

Global growth generators: Moving beyond emerging markets and BRICs

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Introduction: What drives growth?

The drivers of economic growth in the world economy have been studied by economists since political economy became a serious discipline in the 18th century. In a recent study (Buiter and Rahbari 2011) we add to this literature by investigating the likely future sources of global economic growth between 2010 and 2050.

Our fundamental unit of analysis is the nation state or country. This is because most of the prior literature has been conducted using countries and country-level characteristics as the basic data points and because many of the key data currently only can be found at the country level. We recognise, however, that global growth generators (3G) entities can be found at the level of regions (sub-national or multi-country), cities (especially the mega-cities where a growing fraction of the world's population lives and works), sectors, industries, firms, products, asset classes or business practices. We hope to explore these other types of global growth generators in future studies.

We believe that exceptional opportunities for profitable investment, financial and real, are likely to be associated with extraordinary growth opportunities, although we recognise that there may be many a slip between growth and returns. With efficient financial markets, of course, risk-adjusted expected returns are equalised across all possible investment opportunities. Good or bad growth opportunities are fully priced in by the markets and there can be no 'alpha' or expected risk-adjusted excess returns. This tells us more about the empirical relevance of the efficient-market hypothesis, however, than about the wisdom of anticipating exceptional investment returns in economic environments characterised by extraordinary growth opportunities.

The word 'global' in 3G is there not just to indicate that we are looking for growth prospects

anywhere in the world. It is there also because we believe that the process of globalisation that started around 1950 accelerated with the Chinese reforms of the 1980s, the fall of communism and central planning in central and eastern Europe in 1989, the collapse of the Soviet Union in 1991 and the Indian reforms launched in 1991, and that has encompassed most of the world during the past two decades, has been instrumental in spreading economic growth more widely than ever before.

This wave of globalisation was driven by technology (improvements in information, communication and transportation technology) and by the deliberate removal of man-made obstacles to cross-border movements of goods, services, capital, people, business and ideas. Globalisation went hand-in-hand with the adoption of some form of market economy in many countries where markets had hitherto been suppressed, supplanted with various forms of central planning, or over-regulated to the point of utter ineffectiveness.

We don't want 3G to join the list of patronising acronyms or even the list of cute but uninformative and pointless ones (BRIC, Next Eleven, Seven Percent Club), although at one point we flirted with an intriguing/confusing label like the Magnificent Seven, the Nine Nazgûl or The 39 Steps. Instead we view it as a question. What are the generators of global growth and profitable investment opportunities or the next 40 years? This question requires an answer based on economic fundamentals and a replicable methodology.

We base our forecasts on three sources of information.

- A set of individual country forecasts of GDP (real GDP using PPP exchange rates and dollar GDP using market exchange rates), per capita GDP, inflation and market exchange rates for

58 countries accounting for 85% of global GDP prepared by the 50 economists on Citi's Economics team.

These economists normally provide 5-year forecasts. We asked them to extend the forecast horizon to 40 years and to provide a brief rationalisation for these forecasts.

- Historical GDP data for the most recent 10-year period.
- A few centuries of economic research on the drivers of long-term growth.

One key insight was the distinction between growth at the technology frontier and catch-up or convergence growth.

Defining the frontier country

The frontier is represented by the country or countries with the most advanced technology, with a reasonably well-functioning (market) economy, physical capital appropriate in scale and composition to its endowments of human capital, and a reasonably well-educated labour force.

...most of the global growth we predict comes from the convergence to the technology frontier.

Since modern economic growth began with the British Industrial Revolution around the middle of the 18th century, there have been as few as two but certainly no more than four technology leaders:

- the UK from about 1750 till 1850 or 1870;
- the US (and perhaps Germany and/or Japan) since then.

Underlying productivity growth at the frontier (proxied by US real GDP per capita in our study) is modest and steady. Based on past evidence we set it at 1.5% per annum.

