

## How Solid are the BRICs?

- Since we began writing on the BRICs, each country has grown more strongly than our initial projections. Our updated forecasts suggest the BRICs can realise the 'dream' more quickly than we thought in 2003.
- The case for including the BRICs directly in global economic policymaking is now overwhelming.
- We present the prospects for another set of developing countries, a group we call the N-11—the Next Eleven. Of them, only Mexico and perhaps Korea have the capacity to become as important globally as the BRICs.
- We introduce a Growth Environment Score (GES), which aims to summarize the overall structural conditions and policy settings for countries globally. Improving long-term foundations is key to converting potential into reality.
- Encouragingly, the BRICs themselves are all in the top half of the rankings for developing countries. While the BRICs are generally progressing, there is a need for considerable further policy improvement in each.

Important disclosures appear at the back of this document

**Jim O'Neill, Dominic Wilson, Roopa  
Purushothaman and Anna Stupnytska**

**1st December 2005**

**Goldman Sachs Economic Research Group****<sup>1</sup> Jim O'Neill, M.D. & Head of Global Economic Research****Global Macro & Markets Research**

<sup>2</sup> Dominic Wilson, M.D. & Director of Global Macro & Markets Research  
<sup>1</sup> Francesco Garzarelli, M.D. & Director of Global Macro & Markets Research  
<sup>1</sup> Michael Buchanan, E.D. & Director of Global Macro & Markets Research  
<sup>2</sup> Sandra Lawson, V.P. & Senior Global Economist  
<sup>1</sup> Dambisa Moyo, E.D. & Economist, Pension Fund Research  
<sup>1</sup> Binit Patel, E.D. & Senior Global Economist  
<sup>1</sup> Kevin Edgeley, E.D. & Technical Analyst  
<sup>2</sup> Jens J Nordvig-Rasmussen, V.P. & Global Markets Economist  
<sup>1</sup> Thomas Stolper, E.D. & Global Markets Economist  
<sup>2</sup> Mónica Fuentes, Associate Global Economist  
<sup>1</sup> Fiona Lake, Associate Global Markets Economist  
<sup>1</sup> Michael Vaknin, Associate Global Markets Economist  
<sup>2</sup> Roopa Purushothaman, Associate Global Economist  
<sup>2</sup> Themistoklis Fiotakis, Research Assistant, Global Markets  
<sup>2</sup> David Heacock, Research Assistant, Global Macro  
<sup>1</sup> Anna Stupnytska, Research Assistant, Global Macro  
<sup>1</sup> Sergiy Verstyuk, Research Assistant, Global Markets

**Americas**

<sup>9</sup> Paulo Leme, M.D. & Director of Emerging Markets Economic Research  
<sup>2</sup> Jan Hatzius, M.D. & Chief US Economist  
<sup>2</sup> Edward McKelvey, V.P. & Senior US Economist  
<sup>2</sup> Alberto Ramos, V.P. & Senior Latin America Economist  
<sup>8</sup> Alec Phillips, V.P. & Economist, Washington Research  
<sup>2</sup> Andrew Tilton, V.P. & US Economist  
<sup>8</sup> Chuck Berwick, Associate, Washington Research  
<sup>2</sup> Pablo Morra, Associate Latin America Economist  
<sup>2</sup> Sara Aronchick, Research Assistant, US  
<sup>2</sup> Avinash Kaza, Research Assistant, US  
<sup>2</sup> Malachy Meechan, Research Assistant, Latin America/Global Markets

<sup>2</sup> William Dudley, Advisory Director

**Europe**

<sup>1</sup> Erik F. Nielsen, M.D. & Chief European Economist  
<sup>1</sup> Ben Broadbent, E.D. & Senior European Economist  
<sup>3</sup> Nicolas Sobczak, E.D. & Senior European Economist  
<sup>1</sup> Ahmet Akarli, E.D. & Economist  
<sup>4</sup> Rory MacFarquhar, E.D. & Economist  
<sup>1</sup> Javier Pérez de Azpillaga, E.D. & European Economist  
<sup>10</sup> Dirk Schumacher, E.D. & European Economist  
<sup>1</sup> Istvan Zsoltos, E.D. & European Economist  
<sup>1</sup> Inês Calado Lopes, Associate European Economist  
<sup>1</sup> Kevin Daly, Associate European Economist  
<sup>1</sup> Neena Sapra, Research Assistant, Europe  
<sup>1</sup> AnnMarie Terry, Research Assistant, Europe

**Asia**

<sup>5</sup> Sun Bae Kim, M.D. & Co-Director of Asia Economic Research  
<sup>7</sup> Tetsufumi Yamakawa, M.D. & Co-Director of Asia Economic Research  
<sup>6</sup> Adam Le Mesurier, V.P. & Senior Asia Pacific Economist  
<sup>7</sup> Naoki Murakami, V.P. & Senior Japan Economist  
<sup>5</sup> Hong Liang, V.P. & Asian Pacific Economist  
<sup>7</sup> Yuriko Tanaka, V.P. & Associate Japan Economist  
<sup>5</sup> Enoch Fung, Associate Asia Pacific Economist  
<sup>5</sup> Helen Qiao, Associate Asia Pacific Economist  
<sup>7</sup> Rie Kitagawa, Research Assistant, Japan  
<sup>5</sup> Yu Song, Research Assistant, Asia Pacific  
<sup>5</sup> Mark Tan, Research Assistant, Asia Pacific  
<sup>7</sup> Daisuke Yamazaki, Research Assistant, Japan  
<sup>5</sup> Eva Yi, Research Assistant, Asia Pacific

