization. National symbols have mixed effects on HDI in terms of the estimate sign, magnitude, and statistical significance (i.e., overall parameter efficiency). It generally appears that globalization and national symbols represent competing forces - a maintained assertion for now. Tested is that variations in HDI across broad geographic regions are approximately the same in terms of magnitude and negative sign.

From the coefficients of conventional factors and forces I infer that GDP (PPP) per capita is an essential determinant of national well-being. Non-economic factors like national symbols affect national well-being; however, their effects are positive when considered in isolation and negative in light of globalization, for example. Now whether nations seek to strengthen their national independence or their global interdependence is a marginal cost/benefit decision. In this analysis evidence favors globalization, especially social globalization. This conclusion is not altered by regional variations, although the instability of the estimated effects of national symbols indicates a need for further research on this topic.

The remainder of the paper describes my journey, so to speak. In Section 2 below I outline the scanty relevant literature. Section 3 focuses on the empirical analysis. First, it builds a

model. Second, it describes the data, and thirdly, implements the model. Section 4 presents preliminary findings and their implications, while the final section makes a tentative conclusion.

2. The scanty relevant literature

The literature on the human well-being of nations is vast, and the vastness makes sense since well-being is ultimately the objective of every economic agent. As May (2007) points out, the concept of utility in the microeconomic theory of consumer behavior reflects the centrality of well-being in life. Quantitative measures of human well-being (welfare) now attract considerable attention (Kahnemann, Diener, and Schwarz, 2003, Bruni and Porta, 2007), but at the national and cross-national levels it was not long ago when a breakthrough of sorts came by way of Anand and Sen's (1994) successful development of the first comprehensive index of human development - the human development index. (HDI). The advantage of the HDI over GDP per capita as a measure of well-being is that it is *actually* three-dimensional, and *potentially* multidimensional.¹ To-date major improvements have been made on the first generation of HDI (Clark and McGillivray, 2007, Clarke and McGillivray, 2006, Mishra and Nathan, 2008). Clearly, both the new and old literature indicate that measured as happiness well-being is a function of economic and non-economic factors. Key among economic factors is income which defines the consumer's consumption possibilities. As a flow income depends on the stock of productive resources and wealth. Building wealth and improving productive resources require scarce time and efforts for which leisure is an opportunity cost. Non-economic factors include social, cultural, political, and psychological environments (see Hoselitz, 1952). Despite this acknowledgment, most literature still uses per capita income as a proxy for human welfare.

In a related area, the nexus between economic growth and globalization draws mainly from economic growth and trade theories. Hence, from Axel Dreher's (2003) finding that globalization promotes economic growth, for example, many economists would have no problem inferring that globalization is good for human well-being. Indur M. Goklany (2002) observes positive the effects of globalization on human well-being, and concludes that '... in terms of the truly critical measures of well-being - hunger, infant mortality, life expectancy, child labor - the countries of the world are much closer to being equal now than they were a few decades ago' (p. 15). Yet continued debate indicates globalization is not omni-good. For example, Ming-Chang Tsai (2006) uses a random effect model to estimate the impacts of globalization on human well-being, and finds a direct direct correlation between human development and globalization. However, the positive effects are neutralized by the negative indirect effects of globalization by way of debilitated state power, and increased social

¹A literature that extends the HDI applications to poverty, gender, and other issues of (in)equality and redistribution is fast growing.

spending and instability. In the end only the impacts of political globalization are positive, 'whereas economic and social globalization do not generate favorable influences when development level and regional differences [serve] as controls' (see paper abstract). There is room for another look.

Moreover, while it is common to see regressions of economic growth that take as arguments institutional aspects like corruption and constitutions, evidence about a direct connection between well-being and its deeper 'causes' is still scanty. Inspired by works about the value of cultural goods and services such as Kinsey (2002), Throsby (2001), and Baumol and Bowen (1966), Amavilah (2008a) supposes a relationship between national flags and national flag colors and HDI across 93 nations in 2007.² He finds an inverse correlation between HDI and flag colors and a positive relationship between flag existence and HDI. In another paper Amavilah (2008b) also argues for a relationship between HDI on one side, and flags, flag colors, number of original articles in a constitution, and number of constitutional changes on the other. Again the results confirm the first paper, in addition to revealing negative coefficients of the number of original articles of constitution, and number of constitutional changes. The current paper augments Amavilah (2008a) by making HDI a function of conventional factors and forces, national symbols, and globalization.

Empirical analysis

This section outlines the model, data, and the model estimations.

3.1 Model

To quantify the effects of national symbols and globalization on the national well-being of nations, I measure well-being by the human development index (HDI). I follow the conventional wisdom in preferring HDI to per capita GDP because HDI is a broader measure of human socio-economic development. It includes the knowledge (education) of the population (H1), the health (life-expectancy) of the population (H2), and the per capita material condition of the population (Y), see, e.g., Clark and McGillivray (2007).