Over a 40-year period, even this modest annual growth rate would cause per capita output to rise by 81%, but most of the global growth we predict comes from the convergence to the technology frontier of countries that start off way below/inside the frontier. Movement to the frontier can be fast, through the adoption/importation of best-practice technology and know-how from the frontier countries.

However, such rapid convergence or catch-up growth is not automatic or guaranteed. There

are reasons why poor countries – countries with low per-capita GDP – are poor. If these causes of poverty are persistent, the gap between the frontier and the actual position of the country, its relative economic backwardness (see Gerschenkron 1962), is also likely to be persistent.

The causes of economic backwardness are bad luck, bad institutions, and/or bad policies. Bad luck includes such factors as geography, climate, unfriendly neighbours (and associated wars and other cross-border conflicts), and natural disasters, including pandemics. Bad institutions can be institutions that were supportive of reasonable or even good economic performance at some earlier stage of technological, social, political, cultural and economic development but have become economically dysfunctional as these evolved. Slavery, serfdom, indentured labour, the caste system, guilds, feudalism and central planning all fit that bill. The damage done by bad policies, including populist assaults on the incentives to work, save and invest, macroeconomic mismanagement leading to serial sovereign debt default and hyperinflations, ill-designed tax, public spending and regulatory policies that cause damaging internal conflict, are well-known. Three recent examples can be found in Zimbabwe, Venezuela and the Ivory Coast.

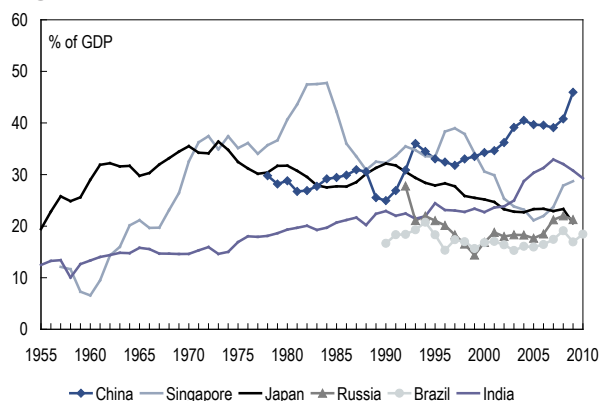
Our reading of the historiography and cliometrics of secular economic growth also prompted us to construct a 3G index that aggregates some key growth drivers identified in this literature (see Barro and Sala-i-Martin 2003 for a useful survey). These are:

- gross fixed domestic capital formation (as a share of GDP),
- gross domestic saving (as a share of GDP),
- a measure of human capital, itself aggregating demographic, health and educational achievement indices,
- a measure of institutional quality,
- a measure of trade openness, and
- the initial level of per capita income.

New technology often has to be embodied in new capital (including new human capital). A high rate of domestic capital formation is therefore a precondition for sustained high rates of growth. The apparent inability of Russia and Brazil to raise their gross fixed investment rates significantly and lastingly above 20% of GDP is one of the reasons neither country figures in our list of 3G countries (see Figure 1). Although

in principle domestic capital formation can be financed out of external savings (through a current-account deficit on the balance of payments, that is, through capital inflows), in practice most countries that have achieved and sustained high domestic investment rates have financed the bulk of this out of domestic saving. Indeed, the countries with the most spectacularly high investment rates (Japan between 1960 and 1990, Singapore since 1979, China since 1990, have tended to run current-account surpluses during the years that saw their peak investment rates.¹

Figure 1. Gross fixed investment



Note: Gross Fixed Capital Formation divided by GDP.

Source: IMF IFS and Citi Investment Research and Analysis

Human capital, especially a young population (a large share of the population of working age in total population), a healthy population and a population with good primary, secondary and vocational education and training is a big plus for growth.² Our measure for the quality of institutions is calculated as a simple average of five indicators of institutional and policy quality.³ Openness is computed as the sum of exports and imports divided by GDP, controlling for population size and landmass. One of the interesting insights from our study is that, provided a modicum of political stability and predictability as regards the economic environment of enterprises, and households (as consumers, portfolio investors and workers)

1 The saving/investment variable is constructed by taking an unweighted average of 2006 – 2009 averages of gross national savings and gross fixed capital formation, as a percentage of GDP, obtained from the World Bank World Development Indicators.

