

Statistical Appendix *The World Economy and Developing Countries since WWII*

This appendix is a graphical review of the evolution of the global economy in the postwar period and the growing role of developing countries. We present the main characteristics of developing countries' economic and social evolution, and some features of the global economic environment that influence these countries' economic prospects and challenges.

In doing this review we have been surprised by the extent to which important data on developing countries are incomplete or contradictory. On the one hand, there are basic problems such as compilation issues. For example, no single source provides time series for all countries' national accounts that are consistent with national accounts statistics: more often than not the time series are truncated. One the other hand, there are more serious problems such as lack of data. For example, data is incomplete on infrastructure and quality of education and, more generally, on the efficiency of public sector spending. It seems important that international development institutions and statistical offices invest the time and resources needed to address this problem.

The appendix consists of six parts. Part 1 reviews the evolution of GDP in industrialized and developing countries. Part 2 documents population trends, including forecasts. Part 3 deals with poverty in developing countries and some of its main characteristics. Part 4 provides some information on the evolution of socioeconomic indicators, education and health indicators in particular. Part 5 reviews selected information on infrastructure, an area where data are surprisingly incomplete. Part 6 reviews important global trends.

1. EVOLUTION OF GLOBAL GDP AND PER CAPITA GDP

1.1 Evolution of Global and Per Capita GDP in the Last 2,000 Years

After several tens of thousands of years of low or negligible economic progress, growth accelerated in the nineteenth century and remained at relatively high levels. This resulted in large and persistent increases in per capita incomes. These are illustrated in figure 1.1, which shows estimates of both world GDP and per capita incomes in the past 2,000 years.



Source: Data from: Maddison, Angus. 2001. The World Economy: A Millennial Perspective. Paris: OECD.

1.2 The Growth of the World Population and Some Major Events in the History of Technology—9,000 B.C. to Present

Growth in incomes was accompanied by unprecedented increases in population and exponential increases in the rate of scientific discoveries.



Source: Fogel, Robert. 1999. "Catching Up with the Economy." American Economic Review 89(1) (March): 1–21.

Note: There is usually a lag between the invention of a process or a machine and its general application to production. "Beginning" means the earliest stage of this diffusion process.

1.3 Long-Term Evolution of Per Capita GDP for Selected Developing Countries and Regions

Until WWII, economic growth was limited to Europe and North America. Per capita income stagnated elsewhere as shown in figure 1.3, where the horizontal axis measures per capita incomes for different groups of countries or regions over the past 2,000 years.



Source: Data from Maddison, 2001.

1.4 Global GDP since 1960

After WWII, some developing countries started to grow at high rates and to catch up with industrialized countries, thus contributing to the exponential growth of world GDP. Figure 1.4 shows how different groups of countries and regions have contributed to the world's GDP since 1960. It shows that the United States, Canada, the European Union, and Japan account for well over half the global GDP, but that this proportion has been declining as a result of China and India's growth. Since WWII Japan has experienced high growth that is a hybrid of catching up and postwar recovery. Whereas Japan was part of the developing world in the 1950s, 1960s, and part of the 1970s, it is now an industrialized economy and its GDP ranks among the world's largest.



Source: World Bank, World Development Indicators 2007.

Note: As of 2006, the European Union (European Union) consisted of 25 countries. Years of data availability vary by country; for example, German GDP begins in 1971. "Dev11" refers to the 11 developing countries that are among the 25 largest developing countries featured in table 1.1 and are not captured by the categories above. Dev11 comprises Algeria, Bangladesh, the Arab Republic of Egypt, Indonesia, the Islamic Republic of Iran, Malaysia, Pakistan, the Philippines, Romania, Thailand, and Turkey. The top 10 economies in the "others" category by size are the Republic of Korea, Australia, Taiwan (China), Switzerland, Hong Kong (China), Norway, Singapore, New Zealand, Ukraine, and Vietnam.

1.5 Growth in Today's 25 Largest Developing Countries

Some of the largest developing countries have put their economies on track to catch up with industrialized countries; many others have not. There are about 150 developing countries in the world. The 10 largest account for about 70 percent of developing countries' GDP, and the 25 largest countries for about 90 percent. The growth performance of these 25 countries has been uneven. Because industrialized countries' secular growth rate is about 2 percent per capita, developing countries need to grow at much higher rates to catch up. Less than half have been able to reach this performance as indicated in table 1.1. Since 1960, only 6 countries have grown faster than 3 percent in per capita terms and 10 had growth rates below 2 percent, implying that they have fallen farther behind industrialized countries' incomes. Japan and the Republic of Korea are two large economies in the category of developing economies after WWII that, because of their growth performance, have reached the income levels of industrialized countries and hence are not in this table. As mentioned above, Japan's growth is a hybrid of war recovery and catching up.

