CEO CONFIDENTIAL

Issue 2003/12
October 2003

Goldman Sachs

Dreaming With BRICs: The Path to 2050

Over the next 50 years, Brazil, Russia, India and China—the BRICs economies—could become a much larger force in the world economy. The BRICs could become an important source of new global spending in the near future—and if things go right, their economies together could be larger than today's G6 by 2039

Over the next 50 years, Brazil, Russia, India and China—a group we term the BRICs—could become a much larger force in the world economy—much larger than they are now and much larger than many investors currently anticipate. We gauge just how large a force the BRICs could become over the next 50 years. We do this by setting out clear assumptions about how the process of growth and development works and applying a formal framework to generate long-term forecasts. Using the latest demographic projections and a model of capital accumulation and productivity growth, we map out GDP growth, income per capita and currency movements in the BRICs economies until 2050. We also look at our projections relative to long-term projections for today's G6 (US, Japan, Germany, France, Italy and the UK).

The results are startling. If things go right, the BRICs could become an important source of new global spending in the not too distant future. Taken together, the BRICs could be larger than the G6 by 2039. India's economy could be larger than Japan's by 2032, and China's larger than the US by 2041 (and larger than everyone else as early as 2016).

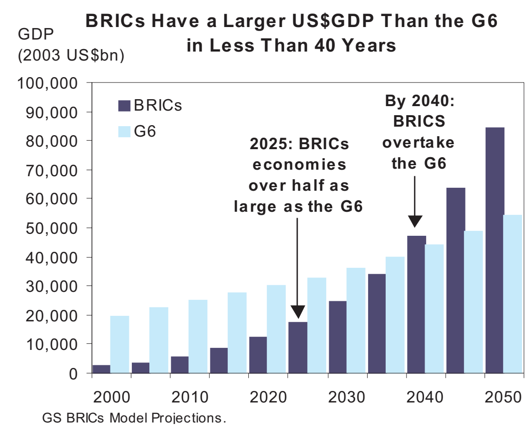
Our projections are optimistic, in the sense that they assume reasonably successful development. But they are economically sensible, internally consistent and provide a clear benchmark against which investors can set their expectations. There is a good chance that the right conditions in one or another economy will not fall into place and the projections will not be realized. If the BRICs pursue sound policies, however, the world we envisage here might in fact come close to reality.

2050: A Dramatically Different World

Our conclusions fall under five main topics:

Economic Size

- In less than 40 years, the BRICs economies together could be larger than the G6 in US dollar terms. By 2025 they could account for over half the size of the G6. Currently they are worth less than15%.



- In US dollar terms, China could overtake Germany in the next four years, Japan by 2015 and the US by 2039. India's economy could be larger than all but the US and China in 30 years. Russia would overtake Germany, France, Italy and the UK by 2050.

- Of the current G6, only the US and Japan may be among the six largest economies in US dollar terms in 2050.

Economic Growth

- India has the potential to show the fastest growth over the next 30 and 50 years. Growth could be higher than 5% over the next 30 years and close to 5% as late as 2050 if development proceeds successfully.

- Overall, growth for the BRICs is likely to slow significantly over this time frame. By 2050, only India on our projections would be recording growth rates significantly above 3%.

Continued on page 2

Goldman Sachs
133 Fleet Street
London EC4A 2BB
England

Sandra Lawson
Senior Global Economist
Roopa Purushothaman
Associate Economist

http://www.gs.com/ceoconfidential
(44) 20 7774 8736
sandra.lawson@gs.com

Goldman Sachs
CEO CONFIDENTIAL

Dreaming With BRICs: The Path to 2050

Continued from page 1

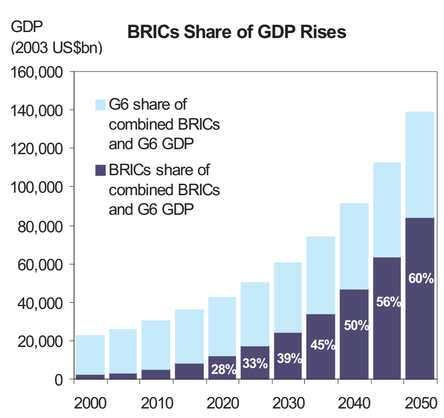
Incomes and Demographics

- Despite much faster growth, individuals in the BRICs are still likely to be poorer on average than individuals in the G6 economies by 2050. Russia is the exception, essentially catching up with the poorer of the G6 in terms of income per capita by 2050. China's per capita income could be similar to where the developed economies are now (about US$30,000 per capita). By 2030, China's income per capita could be roughly what Korea's is today. In the US, income per capita by 2050 could reach roughly $80,000.

- Demographics play an important role in the way the world will change. Even within the BRICs, demographic impacts vary greatly. The decline in working-age population is generally projected to take place later than in the developed economies, but will be steeper in Russia and China than India and Brazil.

Global Demand Patterns

- As early as 2009, the annual increase in US dollar spending from the BRICs could be greater than that from the G6 and more than twice as much in dollar terms as it is now. By 2025 the annual increase in US dollar spending from the BRICs could be twice that of the G6, and four times higher by 2050.