2 Demographic prospects are represented as the average annual change in the working age (15 – 64 year) population between 2010 and 2050, obtained from the UN Population Statistics. (Poor) health is measured by the inverse of life expectancy at birth, while education is proxied by the primary school gross enrolment rate, both from the World Bank.

3 Scores for 'Rule of Law' and 'Government Effectiveness' from the World Bank World Governance Indicators, the 'Ease of Doing Business' score from the World Bank's eponymous survey, 'Democracy' from the Polity IV dataset and the 'Global Competitiveness score' by the World Economic Forum.

has been achieved, and provided incentives to work, save and invest are not too badly warped, the quality of institutions and policies matters less for growth at very low levels of initial per capita income and productivity (in very poor countries) than at higher levels (in middle income countries) when a significant degree of convergence and catch-up to the frontier has already taken place.

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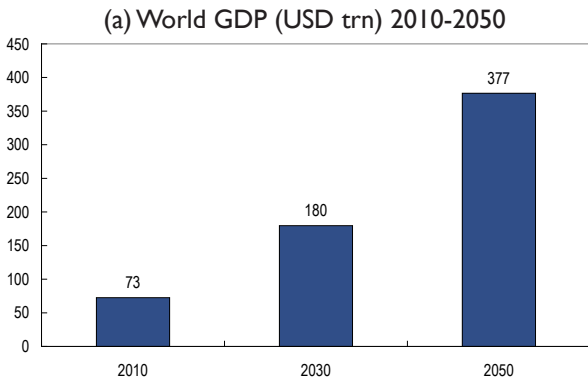
The two dimensions of openness that matter most for growth are trade in goods and services and foreign direct investment. Trade is obviously important for small countries, as exports to the global market may be the only way to achieve economies of scale. It is equally important, however, on the import side for both small and large countries, as international competitive pressures are often the only effective ones spurring efficiency. Foreign direct investment is important not primarily because of the additional funds it makes available, but because it is often bundled with technical knowledge, know-how and management skills and thus provides an ideal vehicle for transferring products, processes and practices from the frontier to the low initial productivity nations. It may also be the only way of introducing competition to the non-traded sectors.

We use the local knowledge embodied in our economists' forecasts (including demographic projections), the historical per capita GDP growth rates for the most recent decade and stylised facts of convergence (the US as the frontier technology country and the empirical regularity that historically the rate of convergence has been lower the smaller the productivity gap between the frontier nation and the converging nation) to put together our final published set of forecasts.

Our key projections

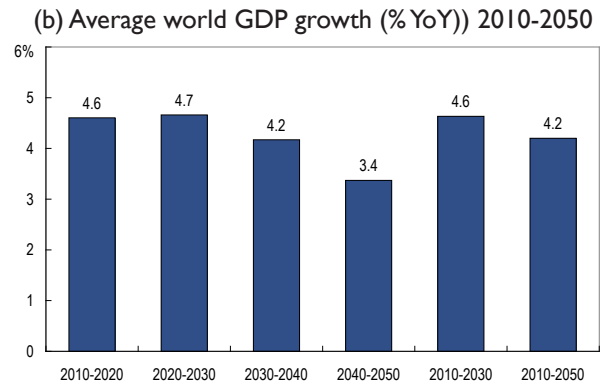
We expect strong growth in the world economy until 2050 (see Chart 2), with real GDP growth at PPP exchange rates of 4.6% p.a. until 2030 and 3.8% p.a. for the period 2030-2050. This would cause global real GDP to rise from 73trn US dollars in 2010 to about 380trn US dollars in 2050, both in constant 2009 USD at PPP exchange rates. At market exchange rates, these annual growth rates would be somewhat lower, by about half a percentage point initially, and less in later decades.