	Deal		GDP growth rate***					Deal
	GDP*	Share in	198	0–2006	1960)–2006	Rank	GDP
	2006	total**	Real	Per capita	Real	Per capita	1960	1960
China	2092	25.4	9.8	8.6	7.7	6.1	5	70
Brazil	765	9.3	2.2	0.5	4.4	2.3	2	105
India	703	8.5	6.0	4.1	4.9	2.8	4	77
Mexico	666	8.1	2.6	0.9	4.3	2.0	3	94
Russian Federation	373	4.5	-0.4	-0.2	-	-	-	-
Argentina	340	4.1	1.8	0.5	2.5	1.1	1	108
Turkey	261	3.2	4.4	2.5	4.3	2.2	-	-
Indonesia	219	2.7	5.2	3.6	5.5	3.6	8	18
Poland	210	2.6	3.7	3.7	-	-	-	-
South Africa	169	2.0	2.2	0.1	3.3	1.0	7	38
Thailand	165	2.0	5.9	4.5	6.6	4.5	19	9
Venezuela, R. B. de	147	1.8	2.0	-0.3	2.8	0.0	6	41
Iran, Islamic Rep. of	140	1.7	3.5	1.3	4.4	1.8	-	-
Egypt, Arab Rep. of	128	1.5	4.7	2.6	5.3	3.0	17	12
Malaysia	119	1.4	6.1	3.6	6.6	3.9	22	6
Colombia	106	1.3	3.2	1.4	4.2	1.9	11	16
Philippines	99	1.2	2.9	0.7	4.0	1.4	9	17
Pakistan	99	1.2	5.1	2.5	5.5	2.7	20	9
Chile	96	1.2	4.9	3.3	4.3	2.5	12	14
Algeria	72	0.9	2.8	0.5	3.6	1.1	13	14
Peru	71	0.9	2.3	0.4	3.2	0.9	10	16
Bangladesh	65	0.8	4.6	2.3	3.6	1.3	16	13
Nigeria	64	0.8	2.7	0.0	3.5	0.8	15	13
Hungary	62	0.7	1.7	2.0	3.4	3.4	14	13
Romania	53	0.6	1.0	1.1	-	-	-	-
Others	965	117	_	_	_	_	_	_

Source: World Bank, World Development Indicators 2007.

Note: The table excludes countries that were developing in 1960 and have already reached industrialized countries' income levels. Numbers in italics and red indicate different time periods due to data availability: Russia (1989–2006), Turkey (1968–2006), Poland (1990–2006), Iran (1965–2006).

*Real and per capita GDP in constant 2000 US dollars, billions.

**Shares in total developing countries' real GDP in 2006.

***Period growth rate in CAGR (compound annual growth rate).

1.6 Divergence in Economic Performance, 1960–2006

Differences in economic performance imply that for many developing countries, per capita incomes are lower than they were a few decades ago. This applies particularly to Africa and Latin America, where growth has been slow or has slowed relative to the incomes of industrialized countries, implying that they have fallen behind.



Source: World Bank, World Development Indicators 2007.

1.7 Catching Up

Another way of describing differences in developing countries' economic performance is to ask what growth rate a country would need to achieve to catch up with industrialized countries (whose per capita income is growing at the 2 percent secular rate) by a certain date. Table 1.2 shows the increase needed to catch up by 2050 and by 2100. Current trends persisting, China would need to reduce its per capita growth rate to 5.7 percent per year, down from its 8.3 percent average during the past 10 years. This indicates that at current rates China will catch up with industrialized countries before 2050. Brazil, on the other hand, needs to raise its per capita income growth rate by a factor of 5 compared to its 1.1 percent growth over the past 10 years to catch up with industrialized countries by 2050.

The last column in the table below shows the number of years needed for a country to catch up with OECD countries, assuming it grows in the future at the highest rate registered in the last 10 years. This rate is obviously arbitrary. Countries that experience large fluctuations, such as Venezuela, will automatically have a very high growth rate,

explained by rebounds, and hence an artificially low number of years to catch up. Using the average for the last 10 years would have provided a more credible estimate. However, many countries have an average per capita growth rate for the decade well below the OECD secular per capita growth rate, implying that they would never catch up at such rates. On the other hand, the table shows that all countries grew at a rate above 2 percent in at least one year. Using this rate renders the calculation mathematically feasible, but its economic meaning needs to be interpreted carefully.

Growth has recently accelerated in countries in Africa, Latin America, and the Middle East, partly as a result of commodity price increases, and partly as a result of changes in economic policies. The issue now is whether this acceleration will persist.

	Per capita	Growth rate of 10 y	during past rs	Growth rate catcl	e needed to h up	Years needed to
	GDP* in 2006	maximum**	average**	in 2050	in 2100	catch up****
China	6,621	10.1	8.3	5.7	3.7	23
Brazil	7,826	4.3	1.1	5.3	3.5	119
India	3,308	7.7	4.9	7.4	4.5	50
Mexico	9,967	5.2	2.4	4.7	3.3	55
Russian Federation	10,350	10.0	5.4	4.6	3.2	17
Argentina	13,652	8.1	1.7	4.0	2.9	17
Turkey	7,842	8.3	2.7	5.3	3.5	28
Indonesia	3,570	4.3	1.3	7.2	4.4	181
Poland	13,349	7.0	4.3	4.0	3.0	22
South Africa	10,338	3.9	1.7	4.6	3.2	135
Thailand	8,065	6.2	1.8	5.2	3.5	45
Venezuela, R. B. de	6,485	16.2	1.1	5.7	3.7	13
Iran, Islamic Rep. of	7,405	5.9	3.2	5.4	3.6	54
Egypt, Arab Rep. of	4,031	4.9	2.7	6.9	4.3	118
Malaysia	10,091	6.4	2.2	4.7	3.3	35
Colombia	6,886	5.4	1.0	5.6	3.7	68
Philippines	4,731	4.3	2.2	6.5	4.1	159
Pakistan	2,206	4.8	1.8	8.3	4.9	159
Chile	10,939	5.1	2.6	4.5	3.2	54
Algeria	6,376	5.3	2.4	5.8	3.8	75
Peru	5,725	6.5	2.3	6.0	3.9	51
Bangladesh	1,916	4.8	3.5	8.7	5.1	163
Nigeria	1,008	8.0	1.8	10.3	5.8	74
Hungary	16,928	5.5	4.7	3.4	2.7	26
Romania	8,722	8.7	3.1	5.0	3.4	24
		Growth rate	during past			
	Per capita	10 yrs		Per capita	GDP***	
	GDP in 2006	maximum	average	in 2050	in 2100	
OECD	30897	3.08	2.04	75130	206222	-

Source: World Bank, World Development Indicators 2007.

*Per capita GDP based on purchasing power parity, in constant 2000 international dollars.

