



A 45 Year Forecast for the World Economies

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Over the next 45 years, Vietnam and Nigeria may emerge as the premier developing economies. Pricewaterhouse Coopers (PWC), in their newly released study *The World in 2050: Beyond the BRICs: A broader look at emerging market growth prospects*, offers this prediction, as well as many others, as part of their macroeconomic forecast for emerging markets.

The US, China, and India will be the dominant world economies. But Brazil will overtake Japan. Russia, Mexico, and Indonesia will overtake Germany, France, and the UK, and Turkey's economy will be as large as Italy's in 2050.

The current study is an update to PWC's original study, done in 2006, and looks at 20 countries – those they term the "E7" (the BRIC countries of Brazil, Russian, India, and China, plus Mexico, Indonesia, and Turkey), plus the 13 largest economies outside of the G7 (US, Japan, Germany, UK, France, Italy, and Canada).

We spoke with PWC economists Ed Mansfield and Brendon Ogmundson, who provided additional insights into their study.

Neoclassical Growth Models and Their Limitations

PWC's study utilizes a neoclassical growth model, which is based on a series of inputs and assumptions:

- growth in the physical capital stock, which is determined by new capital investment less depreciation of the existing capital stock;
- growth in the labor force, using the latest available United Nations (UN) projections of working age population growth;
- growth in the quality of labor ('human capital'), which is assumed to be related to current and projected average education levels in the workforce; and
- technological progress, which drives improvements in productivity.

The model assigns higher growth rates to those countries that are more capital intensive, as reflected by higher investments in physical assets (plants and machinery). Mansfield and Ogmundson say "the cheapest way to get faster growth is through investment in machinery and hard assets." Higher growth rates are also a function of faster growing populations, particularly those with demographic characteristics that will result in higher proportions of individuals in



the working age range of 19-59. Education and training of the workforce enters into play, as it contributes to the growth of “human capital” and subsequent economic growth.

Economic growth is based on the GDP of each country. To facilitate comparisons across countries, PWC measures GDP growth using two metrics – trends in real exchange rates over time, and trends in PPP (purchasing power parity). Higher growth is assumed to lead to a stronger currency. PWC notes that these two metrics produce markedly different forecasts, although they tend to converge over time.

A key aspect of the model is that investments in physical and human capital have diminishing returns over time. Mansfield and Ogmundson cite this, as well as an aging population, as contributing factors to the slowdown in Japan’s growth over the last 15 years.

Neoclassical models predict a convergence between “rich” and “poor” countries. Less economically developed countries should eventually catch up to the more developed ones, although there is limited empirical evidence of this taking place on a widespread basis. Japan is the exception, as it emerged as a poor country, post World War II, to become an economic powerhouse.

Mansfield and Ogmundson note that political instability can overcome model predictions. “If you went back to the 1950s,” says Mansfield, “you would have predicted Brazil and Argentina would become major economic forces, but political factors prevented that from occurring.” Lastly, the model does not specifically incorporate entrepreneurship (other than through the investment in human capital) or the effects of regulation, incentives, or intervention by government.

PWC notes the model predicts long term secular growth, and “ignores cyclical fluctuations around this long-term trend, which history suggest could be significant in the short term for emerging economies in particular.”

Predictions for the Emerging Markets

The world’s economies will line up much differently in 45 years, according to the PWC model:

Table 2: Projected relative size of economies in 2007 and 2050 (US = 100)

Country (indices with US = 100)	GDP at market exchange rates in US \$ terms		GDP in PPP terms	
	2007	2050	2007	2050
US	100	100	100	100
Japan	32	19	28	19
China	23	129	51	129
Germany	22	14	20	14
UK	18	14	15	14
France	17	14	15	14
Italy	14	10	13	10
Canada	10	9	10	9
Spain	9	9	10	9
Brazil	8	26	15	26
Russia	8	17	17	17
India	7	88	22	88
Korea	7	8	9	8
Mexico	7	17	10	17
Australia	6	6	5	6
Turkey	3	10	5	10
Indonesia	3	17	7	17

