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The Five Layers of Affluence

Henri Theil, Charles B. Moss, and Dongling Chen

Using the Penn World Tables for 1950–1992, we summarize the gross domestic product development of 114 non-Communist countries by means of five regions: the North, the South (“down under”), tropical America plus southwest Asia, southeast Asia, and tropical Africa plus south-central Asia. This five-region classification accounts for >85% of the inequality among the 114 countries during 1961–1986.

Key Words: GDP, income convergence, inequality, Penn World Tables

Theil and Deepak used the Penn World Tables of 1993 to analyze the per capita gross domestic products (GDPs) of seven non-Communist regions and the inequalities between and within these regions. The tables of 1995, which include data through 1992, are now available on the Internet. The objective of the present article is to update the Theil-Deepak results and to show that five (rather than seven) regions are sufficient to summarize the GDP development over time.

The seven regions used by Theil and Deepak are the following:

1. The North, which consists of three subregions: (1) the United States and Canada, (2) Japan and South Korea, and (3) 18 countries in Western Europe.¹

Henri Theil was McKethan-Matherly Eminent Scholar Emeritus in the Department of Economics and Courtesy Professor in the Food and Resource Economics Department, University of Florida. Charles B. Moss is a professor in the Food and Resource Economics Department, University of Florida. Dongling Chen is General Manager of Beijing BYL SVA Network Co., Ltd. Working in Beijing.

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¹ These 18 countries are Australia, Belgium, Denmark, Finland, France, Germany (west), Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

2. The South (“down under”), which also consists of three subregions: (1) Australia and New Zealand, (2) South Africa, and (3) Argentina, Chile, and Uruguay in the southern cone of South America.
3. Tropical Africa, which consists of 43 countries south of the Mediterranean Sea and north of South Africa.²
4. Tropical America, which consists of 22 countries south of the United States and north of South America’s southern cone.³
5. Southwest Asia, which consists of seven countries: Iran, Iraq, Israel, Jordan, Saudi Arabia,⁴ Syria, and Turkey.
6. South-central Asia, which consists of six

² These 43 countries are Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Nigeria, Chad, Comoros, Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

³ These 22 countries are Barbados, Bolivia, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Surinam, Trinidad/Tobago, and Venezuela.

⁴ Saudi Arabia was not included in Theil and Deepak’s analysis, but the 1995 Penn World Tables provide enough data to include it.