**Maximum and simple average of the annual growth rates during the past 10 years.

***Assuming growth at annual rate of 2.04%, which is the average growth rate of OECD during the past 10 years.

****Assuming both grow at the maximum growth rate achieved during the past 10 years.

1.8 Rapid Growth Is Urban Based—Decomposition of Growth Rates for the Fast-Growing Economies: Various Periods

In all cases of sustained high growth (7 percent or more sustained over 25 years or more), it is production in urban areas—that is, manufacturing and services—that led the growth.



Source: World Bank, World Development Indicators 2007. Institute of Applied Economic Research (IAER), Brazil; http://www.ipeadata.gov.br.

Note: The calculations apply for different periods indicated in parentheses because of different degrees of consistent data availability: Botswana (1965–2006); China (1965–2006), Hong Kong, China (2000–06); Indonesia (1960–2005); Japan (1960–2004 for services and agriculture and 1996–2004 for manufacturing); Korea (1970–2006); Malaysia (1970–2006); Oman (1988–2004); Singapore (1975–2006); Taiwan (China) (1965–2006); and Thailand (1960–2006).

1.9 Divergence in Sub-Saharan Africa and East Asia, 1960–2006

Another way of looking at divergence is to compare selected regions or economies over time. The figure below shows differences in performance of Africa overall in relation to East Asia.



Source: Arbache, Jorge, Delfin Go, and John Page. 2008. "Is Africa at a Turning Point?" Policy Research Working Paper 4519, February. World Bank, Washington, D.C.

1.10 Divergence within Africa, 1960–2006

Within Africa itself there has been significant divergence. For example, Mauritius and Côte d'Ivoire faced the same international market for commodities and became independent at about the same period. Mauritius pursued a growth strategy aimed at supplying the external market, integrating itself with the global economy, and diversifying its production and exports. Conversely, Côte d'Ivoire relied almost exclusively on the rents of its commodity exports. Zambia and Botswana started with about the same per capita income, and both were rich in minerals: again, different policies and institutions brought about different results.



Source: Arbache, Delfin, and Page, 2008.

1.11 The Rise of China and India, 1860–2006

Because of the consistently improving economic performance of China and India, the share of developing countries in global GDP is increasing. The corollary is that the share of the United States, Canada, Japan, and the European Union has been declining since the 1980s—although these economic blocks together still account for 70 percent of the world's GDP.



Source: World Bank, World Development Indicators 2007.

2. POPULATION: TRENDS AND FORECASTS

2.1 Population Growth, 1960–2006 and 2030 Forecast

Since WWII, most of the growth in the world's population has taken place in developing countries.



Source: World Bank, World Development Indicators 2007; forecast for 2030 from Maddison, 2001.

2.2 Global Population, 1960–2006 and 2030 Forecast, Percent Distribution

The corollary to population growth in developing countries is that industrialized countries account for a dwindling share of the world population.



Source: World Bank, World Development Indicators 2007; forecast for 2030 from Maddison, 2001.

2.3 Demographic Change, 1950–2050, by Five-Year Age Group

The figures below illustrate for different groups of countries and regions the evolution of the age structure of the population from 1950 to present, and how it is expected to evolve from the present to 2050. The figures ignore future migration flows. Reading the age axis from left to right provides the age composition of the population at different points in time, starting in 1950, by five-year age groups. Reading the time axis from past to present, and then to the future, following the contour on the surface, shows the evolution in size of a particular age group. In the case of China, for example, as one moves right along the time axis, the figure shows first an increase in the number of children in the 0-4 year group, followed by a sharp decline, which is expected to continue throughout 2050. All the countries and regions have experienced or will experience a decline in the low age categories as a result of declining birth rates. In the case of the United States and the European Union, for example, declining birth rates explain the rise in the high age categories. One important exception is Sub-Saharan Africa, where low age groups are expected to continue to increase in number. Another exceptional feature of Sub-Saharan Africa's population trends is the expected rapid decline in population in the higher age categories.

The main conclusions of the figures below are that important demographic changes are underway that will lead to rapidly aging populations in industrialized countries.

United States & Canada European Union 30 40 25 30 millions 20 millions 15 20 10 10 2020 2020 5 0 1985 1985 0 1950 1950 90⁻⁹⁴ 90⁻⁹⁴ ~00× 8 ,00×

Populations in industrialized countries will age rapidly.

Aging will be particularly pronounced in Japan, Russia, and, to a lesser extent, China.



2.3 Demographic Change, 1950–2050, by Five-Year Age Group – continued

India's population will also age, albeit less than China's.



Latin America's population will age, and Africa's shows the devastating effects of HIV/ AIDS on longevity.



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. 2005 and 2006. "World Population Prospects: The 2006 Revision" and "World Urbanization Prospects: The 2005 Revision." Available at: http://esa.un.org/unpp.

2.4 Urban Population and Urbanization Rate, 1960–2005

Both as a result of population growth within urban areas and in-migration from rural areas, the world is becoming increasingly urbanized. A threshold was crossed in 2008: 50 percent of the world population is now urban. There is a lot more urbanization to come, as countries industrialize and grow.





Sources: United Nations World Urbanization Prospects; World Bank, World Development Indicators 2007.

2.5 Population Growth to 2030: Low- and Middle-Income versus High-Income Countries

Most of the increase in population in the next two decades will take place in the cities of today's developing countries.



Source: United Nations World Urbanization Prospects.

2.6 Female Labor Force and Female Participation Rate, 1980 to Present

The participation of women in the labor force has increased in industrialized countries and in Latin America and the Dev11, but participation rates have declined in India, China, and Russia. The reasons behind these declining trends have not been studied and are poorly understood. Declining trends may be explained by the upward trends in school enrollment, to the extent that participation in labor comes from girls who should otherwise be enrolled. Another possible explanation is inelastic labor demand for women for a variety of sociological and cultural reasons. The conclusion is that more work is needed to understand the meaning of these data and whether data collection captures informal work by women. Additionally, some of these trends should be disaggregated by age and education, and labor market issues in general should be looked at more deeply.