However, we also know from the works of Myrdal (1968), Blaug (1970), Cohn (1979), Schultz (1981), Becker (1996), and many others that H1 and H2 are elements of the human capital (H) component of the economically-active population (N). Thus, human well-being indexed by N can be stated as

²The inspiration is an indirect one; it provided motivation in the face of discouragement that such research is futile and silly.

$$[N \cdot e^{HDI}] = H^{a_1} Y^{a_2}, \quad a_1 + a_2 \leq 1, \quad (1)$$

where a_1 and a_2 are weights. Moreover, Amavilah (2008c) argues that basing H on the quality of labor (L) alone overestimates its importance. Rather, $H=f(N)$, such that we can claim that

$$H = e^{\phi \ln q} N, \quad (2)$$

where q is a vector of measures of the quality attributes of N. Now, if we suppose that the material conditions (Y) of N evolve according to the Cobb-Douglas transformation, and that L grows exogeneously at the rate n equal to the rate of growth of N, then

$$Y = (AL)^\alpha K^{1-\alpha}, \quad \text{for } L = e^{nt} N, \quad (3)$$

where A = state of technology, L = labor, and K = physical capital. This means that inserting (2) and (3) into (1) and simplifying gives

$$[N \cdot e^{HDI}] = A^{a_2 \alpha} K^{a_2(1-\alpha)} e^{a_1 \phi \ln q + a_2 n} N^{a_1 + \alpha a_2}, \quad (4)$$

where $t = 1$ for cross-section data. Set $A^{a_2 \alpha} = A_0$, $a_2(1-\alpha) = \beta$, $a_1 \phi = \gamma$, $a_2 \alpha = \delta$. Then dividing through (4) by N and taking the natural logarithms on both sides leads to

$$HDI = a_0 + \beta \ln k + \gamma \ln q + \delta n, \quad a_0 = \ln A_0 = a_2 \alpha \ln A. \quad (5)$$

3.2. Data and data sources

I focus on 88 countries for which data is readily available (see also Amavilah, 2008a, b).³ The data for HDI, N, and n are available from different places, including the UNDP's *World Human Development Reports* (WDRs, various), the CIA's *World Factbook* (various), and Wikipedia (2008). I rely on WDRs. Capital (K, k) is the percentage of GDP that goes into fixed capital formation as given by the IMF's

Table 1 - Descriptive statistics

³For the list of countries in this subsample of 88 and the whole sample of 93 see Amavilah (2008a). For the subsample of 59 countries see Amavilah (2008b).

Name	No.					
	Observations	Mean	St. Deviation	Variance	Minimum	Maximum
Country	88	44.500	25.547	652.670	1.000	88.000
HDI	88	0.789	0.156	0.0244	0.370	0.968
Population (N)	88	60.067	187.270	35071.000	0.300	1324.400
GDP(PPP)	88	657.740	1746.700	0.305E+07	2.900	13844.000
Capital(K)	88	22.612	5.715	32.658	9.780	42.610
Health (H1)	88	71.367	9.739	94.843	42.500	82.000
Education (H2)	88	87.044	17.579	309.030	12.800	99.900
Flag (White)	88	5.000	0.000	0.000	5.000	5.000
Flagcolors	88	13.795	5.268	27.751	2.000	37.000
N-growth (<i>n</i>)	88	1.259	2.497	6.233	-0.900	22.700
aGlobe	88	68.002	14.565	212.130	34.910	98.920
eGlobe	88	67.016	17.246	297.420	8.040	96.670
sGlobe	88	62.336	19.424	377.310	21.450	93.850
pGlobe	88	77.243	16.253	264.160	40.910	98.030

International Financial Statistical (IFS) Yearbook (2007). Human capital (H) has two dimensions: Literacy rate/education (H1) and life expectancy (health) at birth (H2). GDP (PPP) (Y) is per capita GDP in terms of purchasing power parity (PPP). H1, H2, and Y are available from a variety of sources including the IFS, CIA, and WDRs.

The two key variables of interest are national symbols and global interactions. As indicated above, I represent national symbols and global interactions by national flags and national flag colors, and globalization, respectively. To generate dummy variables for national symbols, let White indicate the existence of a flag for each country. Scanning national flags indicates that Blue (B), Red (R), Yellow (Y), Green (G), and Black (BI) as common flag colors (see photius.com, 2008, flagpedia.net, 2008). Next I arbitrarily set $W = 5$, $B = 4$, $R = 3$, $Y = 2$, and $Bl = 1$. From here the values of other colors are *arbitrary* combinations of dominant colors. For example $Green = Y \times B = 2 \times 4 = 8$, $Purple = Blue \times Red = 4 \times 3 = 12$, and so on. Two examples: The U.S. flag is Red, White, and Blue, on White. Since White on White is White, the value is $White + Red + Blue = 5 + 3 + 4 = 12$. Cameroon's flag is Green, Red, and Yellow, set on White. The dummy value in this case = $White + Green + Red + Yellow = 5 + 8 + 3 + 2 = 18$. By examining national flags for all 88 countries in the sample, dummy variables for flag colors were generated, see Amavilah (2008a, b).