Table 1. Per Capita GDPs and Inequalities

Year	USA (2)	North (3)	South (4)	Tropical			South-central			International Inequality (10)	Percentage	
				Africa (5)	America (6)	SW Asia (7)	Asia (8)	SE Asia (9)	7 rgn (11)		5 rgn (12)	
1950	8,772	—	3,769	—	—	—	—	—	—	—	—	—
1951	9,109	—	3,835	—	—	—	—	—	—	—	—	—
1952	9,074	—	3,585	—	—	—	—	—	—	—	—	—
1953	9,300	5,177	3,762	—	—	—	—	—	—	—	—	—
1954	9,089	5,235	3,926	—	—	—	—	—	—	—	—	—
1955	9,723	5,587	4,061	—	—	—	—	—	—	—	—	—
1956	9,712	5,711	4,007	—	—	—	—	—	—	—	—	—
1957	9,643	5,790	4,111	—	—	—	—	—	—	—	—	—
1958	9,370	5,757	4,233	—	—	—	—	—	—	—	—	—
1959	9,839	6,032	4,140	—	—	—	—	—	—	—	—	—
1960	9,895	6,261	4,268	—	—	—	—	—	—	—	—	—
1961	9,946	6,473	4,362	715	2,161	2,388	762	884	—	—	—	—
1962	10,358	6,738	4,380	725	2,224	2,421	751	914	0.5309	85.4	85.4	85.3
1963	10,642	6,989	4,418	754	2,294	2,512	763	934	0.5377	85.9	85.9	85.8
1964	11,072	7,350	4,690	773	2,326	2,564	818	937	0.5334	85.5	85.5	85.5
1965	11,649	7,660	4,824	781	2,432	2,748	845	964	0.5423	85.6	85.6	85.5
1966	12,164	7,990	4,911	780	2,458	2,917	791	986	0.5744	85.8	85.8	85.8
1967	12,318	8,207	4,969	770	2,522	3,056	712	1,018	0.6134	86.7	86.7	86.6
1968	12,723	8,598	5,162	794	2,588	3,098	754	1,051	0.6100	86.7	86.7	86.6
1969	12,975	8,964	5,404	840	2,719	3,344	776	1,095	0.6139	87.0	87.0	86.9
1970	12,963	9,240	5,604	889	2,805	3,497	806	1,153	0.6082	87.6	87.6	87.6
1971	13,233	9,462	5,767	956	2,947	3,716	856	1,225	0.5939	87.7	87.7	87.5
1972	13,747	9,851	5,782	964	3,097	3,920	831	1,261	0.5954	88.6	88.6	88.3
1973	14,379	10,375	5,911	964	3,261	4,203	797	1,315	0.6185	88.9	88.9	88.4
1974	14,078	10,322	6,048	981	3,466	4,505	786	1,426	0.6360	89.2	89.2	88.6
1975	13,682	10,139	5,915	1,018	3,634	4,831	793	1,482	0.6239	89.1	89.1	88.4
1976	14,271	10,570	5,864	1,033	3,690	4,889	828	1,525	0.5996	89.0	89.0	88.4
1977	14,832	10,903	5,872	1,056	3,857	5,263	833	1,605	0.6124	88.8	88.8	88.1
1978	15,440	11,280	5,888	1,103	3,915	5,299	870	1,699	0.6066	88.5	88.5	87.9
1979	15,637	11,591	6,084	1,130	4,010	5,020	902	1,819	0.6048	88.4	88.4	87.8
				1,133	4,177	5,086	882	1,933	0.6203	88.3	88.3	87.6

countries: Bangladesh, India, Myanmar, Nepal, Pakistan, and Sri Lanka.

7. Southeast Asia, which consists of eight countries: Hong Kong, Indonesia, Malaysia, Papua New Guinea, Philippines, Singapore, Taiwan, and Thailand.

The per capita GDPs of these regions, together with that of the United States (shown here for comparison purposes), are given in columns 2–9 of Table 1 for the period 1950–1992, although missing data for a number of countries implies shorter periods for most regions. The GDPs are expressed in 1985 international prices and are based on a chain index. A comparison of columns 3–9 shows that there are basically five regions, two of which are located in temperate zones and three in tropical zones. When listed according to decreasing affluence, these five regions are (1) the North, (2) the South (“down under”), (3) tropical America plus southwest Asia, (4) southeast Asia, and (5) tropical Africa plus south-central Asia. The top layer of this hierarchy (the North) increases from ~5,000 in the early 1950s to 14,000 in 1990 (see column 3 of Table 1). The next layer (the South) increases from <4,000 in 1950 to 6,000 in the mid-1970s, after which it remains approximately constant. The third layer increases from a little over 2,000 in 1960 to ~4,000 in the mid-1980s. The fourth layer (southeast Asia) increases quickly, from <1,000 in the

early 1960s to 3,000 in 1990. The fifth layer starts even lower in the early 1960s and remains far behind. Page 4 contains a world map that shows the location of these five regions and subregions. The subregions of each region are connected by dotted curves.

We can perform an inequality analysis to verify the extent to which the five regions account for the differences among the per capita GDPs of the non-Communist countries. As in Theil and Deepak, we measure inequality as the natural log of the ratio of arithmetic mean income to geometric mean income (income = GDP). This measure has the advantage of a simple decomposition between and within regions. The results are shown in the last three columns of Table 1 for the period 1961–1986, during which data for all 114 countries are available. Column 10 shows that the inequality among these countries fluctuated between 0.53 and 0.64. The last two columns contain the percentage of this inequality, which is accounted for by the seven or five regions. In column 11 (seven regions), this percentage ranges from 85% to just over 89%; in column 12 (five regions), it ranges from 85% to just under 89%.

Reference

- Theil, H., and S.D. Deepak. “The GDPs of Seven Major Regions, 1950–1990.” *Empirical Economics* 19(1994):517–22.