Another issue with data on female participation in the labor force is comparability across countries. In general, estimates of women in the labor force are lower than those of men and are not comparable internationally, reflecting the fact that for women, demographic, social, legal, and cultural trends and norms determine whether their activities are regarded as economic. In many countries large numbers of women work on farms or in other family enterprises without pay, while others work in or near their homes, mixing work and family activities during the day. Countries differ in the criteria used to determine whether such workers are to be counted as part of the labor force.





Female labor force participation rate

Source: World Bank, World Development Indicators 2007.

*Simple average is used for calculating aggregates.

3. POVERTY

3.1 Number of People Living below US\$2 a Day and Percentage in Population

Reduction of poverty has been an explicit or implicit goal of governments in many developing countries since at least the end of WWII. India has pioneered the formulation of poverty concepts and measurements since the 1950s, including the use of household surveys, and is the developing country with the longest consistent series of poverty indicators. Starting in the 1990s, the World Bank built on this and other developing countries' measurement efforts. It supported the design and implementation of household surveys in a large number of countries and popularized a number of methodologies, concepts, and measurements.

These efforts helped develop poverty lines that allow comparisons across countries and over time. Poverty definitions vary from country to country. In some countries, the poor are defined as those in the lowest quintile or the lowest third of the income distribution. As a result, the number of poor never declines. A reduction in poverty in this context means an improvement in the incomes of those at the bottom of the distribution. In other countries, the poor are those who consume below a certain level considered minimal. The definition of "minimal" varies of course from country to country, depending on their level of development, incomes, values, and norms: what is considered essential in one country may be part of what is superfluous in another. A common definition applicable across countries addresses this problem and allows countries to be compared with each other.

This is what the poverty line valued at US\$1 or US\$2 achieves. It uses as a poverty line a common basket of commodities valued at common prices or purchasing power parities (PPPs). By this definition, while the number of poor has remained relatively stable since the early 1990s, the number of poor as a proportion of the total population has declined because the total population in developing countries has increased.



Source: Development Economics Research Group, World Bank.

3.2 Gini Coefficients: Selected Examples

Poverty incidence measures provide information on the number of people consuming less than what is considered nutritionally and socially desirable. Although they are the most telling measure of a country's economic and social performance, there exist more subtle measures. Often the Gini coefficient is used: it calculates the distance from an absolutely equal income distribution among citizens, which is when the Gini coefficient would be equal to zero. Conversely, the more unequal the distribution, the closer to 1 is the Gini coefficient. In the most extreme case in which one citizen has all of the GDP and the rest of the population zero, the coefficient would be equal to 1.

The table below highlights some regional differences. Latin American countries—in particular Brazil and Chile—have much more unequal distribution of income than in Asia. Tanzania is an interesting exception in a region where income distribution tends to be as unequal as in Latin America. This is possibly the result of the land reform programs under President Nyerere.

The actual calculation of Gini coefficients is actually complex and requires income data at the household level which often do not exist. The distribution of expenditure at the household level is used instead in these cases, which often tends to bias results toward more equality than really exists. The periodicity of the data is another issue. In most countries, income or expenditure distribution data are available at infrequently intervals only. Comparisons between countries and over time should hence be made carefully. For example, the map that follows shows the United States with a more equal distribution than China's. But the coefficient for China is calculated on the basis of 2004 data, and that of the United States on the basis of 2000 data, and most observers would agree that coefficients in the two countries now are believed to be quite close to each other—in the mid 40's.

The table below also provides some information on the evolution of the distribution of income in selected countries. It shows that income distribution has worsened in Bangladesh, China, and India, countries that have experienced rapid growth in the last two decades. In Brazil, where per capita income has stagnated over the last 25 years, income distribution improved as a result of the end of hyperinflation (which penalized the poor disproportionately) and the implementation of redistributive programs. In Chile, Indonesia, and Morocco, the income distribution has remained relatively stable.

Gini Coefficients of Selected Countries (times 100)

Country	Year 1	Year 2	Gini in year 1	Gini in year 2
Bangladesh	1991–92	2005	28.27	33.20
Brazil	1990	2004	60.68	56.99
Chile	1990	2003	55.52	54.92
China	1990	2004	33.50	46.90
India	1993–94	2004–05	31.52	36.76
Indonesia	1993	2004	34.63	34.76
Morocco	1990–91	1998–99	39.20	39.46
Tanzania	1991	2000–01	33.83	34.62

Source: World Bank, World Development Indicators 2007.

3.3 Gini Coefficients around the World

The map below provides a more thorough picture of Gini coefficients and highlights that equity has regional dimensions. Inequality is high in many South American countries: Brazil is not unique. Tanzania, with a Gini coefficient closer to Asia's values, is an exception in a continent where income inequality is extremely high.



Gini Coefficients from the UN Human Development Report, 2007–2008

3.4 Growth Incidence Curves

Growth incidence curves help illustrate the evolution of income distribution by calculating the rate of income growth for each household. When high-income groups see their incomes rise faster than the bottom group, income distribution worsens, even though the whole population sees an increase in incomes.

3.4.1 China

The growth incidence curve for China between 1993 and 2004 illustrates this point. During this period, the annual per capita growth rate was close to 7 percent per year. For the top half of the population in terms of income the increase was above 7 percent, and for the bottom half it was below. The highest income groups benefited more, probably because their skills and assets were in shorter supply.



Source: World Bank, World Development Indicators 2007.

Note: Per capita income has been adjusted by the cost of living difference between the rural and urban areas.