Globalization data are KOF data available and explained at <http://globalization.kof.ethz.ch/>, and in Axel Dreher (2003) and Dreher, Gaston, and Martens (2008).⁴ They come in one aggregate and three disaggregates. The aggregate is called the 'Index of Globalization' (aGlobe). The three disaggregates are the 'Index of Economic Globalization' (eGlobe), 'Index of Social Globalization' (sGlobe), and the 'Index of Political Globalization' (pGlobe). Table 1 presents descriptive statistics.

Regional dummies take the value of one if a country is in a specific region and zero otherwise. I divide the countries in five broad regions: Asia and Australia (Australasia), Africa and the Middle East (AfriMidEast), North America (NorthAmerica), South America (SouthAmerica), and Europe.

3.3 Model implementation

⁴I acknowledge Dr Axel Dreher for an extended email conversation he and I had about his papers and the KOF globalization. As usual, I attribute no blame to him for my errors.

Eq. (5) is the estimation equation. It does no longer include Y and H, both dimensions of HDI already. Instead, in q I include national symbols and measured elements of global interactions, where, again, national symbols are national flags and national flag colors, and global interactions are globalization that can be either aggregate or disaggregate. In other words, (5) is

$$HDI = \alpha_0 + \beta \ln k + \gamma \ln \text{National Symbols} + \phi \ln \text{Globalization} + \delta n + e. \quad (6)$$

I use the OLS estimator on (6), making the usual White's (1980) adjustments for statistical problems. I err in favor of economic significance vis-a-vis statistical significance. I calculate regional HDI as follows:

$$HDI(\text{regional}) = \text{Effect}(\text{regional}) + \beta \ln k + \gamma \ln \text{National Symbols} + \phi \ln \text{Globalization} + \delta n + e. \quad (7)$$

4. Preliminary results and their implications

4.1 Non-essential results

I first estimate H in (1) in its education/literacy rate (H1) and its health/life expectancy (H2) dimensions, and obtain

$$N \cdot \exp(HDI) = \exp(-2.3566) H_1^{-0.58242} H_2^{0.7546} Y^{0.8278}$$

$$T\text{-ratios:} \quad -13.821 \quad -1.763 \quad 2.254 \quad 16.706 \quad (8)$$

$$Adj.R^2 = 0.7354, SEE = 0.8257, DW[\rho] = 2.1822[-0.095].$$

Since $\alpha_{1H1} + \alpha_{2H2} = 1 \Rightarrow H_1 + H_2 = H$, then (6) is the equivalent of

$$HDI = 0.8278 \alpha \ln A + 0.8278(1 - \alpha) \ln k + (0.7346 - 0.5824) \phi \ln q + 0.8278 \alpha n, \quad (9)$$

where

$$0.8278 \alpha \ln A = \alpha_0, \quad 0.8278(1 - \alpha) = \beta, \quad (0.7346 - 0.5824) \phi = 0.17044 \phi = \gamma, \quad 0.8278 \alpha n = (\beta - 0.8278) = \delta.$$

Table 2 - National symbols, globalization, and national well-being

Variable	Estimation 2.1	Estimation 2.2	Estimation 2.3	Estimation 2.4	Estimation 2.5	Estimation 2.6
Conventional						
• Constant	-1.909(-10.54)	-1.278(-7.15)	None	None	None	None
• Capital (k)	0.034(1.27)	0.027(0.83)	0.031(1.22)	0.021(0.77)	0.031(1.21)	0.022(0.80)
• N-growth (n)	-0.003(-2.39)	-0.004(-3.36)	-0.003(-2.12)	-0.003(-2.56)	-0.003(-2.15)	-0.003(-2.60)
National symbols						
• Flagcolor (all)	0.010(0.57)	-0.019(-1.08)	0.009(0.54)	-0.021(-1.24)		
• Flagcolor (lessW)					0.001(0.74)	-0.002(-1.50)
Globalization						
• Average	0.613(17.78)		0.614(12.45)		0.622(12.39)	
• Economic		0.038(1.59)		0.026(1.47)		0.025(1.50)
• Social		0.336(12.93)		0.343(11.92)		0.343(11.90)
• Political		0.118(4.57)		0.085(3.71)		0.094(3.60)
Region						
• Australasia			-1.878(-7.80)	-1.102(-5.54)	-1.893(-8.19)	-1.133(-6.0)
• AfriMidEast			-1.923(-8.83)	-1.168(-6.29)	-1.937(-9.33)	-1.196(-6.9)
• NorthAmerica			-1.901(-7.89)	-1.143(-5.77)	-1.916(-8.29)	-1.169(-6.3)
• SouthAmerica			-1.870(-7.94)	-1.085(-5.64)	-1.884(-8.34)	-1.113(-6.1)
• Europe			-1.016(-7.89)	-1.142(-5.67)	-1.932(-8.27)	-1.169(6.1)
Summary statistics						
• Adj. R-square	0.8311	0.8288	0.8389	0.8488	0.8393	0.8490
• SEE	0.0642	0.0646	0.0626	0.0607	0.0625	0.0607
• DW[ρ]	1.581[0.194]	1.378(0.130)	1.819[0.078]	1.635[0.171]	1.826[0.074]	1.637[0.17]