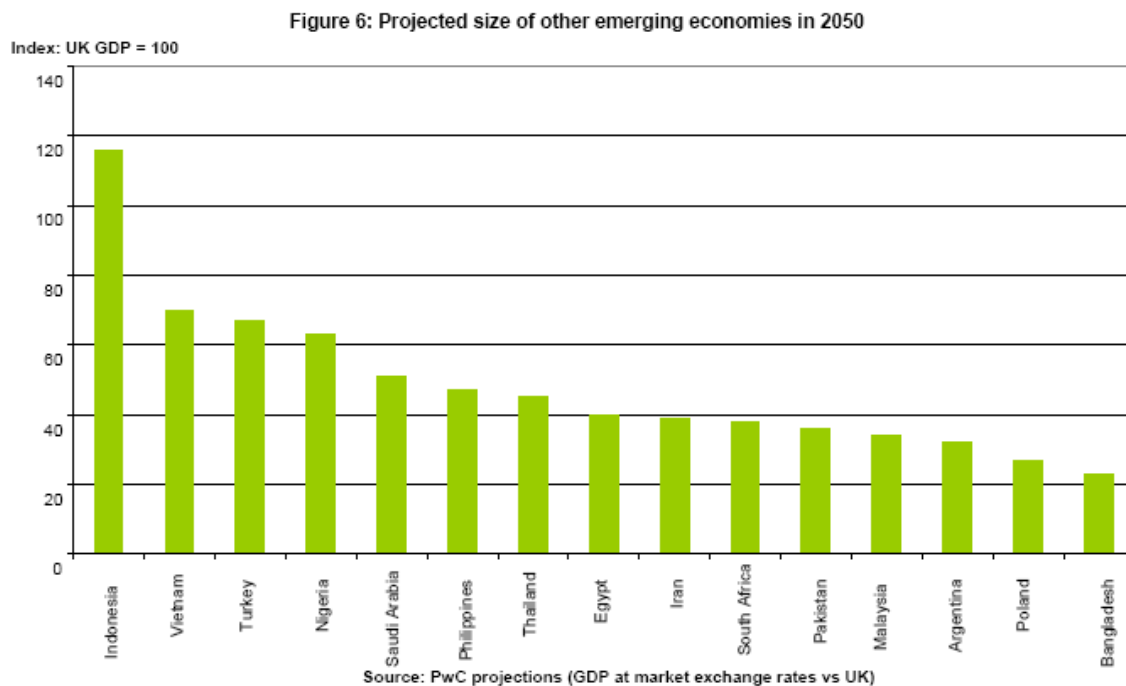
Source: PricewaterhouseCoopers estimates (using UN population projections)

PWC offers the following observations on this data:

- China will be adversely impacted by its one-child policy and rapidly aging population. India, by contrast, will benefit from a rapidly growing working age population. Nonetheless, China will overtake the US in 2025 and become the world's largest economy, surpassing the US by 30% in 2050. India's economy will be 90% of the size of the US in 2050.
- Education and productivity levels in China are lower than in India, but are expected to catch up over time. Education and productivity in India will catch up with OECD levels, provided that India can institute a framework to overcome barriers such as the low education of women in rural areas.
- China's growth has been helped by a high savings rate, but this will become less of a factor as its population ages.

- Brazil, Turkey and Mexico are poised to grow through relatively young, fast-growing populations, provided their governments foster the necessary educational and policy framework conducive to economic growth.
- Russia and South Korea will see a drag on their economies due to declining populations.
- Growth in the OECD countries is most closely correlated with population growth, with the US projected to grow at 2.4% on both a local currency and PPP basis.
- In 2050, the Japanese economy will be slightly larger than that of Russia or Mexico, and a bit smaller than that of Brazil.

PWC also forecasts the size of other emerging economies in 2050:



Vietnam is expected to develop rapidly due to high population growth, a renewed focus on entrepreneurship, and high investment rates. Mansfield and Ogmundson say “a lot of manufacturing has already moved to Vietnam due to its lower cost structure.” Nigeria is an oil-rich economy, and its projected growth is, in part, a function of starting from a low level of per capita GDP. A key factor in Nigeria’s growth will be its ability to stimulate development of non-oil related



revenue. Mansfield and Ogmundson also note that Nigeria is subject to a greater-than-average level of risk from political instability.

Implications for Advisors

PWC notes that “long-term projections are subject to great uncertainties, but the broad conclusion of a shift in the balance of the global economy towards what are today regarded as emerging markets seems clear.” The model is sensitive to many of the assumptions noted above, including population growth, investment rates, and trends in education levels. Ultimately, these factors determine the level of productivity, which is the variable in the model with the highest level of sensitivity. Taking these factors into consideration, PWC estimates a margin of error of +/- 30% in overall growth characteristics over the 45 year period.

The overall messages of the PWC study are the G7 economies will play a smaller role relative to the E7, and significant “surprises” like Vietnam and Nigeria will emerge.

Advisors should not adjust asset allocations based solely on this study. We believe the study provides interesting and insightful analysis with respect to the implications of projecting existing economic conditions and demographic characteristics into the distant future. Economies facing demographic “challenges” will surely be weakened, and vice versa, and demography cannot be overcome with quick policy fixes. But, we believe political risk plays too great a role in economic development, and an investment strategy predicated on the growth of a particular country would be unwise. Diversification at the country and region level is the only way to overcome this risk, from an investment perspective. Advisors should recognize that the US and other G7 countries will have a gradually decreasing share of world GDP, but this does not necessitate a short term adjustment to asset allocation.

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