Figure 2.



Note: In trillion 2009 PPP USD.

Source: Citi Investment Research and Analysis.



Note: GDP measured in 2009 PPP USD.

Source: U.N. Populations Statistics; Citi Investment Research and Analysis.

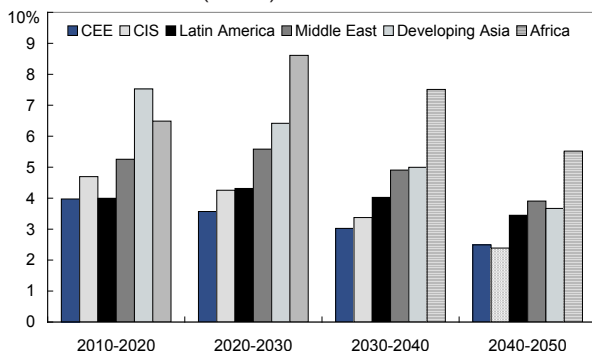
Of the 11 countries we identify as global growth generators, nine are in emerging Asia. This is probably not surprising, but our next finding, that the other two are African nations may well be something of a surprise. We believe that this may well turn out to be Africa's century as well as Asia's century. Modest growth will be experienced by today's advanced economies. The remaining emerging markets perform somewhere between the 3G countries and today's advanced economies. The global centre of economic gravity (see Quah 2011) shifted from the mid-Atlantic around 1980 towards Asia and Africa (see Figures 3 and 4).

We expect strong growth in the world economy until 2050, with real GDP growth at PPP exchange rates of 4.6% per annum until 2030 and 3.8% for the period 2030-2050

According to our projections, China will overtake the US to become the largest economy in the world by 2020 (at PPP exchange rates; it would take a decade longer at market exchange rates) and will itself be overtaken by India by 2050.

Figure 3.

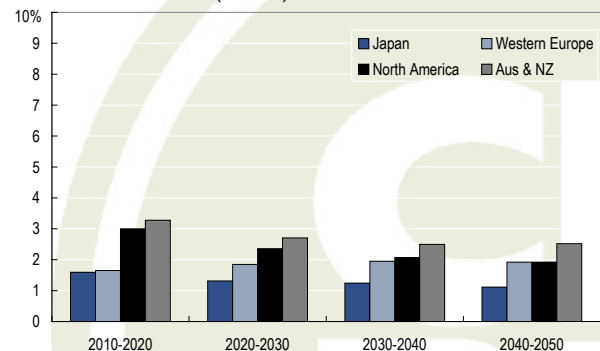
(a) Emerging economies – average real GDP growth (%YoY) 2010-2050



Note: GDP measured in 2009 PPP USD.

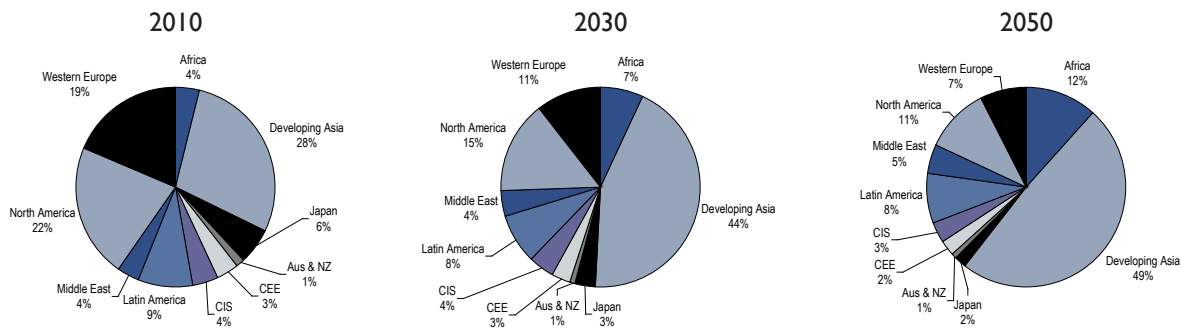
Source: Citi Investment Research and Analysis.