Table 3 - National symbols, globalization, and national well-being

Variable	Estimation 3.1	Estimation 3.2	Estimation 3.3	Estimation 3.4	Estimation 3.5	Estimation 3.6
Conventional						
• Constant	-1.845(-12.5)	-1.40(-7.9)	None	None	-1.812(-13.1)	-1.364(-9.5)
• Capital (k)	0.033(1.2)	0.29(0.9)	0.031(1.2)	0.023(0.8)		
• N-growth (n)		-0.004(-3.5)	-0.003(-2.7)	-0.003(-2.7)		
Globalization						
• Average	0.604(19.7)		0.607(12.8)		0.620(19.2)	
• Economic		0.042(1.6)		0.029(1.4)		0.046(1.6)
• Social		0.341(12.8)		0.346(11.8)		0.351(12.5)
• Political		0.125(4.9)		0.102(3.9)		0.123(4.9)
Region						
• Australasia			-1.819(-8.6)	-1.224(-6.7)		
• AfriMidEast			-1.863(-9.8)	-1.288(-7.6)		
• NorthAmerica			-1.841(-8.8)	-1.263(-6.9)		
• SouthAmerica			-1.811(-8.7)	-1.204(-6.8)		
• Europe			-1.857(8.5)	-1.259(-6.9)		
Summary statistics						
• Adj. R-square	0.8326	0.8287	0.8404	0.8484	0.8312	0.8262
• SEE	0.0638	0.0646	0.0624	0.0607	0.0641	0.0650
• DW[p]	1.567[0.202]	1.396[0.293]	1.804090.086)	1.645[0.166]	1.585[0.195]	1.394[0.29]

Given a from (1) or (8), and β , γ , and δ from (5) or (6), it is conceptually easy to show that $\hat{\alpha}=(\hat{\beta}-\hat{a}_2)/\hat{a}_2$, $\hat{\phi}=\hat{\gamma}\hat{a}_1$, $\hat{\delta}=\alpha a_2=[(\hat{\beta}-\alpha)/\hat{a}_2]\hat{a}_2=\hat{\beta}-\hat{a}_2$ - the hat (^) indicates estimated as opposed to actual values. However, while the results in (8) and (9) are illustrative, they are not the focus of this paper! Even so, one can say in passing that it appears that for this group of countries life-expectancy and per capita GDP have the largest weights, and the net weight of H is only 0.1704, much smaller than that of per capita GDP(PPP) at 0.8278.

4.2 *Essential results*

Tables 2 and 3 present essential estimation results. Across both tables and all estimations it is clear that conventional factors and forces of capital and labor affect national well-being (HDI) in important ways. Although not always statistically significant at the assumed 5% level, the positive effect of investment on HDI ranges from two to four percent. National well-being responds negatively to the growth rate of population - a familiar result. It seems that material conditions are important to the national well-being of this group of countries.

The relationship between national symbols and national well-being is rather unstable. Taken either as national flag colors (White + other colors) or just dominant flag colors, national symbols have a positive but insignificant effect on HDI, when considered without globalization or alongside aggregate (overall) globalization (aGlobe). However, when globalization is disaggregated into economic (eGlobe), social (sGlobe), and political (pGlobe) globalization, the effects of national symbols become negative. This result suggests that although national symbols are important aspects of national well-being, nations gain more from global interactions than from national isolation.

By how much do nations gain from globalization? Estimation results indicate that a dollar's worth of an increase (improvement) in overall globalization adds no less than \$0.60 to HDI. Economic globalization has the smallest effect on the HDI of this group of countries, followed by political globalization. An improvement of one dollar in social globalization, for example, leads to a significant increase of about \$0.35 in HDI. That economic globalization has the smallest effect on HDI is surprising, and appears to render support to the opponents of free international trade and finance. However, the result may also be an aberration due in part to the fact that the sample is comprised of a large number of countries with very high HDI for which gains from economic and political globalization are potentially smaller than from social globalization. In a way the benefits of globalization are in enhancing the mutual interdependence of nations. The scope for mutual interdependence is greater in the sphere of social globalization than in the economic and political spheres.