3.4.2 India

The case of India is more difficult to interpret. Whereas national accounts data indicate that per capita income between 1993 and 2004 increased in excess of 4 percent per year, household surveys show dramatically smaller increases in consumption expenditure—implausibly smaller. The reasons for the discrepancy have been the subject of considerable debate in India. But India is not unique in this aspect. Already in 1999, Angus Deaton* had observed that in many countries discrepancies between household surveys and national accounts were a serious issue deserving serious investigation. This suggestion unfortunately has not been followed up, and one of the many statistical shortcomings in developing countries persists.



Source: World Bank, World Development Indicators 2007.

Note: Per capita consumption expenditure has been adjusted by the cost of living difference between the rural and urban areas.

*Deaton, Angus. 1999. "Saving and Growth." In Luis Serven and Klaus Schmitt-Hebbel, *Economics of Savings and Growth*. Cambridge, UK: Cambridge University Press.

3.5 Ratios of Quintile Shares, Selected Countries

Tracking each population quintile's consumption as a share of GDP is another way of capturing the extent of inequality. In the case of Brazil, the richest 20 percent of the population had more than half of the country's income, whereas in India the top quintile had between one third and 40 percent of income, and in China between 40 and 45 percent. The ratio between top and bottom quintile consumption is another measure of inequality: it varies between a high of more than 20:1 in Brazil, to less than 10:1 in China, to much less in India or Bangladesh.

			Quintile share					
Country	Year 1	Year 2	Bottom in year1	Top in year1	Bottom in year 2	Top in year 2	Top/bottom in yr 1	Top/bottom in yr 2
Bangladesh	1991–92	2005	9.4	33.9	8.8	37.6	3.6	4.3
Brazil	1990	2004	2.3	55.7	2.6	53.0	23.9	20.2
Chile	1990	2003	3.4	52.8	3.7	52.7	15.4	14.3
China	1990	2004	5.6	41.5	4.3	44.5	7.4	10.5
India	1993–94	2004–05	8.9	36.3	8.1	40.4	4.1	5.0
Indonesia	1993	2004	8.3	38.0	8.0	38.0	4.6	4.8
Morocco	1990–91	1998–99	6.6	40.9	6.4	40.7	6.2	6.3
Tanzania	1991	2000–01	7.4	36.8	7.3	37.2	5.0	5.1

Source: World Bank, World Development Indicators 2007.

3.6 Inequality over Time: Annual Change in Gini Coefficient in 59 Developing Countries

Over the last decade, it has become increasingly clear that inequality is rising in many countries, including industrialized ones. The IMF World Economic Outlook documented this trend in its most recent 2008 report. The figure below shows that inequality has increased in most countries. The reasons are not entirely well understood. In industrialized countries, inequality may result from the integration of China and India into the global economy, which puts pressure on low and unskilled labor, technological progress, and migration. Which of these factors matters most is the subject of considerable debate and controversy. In developing countries on a high growth path, the rise in income inequality seems to be the consequence of the movement of people from low- to high-productivity activities and sectors.



Source: World Bank, Global Monitoring Report 2008.

Note: The time period varies depending on the availability of data. Typically it is from late 1980s and early 1990s to later 1990s and early 2000s.

4. SOCIOECONOMIC INDICATORS

4.1 Improved Sanitation Facilities and Water Source, 1990–2004

Developing countries lag behind industrialized countries in terms of access to infrastructure and other services that are crucial determinants of health outcomes. It is well known, for example, that frequently malnutrition develops not from insufficient intake of food, but from diseases associated with lack of access to sanitation and potable water.



Source: World Bank, World Development Indicators 2007.

Improved sanitation facilities: Access to improved sanitation facilities refers to the percentage of the population with at least adequate access to excreta disposal facilities that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. To be effective, facilities must be correctly constructed and properly maintained. See World Health Organization and United Nations Children's Fund, Meeting the MDG Drinking Water and Sanitation Target, for details.

Improved water source: Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, and rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters a person a day from a source within one kilometer of the dwelling. See World Health Organization and United Nations Children's Fund, Meeting the MDG Drinking Water and Sanitation Target, for details.

4.2 DPT* and Measles Immunization, 1995–2005

Although there has been considerable improvement, access to the most basic public good, vaccines, remains remarkably uneven.





Source: World Bank, World Development Indicators 2007. *Diphtheria, pertussis (or whooping cough) and tetanus.

4.3 Prevalence of Undernourishment* and HIV/AIDS

Although there have been improvements everywhere except in Sub-Saharan Africa, undernourishment and HIV remain serious health problems in developing countries, even in the rapidly growing ones.





Source: World Bank, World Development Indicators 2007.

*Population below minimum level of dietary energy consumption.

4.4 Public Spending on Education* (2004) and Expected Years of Schooling (2005)**

It is extremely hard to compile statistics on education that make sense. For example, years of schooling is a function of both public and private spending on education, but data on private spending are not collected systematically.

Another problem is that in most countries, public spending in education is done mostly by the lower levels of government—provincial and city governments—but these data are not systematically collected and processed, with the result that public spending on education is typically underestimated.

Last but not least, years of schooling is a poor proxy to learning achievements, which is the real output of any school system. But developing better data on this will take years of effort.



Source: World Bank, World Development Indicators 2007.

*Most recent year (1999) is used for China.

**The number of years a child of school entrance age is expected to spend at school or university, including years spent on repetition.

4.5 Primary School Enrollment* and Completion Rate

The statistic that are collected suggest that in most countries primary enrollment and completion rates have increased and are getting closer to industrialized levels, except for Africa and India, where they remain at lower levels.



Source: World Bank, World Development Indicators 2007.

*Ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown.

4.6 Adult and Youth Literacy Rates

Low enrollment rates generally translate into low literacy rates among adults and young people.





Source: World Bank, World Development Indicators 2007.

4.7 PISA Tests: 2006

Learning achievements—that is the acquisition of specific cognitive skills—when they are measured, are quite varied both within and across countries. The so-called PISA tests consist of elaborate evaluations meant to determine the learning achievements of students in science. The results show significant variance between and within countries.