(b) Advanced economies – average real GDP growth (%YoY) 2010-2050



Note that in the past we have only seen growth rates like this for a much smaller set of countries and for much shorter periods of time, e.g. the continental west-European countries during the 'Golden Age' from 1950 till 1973, and the BRICs since around 1990. We are therefore using the four most dangerous words in economics: "This time is different" (see Reinhart and Rogoff 2009). What then is different this time? In a nutshell, all but a handful of nations (like North Korea, Myanmar, Cuba - all cursed with dysfunctional political and economic regimes) have opened up to international trade and foreign direct investment, have adopted some kind of market economy and have reached the minimum threshold level of institutional quality and political stability that enables them to launch themselves on a path of rapid convergence and catch-up growth.

Our 3G countries – there are 11 of them – comprise Bangladesh, China, Egypt, India, Indonesia, Iraq, Mongolia, Nigeria, Philippines, Sri Lanka and Vietnam. They were selected on the basis of their average real per-capita GDP growth over the period 2010-2050 – 5% or higher at PPP exchange rates. There was a distinct discontinuity of more than 0.5% in projected per-capita growth rates

Figure 4. Composition of World GDP

Note: GDP measured in 2009 PPP USD.

Source: Citi Investment Research and Analysis.

between the 11 3G countries and the fastest-growing country not included in the 3G category, which was Thailand.

Four of our 3G countries are rich in natural resources (Nigeria, Indonesia, Mongolia and Iraq). They will face special governance and policy challenges to avoid both the mild and the strong version of the 'natural resource curse'. The mild version is the 'Dutch disease'. The exploitation of natural resources put upward pressure on the real exchange rate, through the capital inflows it attracts, through the investment boom that often accompanies it, and through the additional private and public consumption it generates. Part of this additional domestic demand will fall on non-traded goods and services, crowding out the production of non-natural-resource exportables and import-competing goods and services. Qualitatively, some response of the real exchange rate and the composition of output in the direction described by the 'Dutch disease' mechanism is efficient and desirable, but prices and asset markets frequently overshoot and produce an excessive contraction in the size of non-natural resource exportable and import-competing production.

Brazil and especially Russia, have material weaknesses in the quality of their key economic institutions and policies which limit their growth prospects

The strong version of the 'natural resource curse' is a dysfunctional political economy response to natural-resource wealth – 'easy riches'. Effort, enterprise, talent and other resources are diverted away from productive, wealth-creating enterprise towards rent-seeking or dup (directly unproductive profit-seeking) activities. Income and wealth distribution also tend to be much more unequal in natural resource-based societies than in human capital-based societies, leading to social and political polarisation and internal conflict. As a result, natural resource-rich countries are sometimes worse off than they

would have been without 'nature's blessing'. This is not unavoidable, but depends on collective choices and the quality of institutions and policies. Examples of countries like Norway (oil and gas) and Botswana (diamonds) suggest that the natural resource curse is not a 'natural disaster', but a man-made one.

In the case of Iraq, there is a second source of rapid growth potential, i.e. post-war reconstruction. As the example of Europe after World War II makes clear, societies in which armed conflict has destroyed significant amounts of physical capital (and depressed new investment) but where the human capital stock is largely intact, can recover at spectacular rates. Iraq has experienced 30 years of war and civil war. If peace can be maintained, the peace dividend could be significant.

All our 3G countries are poor. China is by far the richest among them. All 3G countries except China have favourable demographics. China's population of working age either has peaked very recently or is about to peak. Its population is projected to be declining from some time in the 2030s. China will therefore be old before it is rich.