Figure 1- National well-being under varying scenarios - Comparative statics I

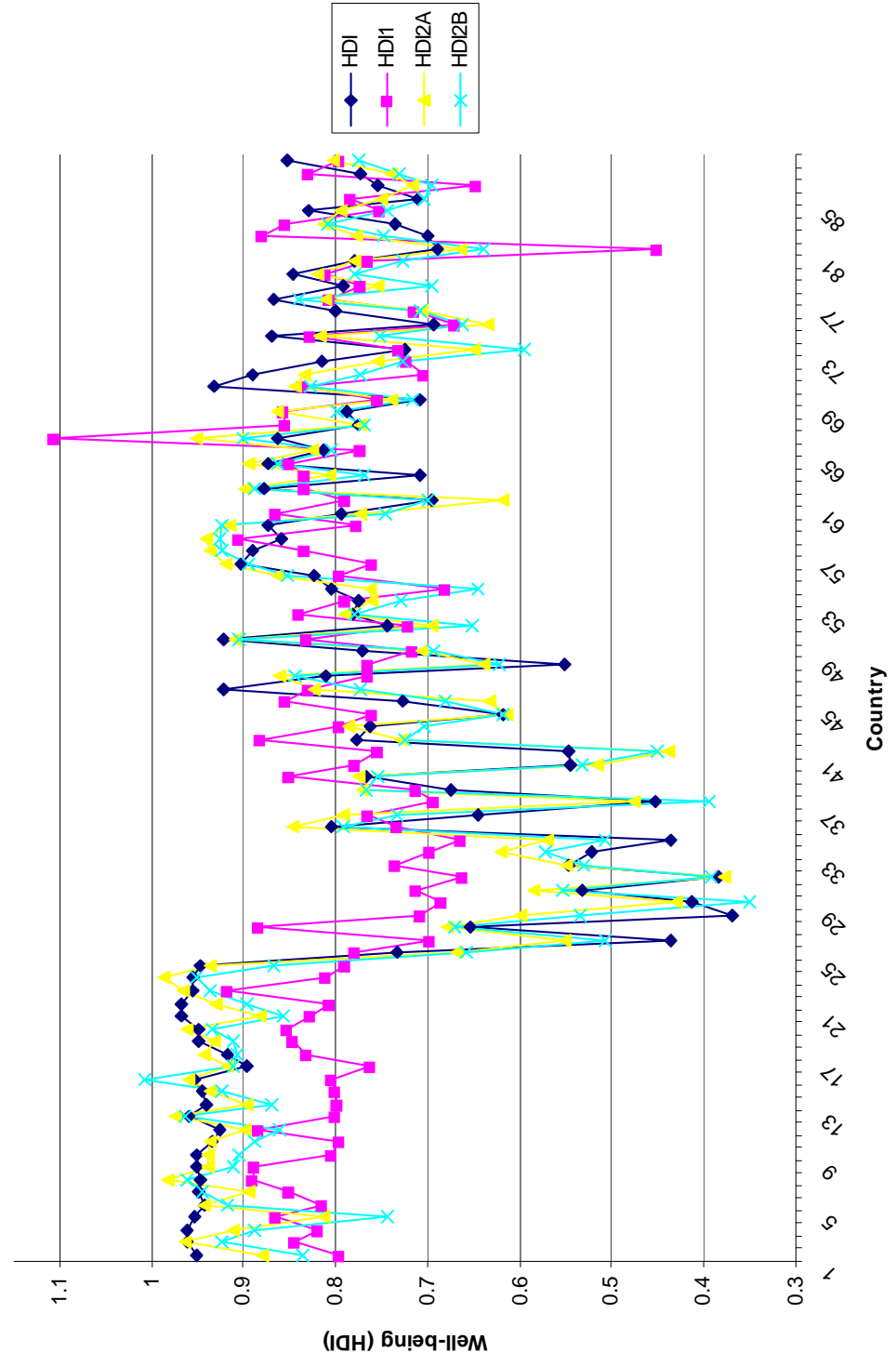