Percentage of students at each proficiency level on the science scale

Note: Countries are ranked in descending order of percentage of 15-year-old at Levels 2, 3, 4, 5, and 6. Above the zero line one finds the proportion of

Note: Countries are ranked in descending order of percentage of 15-year-old at Levels 2, 3, 4, 5, and 6. Above the zero line one finds the proportion of students in the country that has higher ratings than level 1. Below the zero line, one finds the proportion of students with level 1 and below.

5. INFRASTRUCTURE

Investment in infrastructure is key for growth and development because it expands the range of opportunities for and returns on private investment. Furthermore, investment in infrastructure ensures access to key public services such as water, public transportation, and urban amenities—services that not only support growth but also and in turn help distribute the benefits of growth across the population at large. Given the importance of infrastructure for long-term growth and inclusiveness, available data are surprisingly hard to obtain. There appear to be two main reasons for this. First, public investment is generally carried out by various levels of government and agencies whose expenditures are not part of the budget. Very few countries consolidate these various sources of infrastructure spending in their national accounts. Second, private investment in infrastructure is rarely fully recorded. India is an exception in both these dimensions; but for other countries, the information base needs to be built.

5.1 Infrastructure Investment in Latin America (percent of GDP)



Infrastructure Investment in Major Latin American Countries (percent of GDP)



Brazil: Primary Deficit and Public Infrastructure Investment (% GDP)

Source: Afonso, J. et al. 2005. "Fiscal Space and Public Sector Investments in Infrastructure: A Brazilian Case Study." IPEATexto para Discussao 1141.



India: Gross Domestic Capital Formation in Infrastructure Sectors

Source: Government of India data.





South Africa: Infrastructure Investment (% of GDP)







Thailand: Infrastructure Investment (% of GDP)



Source for all four figures: Calderón, C., R. Odawasa, and L. Serven. 2008. "Infrastructure Investment in Developing Countries: A Quarter-Century Retrospective." Mimeo, World Bank.

6. GLOBAL TRENDS

The post WWII period was characterized by a number of important global trends, some of which represent a clear break with the past and a change in direction.

6.1 Inflation*

The last 20 years saw a decline in the rate of inflation. The decline started in industrialized countries and was followed after a lag by developing countries.



Source: World Bank, World Development Indicators 2007.

*Inflation is measured by the median inflation rate in both groups of countries.

6.2 Real Interest Rate*, 1960-2005

Domestic real interest rates increased significantly as a result, as in most developing countries, nominal rates did not decline proportionally to the decline in inflation.



Source: World Bank, World Development Indicators 2007.

^{*}Real interest rates are measured by the median inflation rate in both groups of countries.

6.3 Emerging Markets Risk Spreads*, 2000–08

Risks spreads for emerging markets have substantially declined in the last eight years because of fiscal consolidation, improved debt management, and buildup of reserves.



Source: JP Morgan Government Bond Indices.

*In the calculation of JP Morgan EMBI Stripped Spreads, the value of collateralized flows (if any) is stripped from the bond and hence it provides a better measure of the credit risk premium over United States Treasury bonds.

6.4 Commodity Prices

The third important development, more recent than the previous two, is a return to higher commodity prices. This has been felt in all classes of commodities, as shown in the next four graphs. Agriculture and food indices rose markedly less than other commodities but they have been catching up in recent months.

6.4.1 World Bank Major Commodity Price Indices*



Source: Development Economics Prospects Group, World Bank, Commodity Price Data: various issues.

*World Bank commodity price indices are trade weighted indices for developing countries.



6.4.2 Selected Metals Prices*

Source: Development Economics Prospects Group, World Bank, Commodity Price Data: various issues.

*Real metal price in constant 1990 US\$





Source: Development Economics Prospects Group, World Bank, Commodity Price Data: various issues.



6.4.4 Food: Indices for Various Categories of Products

Source: Development Economics Prospects Group, World Bank, Commodity Price Data: various issues.

6.5 Global Savings Rates* for Developed and Developing Countries as Percent of GDP

Saving rates have been declining in industrialized countries and increasing in developing countries. During the last decade, developing countries have become net exporters of capital.



Source: World Bank, World Development Indicators 2007.

*Gross domestic savings rates are gross domestic savings (GDP less final consumption expenditure (total consumption)) as percentage of GDP, both in current US\$

6.6 Global Investment Rates* for Developed and Developing Countries as Percent of GDP

Investment rates have followed movements in saving rates—that is, declining in industrialized countries and rising in most developing countries. The exceptions are Sub-Saharan Africa and Latin America, where rates of investment and growth have been stagnant.



Source: World Bank, World Development Indicators 2007.

*Gross domestic investment rates are gross capital formation (formerly gross domestic investment, which consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories) as percentage of GDP, both in current US\$

6.7 Size of Government (government expenditure as share of GDP) of Developed and Developing Countries, 1960–2005

The size of government is another important macroeconomic variable that is difficult to estimate precisely because some government expenditure and investment takes place in public enterprises. These are not always consolidated into the government accounts. This leads to variability, and a tendency to understate the figures.



Government consumption expenditure

Source: World Bank, World Development Indicators 2007.

Note: Government expenditure includes all government spending in goods and services, for consumption and investment, and net lending.



General government total expenditure and net lending

Source: IMF, World Economic Outlook.

6.8 International Trade

Since WWII, international trade has grown faster than global GDP. This is illustrated in the three graphs below.

6.8.1 Evolution of World Exports and the Share of Developing Countries, 1975–2005

World exports grew from less than 20 percent of global GDP in 1975 to 30 percent in 2005. The share of developing countries in global exports increased from about 22 percent to about 28 percent. The increase came after a sharp decline in the mid-1980s when the oil price dropped to about US\$10/bbl by about 1986. In constant United States dollar terms, the share of developing countries' exports appear more stable.