We also propose a 'second eleven plus one substitute' of mainly middle-income countries that have robust but not spectacular growth prospects. It includes Brazil, Chile, Colombia, Kazakhstan, Mexico, Peru, Russia, South Africa, South Korea, Thailand, Turkey and Ukraine. There are several reasons why two of the BRICs, Brazil and Russia, are in this second league rather than in the 3G category. One is that they are significantly richer than the 3G countries. A lot of catch-up/convergence has already occurred and most of the low-hanging fruit is gone. The second reason, already referred to, is their low investment rates (see Figure 1). The third is that, for the later stages of the convergence process, the quality of institutions and policies matters more than for the early stages (once a minimum threshold level of political stability, economic predictability and institutional quality has been

achieved). Brazil and especially Russia, have material weaknesses in the quality of their key economic institutions and policies which limit their growth prospects .

Finally, there is a category of 3G 'long shots' – countries that are currently underperforming in a major way because of dysfunctional economic institutions and policies, but for which the radical political transformation required to replace these dysfunctional institutions and policies, although impossible to predict with any degree of accuracy, does not seem beyond the realm of the possible. They include North Korea, Cuba, Iran, Myanmar, possibly Venezuela and Argentina and one or two others.

Caveats

Pricing natural resources

The growth we are predicting cannot occur with current natural-resource intensities, including energy-intensities and CO₂ emissions-intensities of production, consumption and investment. For this growth to materialise we require some combination of a supply-response of both exhaustible and renewable resources, resource-saving technological change and proper pricing or quantity-rationing of natural resources to reflect their long-run social marginal costs and benefits, including such global externalities as global warming. For some resources, including water, food, fuel and power, there are likely to be trade-offs and conflicts between distributional and poverty-relief objectives and environmental or sustainable growth objectives. Where the distributional or poverty-relief objectives cannot be met through cash grants (and in many of the poorest countries this is not possible because the authorities cannot identify and target the beneficiaries), the subsidisation of the consumption of these scarce natural

resources (staple foods, cooking and heating fuel, power, water) is required. Where metering of consumption is possible (as is sometimes the case with water, gas, oil and power) a life-line tariff can be both fair and efficient. A subsistence level of consumption is provided at a low or even zero price but beyond that the tariff increases to the full long-run social marginal cost level.

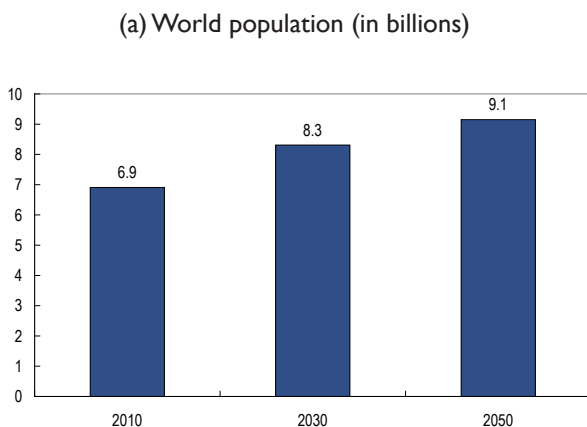
Major social, political and economic changes are required before it will be possible to price or ration key scarce natural resources properly. Take fresh water. About 85% of all water use in India is in agriculture. This is either not priced at all or priced to reflect some of the costs of delivery through irrigation networks. The scarcity rent of the water is never billed to the farmer. In other, poorer emerging markets as much as 90% of water use is in agriculture and is not priced properly if at all. Industrial use of water likewise is hardly ever priced at long-run social marginal cost.

The growth we are predicting will either be 'green' and sustainable or it won't occur. It is therefore encouraging that the main driver of environmental degradation and excessive natural resource use, population growth, is expected to peter out. Figure 5 shows that although the size of the world's population is expected to increase by just over 2 billion between 2010 and 2050 (a daunting prospect for mother earth), global GDP growth will mainly be driven by growth in GDP per capita, especially in the later decades (Figure 6).