GS BRICs Model Projections.

Currency Movements

- Rising exchange rates could contribute a significant amount to the rise in US dollar GDP in the BRICs. About one-third of the increase in US dollar GDP from the BRICs over the period may come from rising currencies, with the other two-thirds from faster growth.

- The BRICs' real exchange rates could appreciate by up to 300% over the next 50 years (an average of 2.5% a year). China's currency could double in value in ten years' time if growth continued and the exchange rate were allowed to float freely.

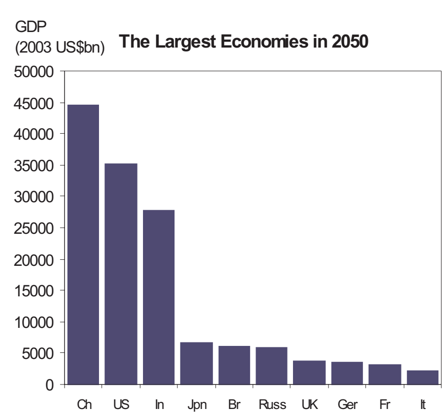
Growth Patterns to 2050

Taking each of the economies in brief:

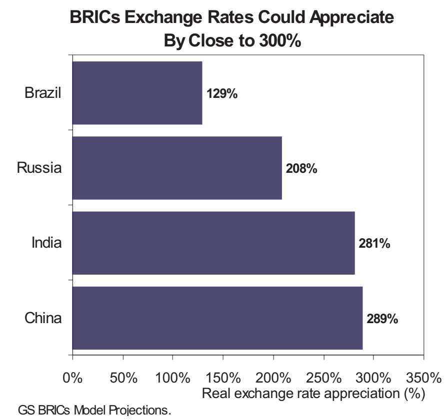
Over the next 50 years, **Brazil**'s GDP growth rate averages 3.6%. Brazil's economy overtakes Italy by 2025; France by 2031; and the UK and Germany by 2036.

China's GDP growth rate falls to 5% in 2020 from the 8.1% projected for 2003. By the mid-2040s, growth slows to around 3.5%. Even so, high investment rates, a large labor force and steady convergence mean China becomes the world's largest economy by 2041.

While growth in the G6, Brazil, Russia and China is expected to slow significantly over the next 50 years, **India**'s growth rate remains above 5% throughout the period. India's GDP outstrips that of Japan by 2032. With the only population among the BRICs that continues to grow throughout



GS BRICs Model Projections.



GS BRICs Model Projections.

the next 50 years, India has the potential to raise its US dollar income per capita in 2050 to 35 times current levels. Still, India's income per capita will be significantly lower than any of the other countries we look at.

Russia's growth projections are hampered by a shrinking population—an assumption that may be too negative—but strong convergence rates work to the country's benefit. By 2050, Russia's GDP per capita is by far the highest in the BRICs and is comparable to that of the G6. Russia's economy overtakes Italy in 2018; France in 2024; the UK in 2027 and Germany in 2028.

How the BRICs Will Get Richer

As developing economies grow, they have the potential to post higher growth rates. This potential comes from two sources. The first is that developing economies have less capital (per worker) than developed economies, so returns on capital are higher and a given investment rate results in higher growth in the capital stock.

The second is that developing countries may be able to use technologies available elsewhere to 'catch up.'

Continued on page 3

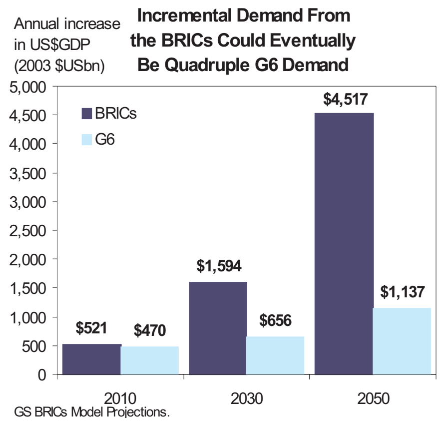
Dreaming With BRICs: The Path to 2050

Continued from page 3

Countries also grow richer on the back of appreciating currencies. Currencies tend to rise as higher productivity leads economies to converge on Purchasing Power Parity (PPP) exchange rates. The BRICs economies all have exchange rates that are a long way below PPP rates. These large differences between PPP and actual exchange rates come about because productivity levels are much lower in developing economies. There is a clear tendency for countries with higher income per capita to have exchange rates closer to PPP. As the BRICs develop and productivity rises, their currencies will tend to rise towards PPP.

To translate these processes into actual projections, we have developed a model described in detail in the paper released today. The intuition behind the model is quite simple. Growth accounting divides GDP growth into three components: growth in employment; growth in the capital stock; and technical progress (or total-factor productivity growth, TFP).

We model each component explicitly. We use the US Census Bureau's demographic projections to forecast employment growth, assuming that the proportion of the working age population that works stays roughly stable. We use assumptions about



GS BRICs Model Projections.

the investment rate to map out the path that the capital stock will take. And we model TFP growth as a process of catch-up on the developed economies, by assuming that the larger the income gap between the BRICs and the developed economies, the greater the potential for catch-up and stronger TFP growth.