Source: World Bank, World Development Indicators 2007.

6.8.2 Developing Countries' Exports of Manufactures and Commodities*

The growth in exports of developing countries comes from both manufactures and commodities. The figures below show exports measured in nominal United States dollars and hence include price effects.



Source: World Bank, World Development Indicators 2007.

*Estimates for Sub-Saharan Africa not available in 2004 and 2005; for all trade data, regional aggregates do not exclude intraregional trade.

6.8.3 More Export Opportunities for High-Income Countries and South-South Trade, 1980–2005

Two new trends emerged in the 1990s: developing countries' imports grew faster than industrialized countries' exports, and developing countries' exports grew faster than industrialized countries' imports. The first trend indicates that developing countries' markets are increasingly open to industrialized countries. Both trends suggest increasing South-South trade (see the figures below).



Source: World Bank, World Development Indicators 2007.

6.9 Global Migration and Remittances

Since World War II, migration has become an increasingly important component of development. The number of immigrants has more than tripled, and remittances have been growing as a share of developing countries' GDP.

6.9.1 Global Migration and Remittances, 1960 to 2005

The number of immigrants has more than tripled. As a proportion of the world population migration has increased from about 2.5 percent to 3 percent, and probably much more as a proportion of industrialized countries' population. Not surprisingly, remittances have become an increasingly large share of developing countries' GDP.



Source: Population Division, United Nations, "Trends in Total Migrant Stock: 2005 Revision"; World Bank staff estimates based on the International Monetary Fund's Balance of Payments Statistics Yearbook 2007.

6.9.2 Remittances in Relation to FDI and Aid, 1970 to 2005

Remittances now exceed official development assistance.



Source: World Bank staff estimates based on the International Monetary Fund's *Balance of Payments Statistics Yearbook 2007;* World Bank, *World Development Indicators and Global Development Finance,* 2007; International Monetary Fund, International Financial Statistics and Balance of Payments databases.

6.10 Role of Technological Advances in Developing Countries' Economies

Developing countries have become technologically more sophisticated, as indicated in the graphs below.

6.10.1 Share of Developing Countries' High-Technology* Exports and Detailed Decomposition

Developing countries' share of high-technology exports has been increasing rapidly in recent years, driven mostly by China, but also other Asian countries.



Source: World Bank, World Development Indicators 2007.

*High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

**For all trade data, regional aggregates do not exclude intraregional trade.

6.10.2 Exports of Knowledge-Based* Commercial Services Dominated by the United States and the European Union

In the case of services, world trade is still dominated by the United States and the European Union. Notwithstanding India's growing exports of services, the share of developing countries has in fact declined.



Source: World Bank, World Development Indicators 2007.

*Knowledge-based commercial services include information technology (IT), communications, insurance, financial, and other services, but does not include transportation and travel. Typical activities are international telecommunications and postal and courier services; computer data processing; news-related service transactions between residents and nonresidents; construction services; royalties and license fees; miscellaneous business, professional, and technical service; personal, cultural, and recreational services; freight insurance on goods exported and other direct insurance such as life insurance; financial intermediation services such as commissions, foreign exchange transactions, and brokerage services; and auxiliary services such as financial market operational and regulatory services.

6.10.3 Developing Countries' Share of Patent Applications (residents and non-residents), 1995–2004

Developing countries have become more important innovators.



Source: World Bank, World Development Indicators 2007.

6.10.4 Receipts of Royalty and License Fees, 1997–2004



However, income from innovation is still dominated by industrialized countries.

Source: World Bank, World Development Indicators 2007.

6.11 Private Capital Flows to Developing Countries

Since the mid-1990s, private capital flows to developing countries have declined and developing countries now are net savers. The exception is FDI, whose role in recent years has increased, in both absolute and relative terms. This is illustrated in the figures below.

6.11.1 FDI Inflows to Developing Countries, 1980–2005

The inflows of FDI to developing countries are highly concentrated, with Latin America and China being the major recipients in the last 10 years. In aggregate terms, FDI to developing countries has been volatile. Between the mid-1990s and the early 2000s, inflows declined from 35 percent of total world FDI to 10 percent. FDI inflows have now recovered and are hovering around 30 percent of the world total.



Source: World Bank, World Development Indicators 2007.

6.11.2 Private Capital Flows* into Developing Countries and Their Share in Total Private Capital Flows, 1991–2005

After reaching over 25 percent of the world total in the early 1990s, private capital flows into developing countries are a small and declining portion of all private capital flows.



Source: World Bank, World Development Indicators 2007.



Source: World Bank, Development Economics Group.

*Private capital flows consist of private debt and nondebt flows. Private debt flows include commercial bank lending, bonds, and other private credits; nondebt private flows are FDI and portfolio equity investment.

6.11.3 Buildup of Reserves in Developing Countries, 1993–2006

Over the last decade, developing countries have started accumulating substantial reserves.



Source: World Bank, World Development Indicators 2007.

6.11.4 Global Imbalances, 1999–2006

The increase in developing countries' reserves occurred in parallel with a decline in the United States savings rate to unprecedentedly low levels.