Figure 2 - National well-being under varying scenarios - Comparative statics II

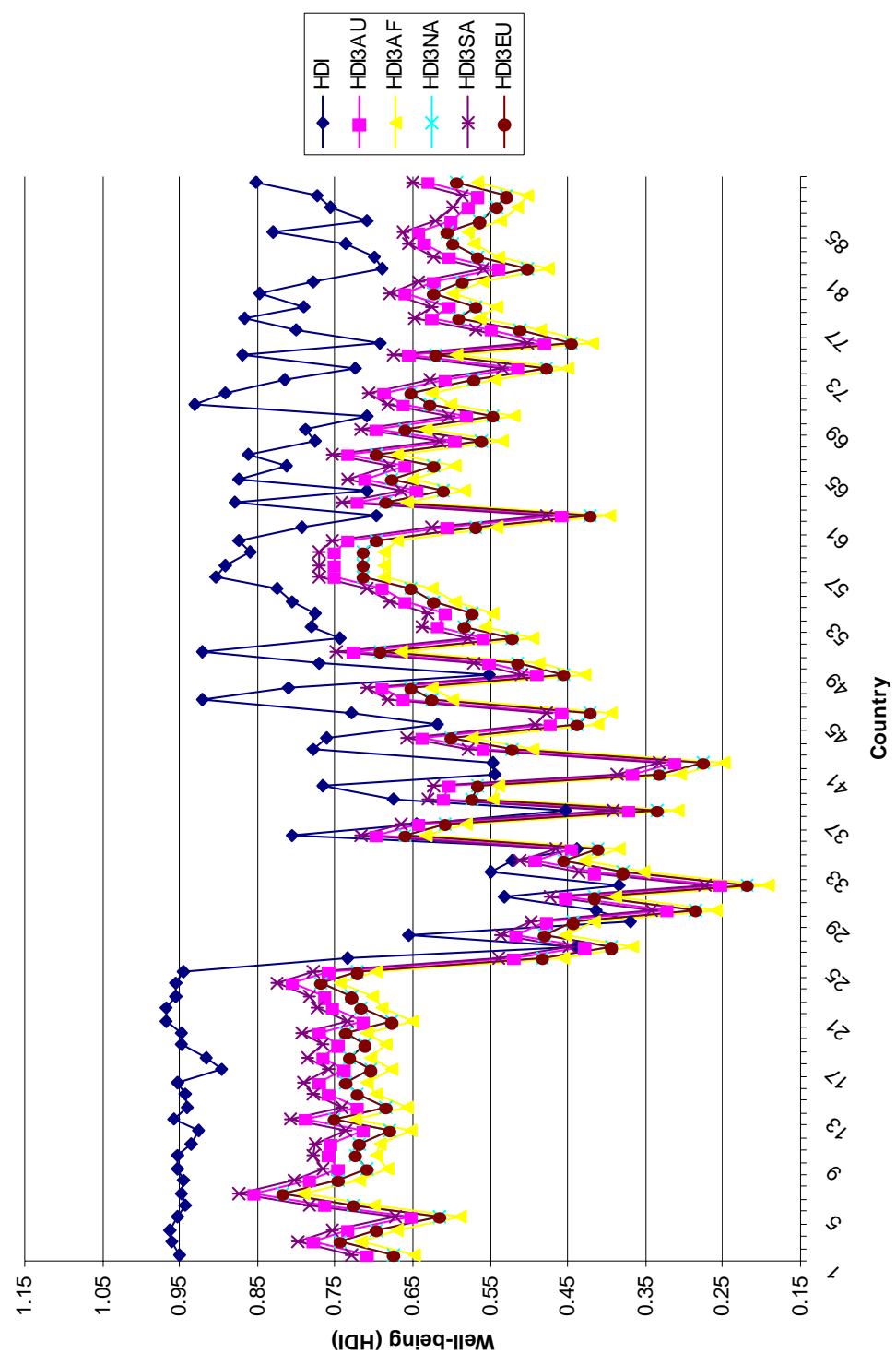


Figure 3 - National well-being