We then use the projections of productivity growth from this exercise to map out the path of the real exchange rate. We assume that if an economy experiences higher productivity growth than the US, its equilibrium exchange rate will tend to appreciate.

Because both the growth and currency projections are long-term projections, we ignore economic cycles. Effectively, the projections can be seen as growth in the trend (or potential growth) of the economy and the currencies' path as an equilibrium path. Where economies peg their exchange rates, it is even more important to view the exchange rate projections as an equilibrium real rate. We abstract from inflation, citing our projections in real terms.

Continued on page 4

Goldman Sachs

CEO CONFIDENTIAL

Dreaming With BRICs: The Path to 2050

Continued from page 3

BRICs and the G6

We also make comparisons with the G6, using a less sophisticated version of the model to project G6 growth. We assume a common 2% labour productivity growth rate, so differences in projected GDP growth are purely a function of demographics (and real exchange rates remain roughly stable). A shrinking working age population is the biggest issue in Japan and Italy, where growth rates are lowest, and the smallest issue in the US, which maintains the fastest growth.

We can then compare GDP and GDP per capita in the BRICs with that in the G6 in a common currency. The shift in GDP relative to the G6 takes place steadily over the period, but is most dramatic in the first 30 years. The BRICs overtake the G6 through higher real growth and through the appreciation of BRICs' currencies. About one-third of the increase in US dollar GDP from the BRICs may come from rising currencies, with the other two-thirds from faster growth.

We also look explicitly at the source of new demand growth in the world economy. While it takes some time for the level of GDP in the BRICs to approach the G6, their share of new demand growth rises much more rapidly. Because it is incremental demand that generally drives returns, this measure may be particularly useful to assess the opportunities in these markets. We measure that new demand growth as the change in US dollar spending power in the various economies, so again it incorporates both growth and currency effects. On these measures, the BRICs come to dominate the G6 as a source of growth in spending power within 10 years.

Implications of the BRICs Ascendancy

The key assumption underlying all of our projections is that the BRICs maintain policies and develop institutions that are supportive of growth. Each of the BRICs faces significant challenges in keeping development on track. This means that there is a good chance that our projections are not met, either through bad policy or bad luck.

Despite the challenges, we think the prospect is worth taking seriously. After all, three of the BRICs—China, India and Russia—have been at the top of the growth charts in recent years.

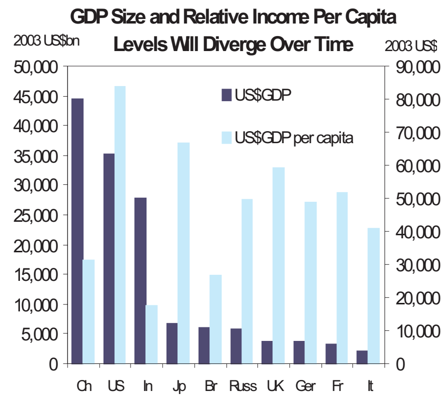
We will use the tools developed here to look in detail at different kinds of scenarios and to flesh out the links between our growth projections and investment opportunities later. For now, we set out some brief conclusions:

- The relative importance of the BRICs as an engine of new demand growth and spending power may shift more dramatically and quickly than expected. Higher growth in these economies could offset the impact of greying populations and slower growth in today's advanced economies.
- Higher growth may lead to higher returns and increased demand for capital in these markets—and for the means to finance it. The weight of the BRICs in investment portfolios could rise sharply. Capital flows might move further in their favour, prompting major currency realignments.

BRICs Real GDP Growth: 5-Year Period Averages

%	Brazil	China	India	Russia
2000-2005	2.7	8.0	5.3	5.9
2005-2010	4.2	7.2	6.1	4.8
2010-2015	4.1	5.9	5.9	3.8
2015-2020	3.8	5.0	5.7	3.4
2020-2025	3.7	4.6	5.7	3.4
2025-2030	3.8	4.1	5.9	3.5
2030-2035	3.9	3.9	6.1	3.1
2035-2040	3.8	3.9	6.0	2.6
2040-2045	3.6	3.5	5.6	2.2
2045-2050	3.4	2.9	5.2	1.9

GS BRICs Model Projections.



GS BRICs Model Projections.

- Rising incomes may also see these economies move through the 'sweet spot' of growth for different kinds of products, as local spending patterns change. This could be an important determinant of demand and pricing patterns for a range of commodities.
- As today's advanced economies become a shrinking part of the world economy, the accompanying shifts in spending could provide significant opportunities for many of today's global companies. Being invested in and involved in the right markets—particularly the right emerging markets—may become an increasingly important strategic choice for many firms.
- The list of the world's ten largest economies may look quite different in 2050. The largest economies in the world (by GDP) may no longer be the richest (by income per capita), making strategic choices for firms more complex.
- Regional neighbours could benefit from the growth opportunities from the BRICs. With Asia potentially accounting for three of the four largest economies in 2050, we could see important geopolitical shifts towards that region. China's growth is already having a significant impact on the opportunities for the rest of Asia. Sustained strong growth in the other BRICs economies might have similar impacts on their major trading partners.■