	Global imbalance							
	1999	2000	2001	2002	2003	2004	2005	2006
Major reserve positive countries								
Total reserves, top 10 (minus gold, current US\$, millions)								
China	158	168	216	291	408	614	822	1068
Japan	287	355	395	461	663	834	834	880
Russian Federation	8	24	33	44	73	121	176	296
Taiwan (China)	106	107	122	162	207	242	253	266
Korea, Rep. of	74	96	103	121	155	199	210	239
India	33	38	46	68	99	127	132	171
Singapore	77	80	76	82	96	113	116	136
Hong Kong (China)	96	108	111	112	118	124	124	133
Brazil	35	32	36	38	49	53	54	86
Malaysia	31	28	30	33	44	66	70	82
U.S. household saving (c	urrent US\$, billions)						
	114	117	108	169	166	160	13	6
As a percentage of household disposable income								
	1.7	1.6	1.4	2.2	2.0	1.8	0.1	0.1
U.S. current account defi	cit (current	US\$, billior	าร)					
	300	415	389	472	528	665	729	857
Composition of U.S. capital inflows by major reserve holding countries (current US\$, billions)								
Foreign-owned assets in the	United Stat	es, excluding	financial de	rivatives (inc	rease/financ	ial inflow (+))	
European Union	409	593	362	215	244	467	479	799
China	15	19	39	72	75	125	188	210
Middle East	2	16	2	1	8	28	19	63
Japan	25	58	50	77	139	238	61	48
Germany	49	72	62	18	40	35	32	42
Hong Kong (China)	11	10	29	15	38	11	32	38
Brazil	-1	1	8	-2	10	3	10	32
Korea, Rep. of	11	1	1	14	18	19	22	16
Singapore	-2	9	0	8	11	12	5	
India	3	-1	0	3	7	-3	4	5
Taiwan (China)	0	-2	9	11	23	8	11	4

Source: World Bank, World Development Indicators 2007; Bureau of Economic Analysis, National Economic Accounts Data and United States International Transactions Accounts Data.

6.12 Climate Change

Global warming and its potential costly consequences are a major, if not the most important, global trend facing developing economies. The figures below illustrate some of the magnitudes of the problem.

6.12.1 Per Capita Carbon Emission, 1970–2003

Per capita emissions of $\rm CO_2$ are lower than those in industrialized countries, but rising rapidly.



Source: World Bank, World Development Indicators 2007.

$\rm 6.12.2~CO_{_2}$ Emissions in the United States, China, and India, Present and Future

Currently, China's total carbon emissions are approximately equal to those of the United States, and India's are about one fifth. On a per capita basis, however, India's emissions were 5 percent and China's 25 percent of United States levels. If India and China reduced emissions by 20 percent over the next 50 years (a period in which their per capita incomes are likely to grow to advanced-country levels) and the United States reduced emissions by 80 percent, then China and India's per capita emissions would be roughly equal and 20 percent of the United States levels, respectively.

Emissions in China and India as Percentage of United States L	.evels
---------------------------------------------------------------	--------

	Total CO ₂ emissions	Per capita emissions	Per capita GDP	Per capita emissions 80% reduction in United States and 20% in China and India
India (% of United States)	20	5	2	20
China (% of United States)	100	25	6	100

Source: UNDP, Human Development Report 2007.

6.12.3 Carbon Intensity in Selected Countries*

Industrialized countries produce much less CO_2 than developing countries per unit of output. This reflects more efficient technology, the production mix, and, possibly, energy costs, which tend to be more highly subsidized in developing countries.

Countries	Output
United States	0.46
European Union	0.29
Japan	0.19
China	1.67
India	1.30

Source: UNDP, Human Development Report 2007.

*Gigatons of CO₂ emissions per trillion United States dollars of GDP.

6.12.4 The Magnitude of the Challenge

The Intergovernmental Panel on Climate Change (IPCC) has assessed that a relatively safe level of CO_2 emissions globally is 14.5 gigatons per year, which comes out to 2.25 metric tons per person per year. The table below from the United Nations Human Development Report (2007) shows the per capita emissions for major industrial countries. World carbon emissions are now at about two times the safe level, meaning that if the current output is sustained, the CO_2 stock in the atmosphere will rise above safe levels in the next 40 years.

	CO_2 emissions per capita (t CO_2) 2004	Equivalent global CO ₂ emissions (Gt CO ₂) 2004 ^b	Equivalent number of sustainable carbon budgets ^c
World ^d	4.5	29	2
Australia	16.2	104	7
Canada	20.0	129	9
France	6.0	39	3
Germany	9.8	63	4
Italy	7.8	50	3
Japan	9.9	63	4
Netherlands	8.7	56	4
United Kingdom	9.8	63	4
United States	20.6	132	9

Global carbon footprints at OECD levels would require more than one planet^a

Source: UNDP, Human Development Report 2007, calculations based on Indicator Table 24.

a. As measured in sustainable carbon budgets.

b. Refers to global emissions if every country in the world emitted at the same per capita level as the specified country.

c. Based on a sustainable emissions pathway of 14.5 Gt CO₂ per year.

d. Current global carbon footprint.

6.12.5 Concentrations of Particulate Matter and Sulfur Dioxide

In addition to the global environment, developing countries also have to deal with local environmental challenges. Particularly in urban areas, air pollution can be the cause of severe respiratory diseases, and children are most at risk. Water pollution and the availability of water is another daunting challenge.



Source: Liang, Congjie ed. 2005. China Environmental Yearbook 2005. Brill Academic Publishers; and WHO 2005. Copy of figure is available at: http:// siteresources.worldbank.org/INTEAPREGTOPENVIRONMENT/Resources/China_Cost_of_Pollution.pdf, p. xviii.

*The notation PM10 is used to describe airborne particles of 10 micrometers or less.

- Why have only 13 developing world economies achieved sustained, high growth since World War II?
- Why is engagement with the global economy necessary to achieve high growth?
- Why do some countries' growth strategies fail to win the public's confidence?
- Why are equity and equality of opportunity important components of successful growth strategies?
- Why do many countries, blessed with natural resource wealth, "not achieve high growth?
- Why has no country ever sustained rapid growth without high rates of public investment?
- Why does it not always pay to devalue the exchange rate? When does it?
- Why is childhood nutrition so important to economic growth?
- Why do some economies lose momentum when others keep on growing?
- Why has no country ever sustained long-term growth without urbanizing?
- Why should there be an end to energy subsidies?
- Why do global warming and the rising prices of food, energy, and minerals pose challenges to potential future growth in developing countries?
- Why does the aging of the world population matter for developing countries' growth and employment prospects?

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