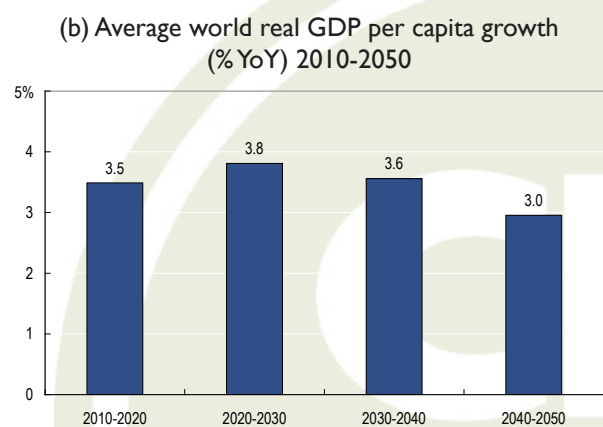
Food prices

Food prices deserve a special mention because they are among the most politically sensitive of natural resource prices. The kind of growth we are predicting, especially with its bias towards the most commodity-intensive producing and consuming nations, will be associated with rising

Figure 5.



Source: UN Population Statistics and Citi Investment Research and Analysis

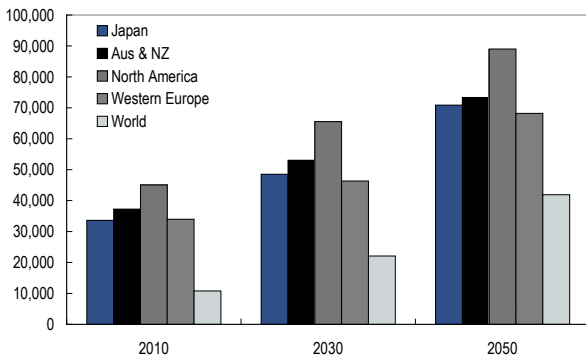


Note: GDP measured in 2009 PPP USD.

Source: Citi Investment Research and Analysis.

Figure 6.

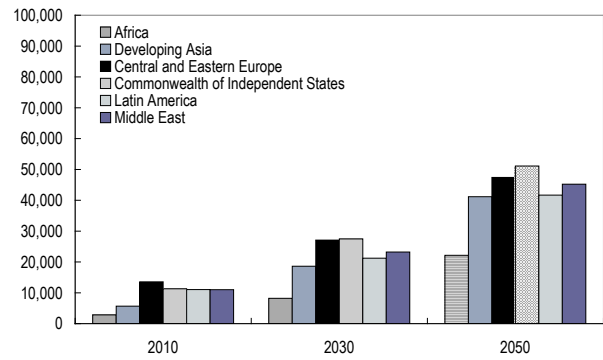
(a) GDP per capita (2010 PPP USD) 2050



Note: GDP per capita measured in 2009 PPP USD.

Source: Citi Investment Research and Analysis.

(b) Selected countries – convergence in real per capita GDP (% of US) 2010-2050



relative commodity prices, including rising food prices, thus reversing a trend that prevailed since the end of World War I until the end of the 20th century. Growing demand for food from the emerging markets will be one source of upward pressure on global food prices. Since fuel prices are likely to be rising also, there will be diversion of agricultural production from food to bio fuels. Finally, oil, energy and other hard commodities are important inputs into agricultural production, adding a cost-push element to food price inflation.

Even with another 40 years of superior growth, China's real per capita GDP in 2050 will barely be 50% of that of the US.

No doubt there will be supply response, as land and other scarce resources get diverted towards food production. But to stop the relative price of food from rising a new agricultural revolution or second 'green revolution' is likely to be required. We can hope for it, and make it more likely by spending money on R&D, but a successful outcome cannot be guaranteed. As demonstrated

by Azerki and Brückner (2011, p1), "... in low income countries increases in the international food prices lead to a significant deterioration of democratic institutions and a significant increase in the incidence of anti-government demonstrations, riots, and civil conflict."