under varying scenarios - Comparative statics III

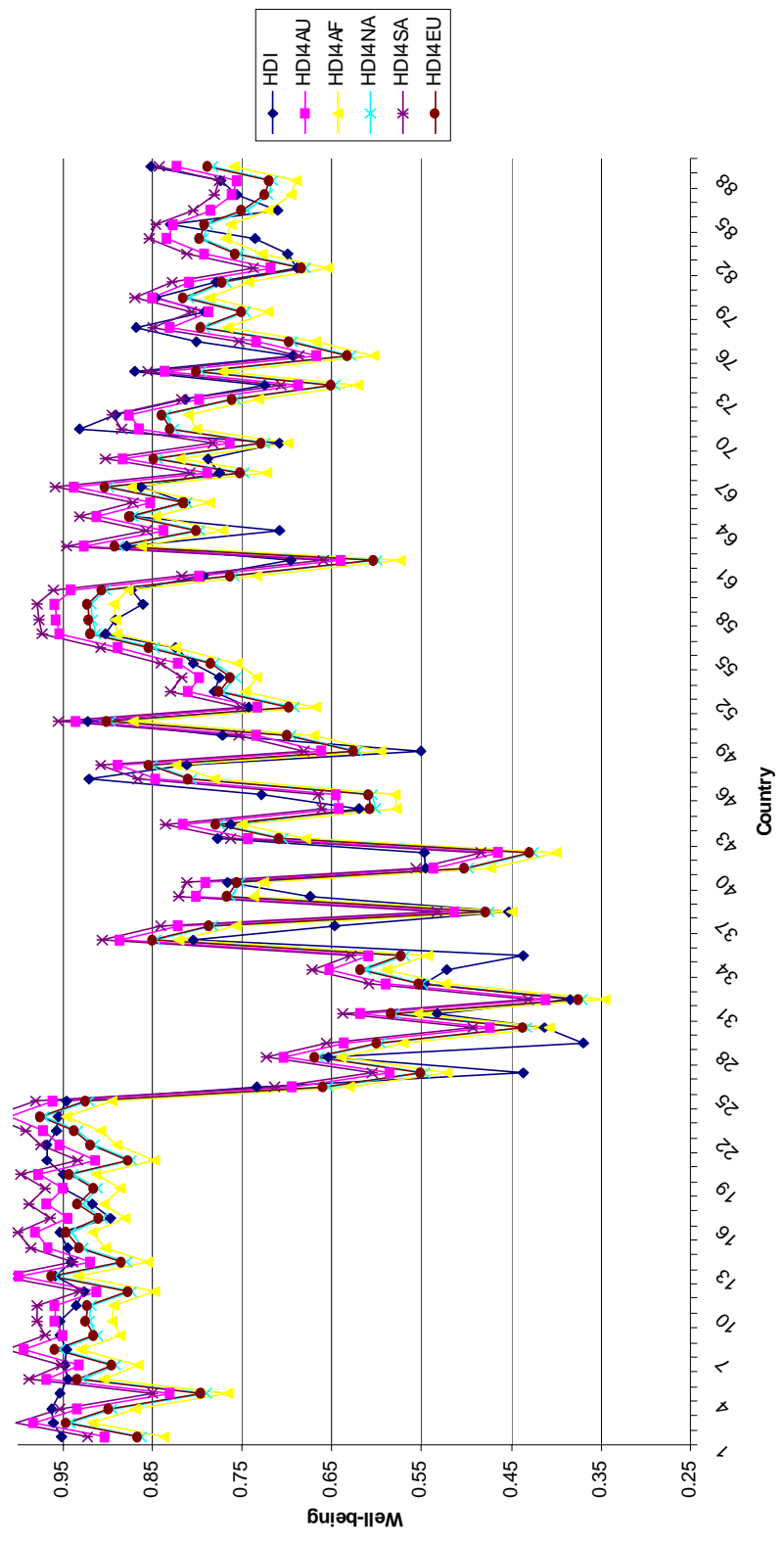
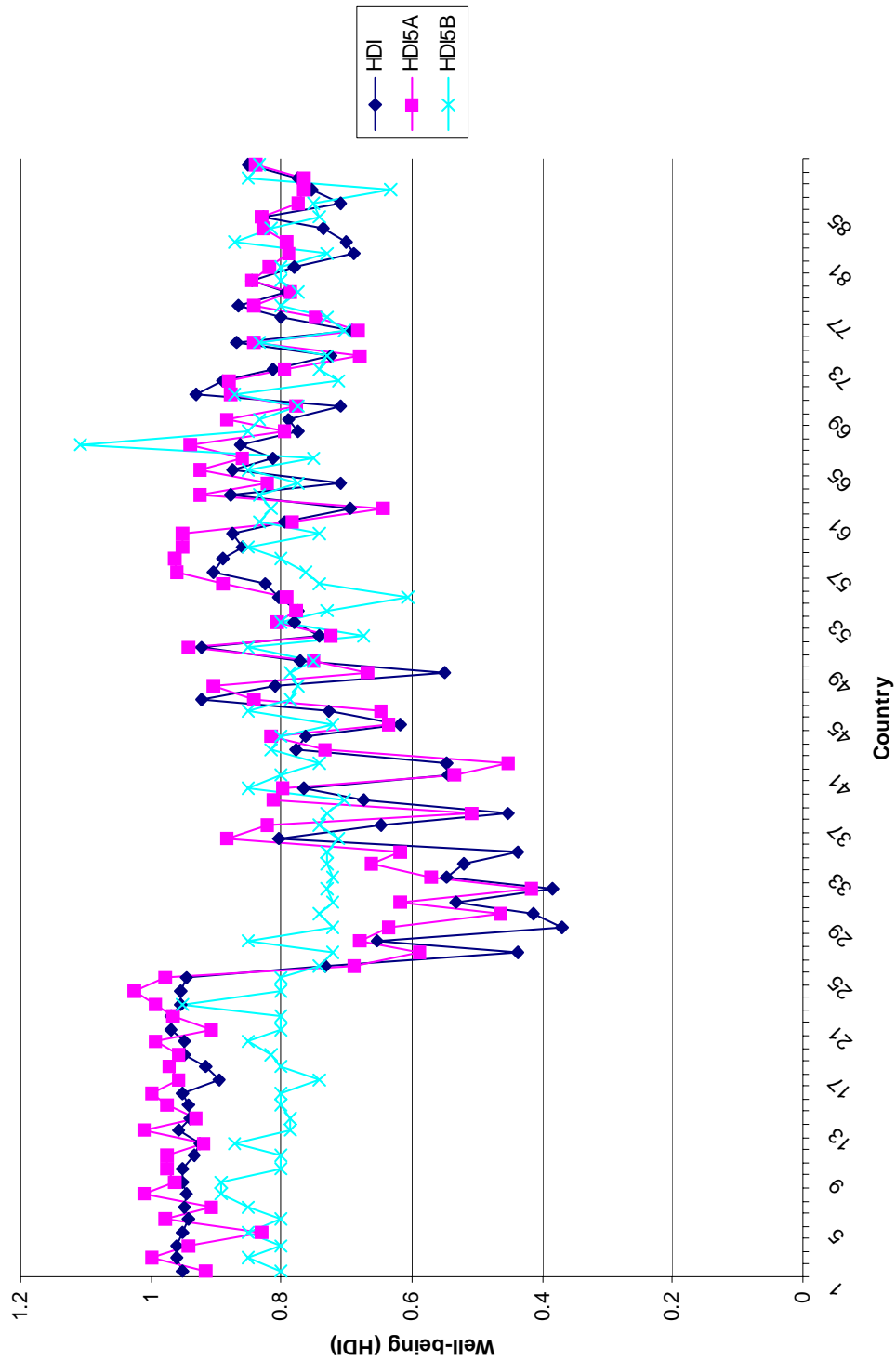