To prevent poverty, political instability and civil conflict, governments will subsidise the staple foods of the poor. For many of the poorer countries, the additional budgetary demands this makes on already stretched fiscal authorities will be hard to handle. Fiscal crises since the Asian and Russian crises of 1997/98 and especially during the last decade, have been mainly an advanced-country phenomenon, with emerging markets generally exhibiting fiscal sustainability and restraint. If rising food, fuel and energy prices raise the political demand for larger subsidies, the era of superior emerging-market fiscal performance may be drawing to an end, at least in those countries whose revenue raising capacity does not keep pace with the growth in the politically mandated subsidy budget.

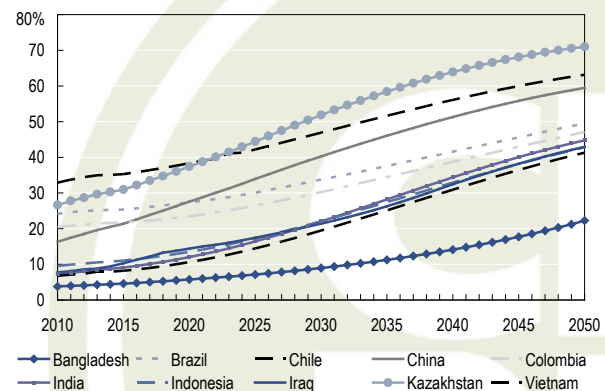
Figure 7.

(a) GDP per capita (2010 PPP USD) 2050

| Rank | Country | 2050 |
|------|---------------|---------|
| 1 | Singapore | 137,710 |
| 2 | Hong Kong | 116,639 |
| 3 | Taiwan | 114,093 |
| 4 | Korea | 107,752 |
| 5 | United States | 100,802 |
| 6 | Saudi Arabia | 98,311 |
| 7 | Canada | 96,375 |
| 8 | UK | 91,130 |
| 9 | Switzerland | 90,956 |
| 10 | Austria | 90,158 |

Source: Citi Investment Research and Analysis.

(b) Selected Countries – Convergence in Real GDP per Capita (% of US), 2010 to 2050



Today's rich are also tomorrow's rich

The focus on convergence and catch-up should not blind one to the reality that the richest countries (in terms of real per capita GDP) in 2010 are still the richest countries in 2050. The gap with the poorer countries is expected to narrow. It won't be closed for most countries. Even with another 40 years of superior growth, China's real per capita GDP in 2050 will barely be 50% of that of the US (see Figure 7).

The problem with forecasts

Projections and forecasts are smooth. Growth will not be smooth. Market economies and capitalism are characterised by alternating booms and busts, not by smooth growth. In addition, there will be occasional 'growth disasters', caused by very bad policies, internal or external conflicts or natural disasters. We know such growth disasters will occur, although we don't know which country or countries they will affect. We could have tried to allow for this by shading down our estimate of global GDP growth relative to the GDP-weighted average of national GDP growth rates, but chose not to do so. It must be recognised, therefore, that because of our inability to forecast local growth disasters, our global growth estimates are bound to be somewhat optimistic. Even allowing for that, however, we believe that there was never a better time for humanity, as regards the satisfaction of material wants, than the first half of the 21st century is likely to be.

Conclusion: How to grow fast

There is no secret to how to achieve high growth rates. Some of the necessary conditions are, however, not choices - even collective choices - that nations or regions can make. Others represent the result of choices that ought not to be made.

This is how a nation grows fast:

- Start poor;
- Start young;
- Open up to trade in goods and services and to foreign direct investment;
- Achieve reasonable political stability (the absence of significant external and internal conflict);

- Create some semblance of a functioning market economy;
- Boost the domestic saving and investment rates;
- Invest in human capital (educate and train both boys and girls, focusing on pre-school, primary and secondary education and on vocational training);
- Invest in infrastructure;
- Don't be unlucky. Avoid war-like neighbours and natural disasters;
- Don't blow it. Avoid internal conflict and populist assaults on the incentives to work, save and invest; avoid macroeconomic mismanagement, premature capital account liberalisation and financial regulatory disasters.

Catch-up and convergence will do the rest.

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