Figure 4 - National well-being under varying scenarios - Comparative statics IV



The effects of globalization on HDI are not overestimated because even when $HDI=f(iGlobe)$ alone, the technical efficiency and magnitude of the estimates remain unchanged as Columns 5 and 6 of Table 3 show. Also, the fixed regional effect are all negative and of approximately the same order of magnitude. This outcome suggests that the benefits of globalization are paid for by the loss of national uniqueness.

4.3 Some comparative statics

Figures 1-4 present some simple comparative statics based on a number of variations of (7). HDI1 is HDI assuming the determination of well-being is invariant with respect to globalization and regional effects. *This HDI is the base case*; it particularly underestimates high HDIs as Figure 1 shows. Also in Figure I are HDI2A and HDI2B, which derive from Estimations 2.1 and 2.2 where HDI2A depends on conventional factors and forces, average globalization (aGlobe), and national symbols. Regional effects are excluded. HDI2B is HDI2A with globalization disaggregated into economic (eGlobe), social (sGlobe) and political (pGlobe) globalization. There is noticeable improvement in the explanatory power of HDI2B.

From Estimation 2.6 comes HDI3i as a function of conventional factors and forces, national symbols, disaggregate globalization, and regional dummies. There they are labeled as HDIAU for Australasia, HDIAF for Africa and the Middle East, HDINA for North America, HDISA for South America, and HDIEU for Europe. *These HDIs underestimate the true HDI.*

Another case of comparative statics is calculated from Estimation 3.4, assuming that globalization and regional dummies, and that there are no national symbols. This case, as *Figure 3 portrays, gives the best results.*

The final two cases involve HDI5A and HDI5B. In HDI5A well-being is influenced by disaggregate globalization as in Estimation 3.6. For HDI5B well-being depends on national symbols alone. These results are in Figure 4. Both indices are reasonable, but HDI5B tracks the data better. In sum: HDI2A and HDI2B do a fairly good job, but HDI1 and HDI5A understate high HDI, overestimate middle HDI, and averages low HDI. All of HDI3 does a poor job. *The best fits in this scenario are HDI4 and HDI5A.*

5. Tentative concluding remarks

In this paper I quantify the effects of national symbols and global interactions on the

national well-being of 88 countries in 2007. I utilize a simple production function approach by which national well-being (measured as HDI) depends on national symbols and globalization. I find the following: First, there is a positive correlation between HDI and investment in physical capital, and a negative effect on HDI from the growth of population. Second, national well-being has a weak and unstable relationship with proxies of national symbols. In some instances national symbols appear to promote national well-being although in an insignificant fashion. In other instances HDI is significantly inelastic with respect to national symbols. Third, globalization has larger and positive effects on HDI than other variables. However, when globalization is disaggregated, social globalization has the largest effect on HDI compared to economic and political globalization. Finally, fixed regional effects are of the same magnitude and negative sign.

From these results one may conclude that, despite its limitations, per capita GDP (PPP) remains an important determinant of national well-being. The policy implication of this conclusion is to increase investment in the material conditions, and good management, of the population.

The instability of the effects of national symbols suggests that, in net, such effects are tenuous, which does not mean they are economically insignificant. What it means is that considered in relation to the positive effect of globalization, nations gain more from global interactions with other nations than from national isolation. For this sample of 88 countries social globalization has a larger effect on HDI than economic and political globalization. Although this conclusion differs from Axel Dreher's (2003) by which 'globalization promotes economic growth,' it makes good sense; it suggests that the internationalization and nationalization of well-being rub against one another, creating a friction that weighs down the positive effects of both. Of course, such an assertion must be taken with a grain of salt considering the weaknesses of the paper, chief among them the simple modeling and estimation methods it follows. However, the weakness is also an opportunity for further research.

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