**Admin**

<sup>1</sup> Linda Britten, E.D. & Global Economics Mgr, Support & Systems  
<sup>2</sup> Melisse Dornier, V.P. & US Economics Mgr, Admin & Support  
<sup>1</sup> Philippa Knight, E.D. & European Economics, Mgr Admin & Support

**Location**

<sup>1</sup> in London +44 (0)20 7774 1160  
<sup>2</sup> in NY +1 212 902 6807  
<sup>3</sup> in Paris +33 (0)1 4212 1343  
<sup>4</sup> in Moscow +7 095 785 1818  
<sup>5</sup> in Hong Kong +852 2978 1941  
<sup>6</sup> in Singapore +65 6889 2478  
<sup>7</sup> in Tokyo +81 (0)3 6437 9960  
<sup>8</sup> in Washington +1 202 637 3700  
<sup>9</sup> in Miami +1 305 755 1000  
<sup>10</sup> Frankfurt +49 (0)69 7532 1210

# How Solid are the BRICs?

## I. The BRICs Four Years On

It is now two years since we published our Global Economics Paper No. 99: *Dreaming with BRICs: The Path to 2050*, and four years since we created the acronym in Global Economics Paper No. 66: *The World Needs Better Economic BRICs*. Since we began analysing these countries, each has grown more strongly than our initial projections. Our updated forecasts suggest that the BRICs economies can realise the ‘dream’ more quickly than we thought in 2003. The case for including this group directly in global economic policymaking in a systematic way is now overwhelming.

This latest paper in the series discusses how the BRICs countries have progressed. We also look at how ‘BRIC-like’ other large population countries are, and present a measure to show how these, the BRICs and all the world’s economies score in terms of sustaining a healthy environment for growth. The BRICs economies do seem to be ahead of many other developing economies, both large and small.

We also present a detailed study of the prospects for another set of developing countries, a group we call the N-11—the Next Eleven. Of them, only Mexico and perhaps Korea have the capacity to become as important globally as the BRICs, although many of them have compelling potential.

For all countries, BRIC-like or otherwise, the key to converting potential into reality continues to be progress in strengthening key long-term conditions for growth

(macroeconomic stability, political institutional development, trade and investment openness, and education). We introduce a Growth Environment Score (GES), which aims to summarize the overall structural conditions and policy settings for countries globally. Encouragingly, the BRICs themselves are all in the top half of the rankings for developing countries. While the BRICs are generally progressing, our GES implies there is a need for considerable further policy improvement in each.

## II. Dreams and Reality

Two themes have come up repeatedly since we introduced our BRICs 2050 scenarios: Will the BRICs make it? And who else might join them?

There is a major distinction between the BRICs’ *potential* and the *reality*. The key to turning one into the other—as we pointed out in our 2003 paper—relies largely on the BRICs finding and keeping in place the *conditions* for growth. Without these improvements, the BRICs’ potential will not be fulfilled. Demographic advantage is not sufficient. As we showed, ‘miracle conditions’ are not necessary, but a basic set of powerful conditions is crucial. We try to capture the progress and current state of growth conditions in an index that we call the Growth Environment Score (see section VI for details).

A common question we hear is: why just Brazil, Russia, India and China? The simple reason is that we think they represent the group of countries that have both the potential to become important (largely because of their

### Separating Myth from Reality in the BRICs Theory

We never anticipated the impact that this research has had, especially the 2003 paper (Global Economics Paper No. 99: *Dreaming with BRICs: The Path to 2050*). The ideas implicit in these papers, and many of the concepts that have developed since, have become hot investment themes over the past two years. A number of BRICs investment funds have been established and others are in the process of being launched. Many writers, academics and journalists have offered opinions about the BRICs concept, and we thought that it would be appropriate to address some of the issues most frequently raised.

Our BRICs analysis made a clear distinction between potential and reality. Rather than **forecasting** that China **will** become the largest economy in the world by 2041 and that India **will** become the third-largest by 2035—or that the combined BRICs GDP size **will** become bigger than the G6 (G7 minus Canada) by 2041—we **suggested** that, if everything went right, then China **could** become the largest economy in the world by 2041, India the third-largest by 2035, and the combined BRICs GDP **could** exceed the G6 by 2041. The capacity of the BRICs to influence global dynamics turns on their ability to set and maintain growth-supportive policy settings.

Linked to this growing influence, we see the BRICs as much more than a new emerging market theme. The BRICs are a key aspect of the modern globalised era. What distinguishes the BRICs from any other story of EM growth is their ability to influence, and be influenced by, the global economy and global markets in a broad fashion. The current and prospective outlook for globalisation has the BRICs nations at its core and the interplay between the BRICs economies and the G7 is a critical aspect of globalisation and interdependence. The varied composition among the BRICs, the balance between resource-abundance and resource-dependence within the BRICs, and the global demographic tilt towards the BRICs allows these economies the chance to participate in an integral way in the world economy.

size) and a reasonable chance of meeting the criteria. The case for China and India is especially straightforward, simply on the basis of their massive populations. We did not include Brazil and Russia purely because the acronym would fail to be made if we left them out, as we have repeatedly and amusingly heard. We genuinely believed, and still do, that these two economies, along with China and India, have the potential to be among the most interesting global economic stories and investment themes for many years to come. In addition, we now believe even more strongly that optimal economic policymaking cannot be undertaken without including *all* of the BRICs countries at the highest level.

In our initial report, we did exclude several other large developing countries that have the potential to be much bigger economies in coming decades. We did not ignore South Africa—in fact we specifically showed how unlikely it would be that South Africa could reach the size of any of the BRICs despite its own potential. We excluded Indonesia, Pakistan, Turkey and some of the Middle Eastern nations that could become quite large, though may not have true BRICs potential. The reasons for excluding other candidates in our earlier studies were either because they lacked the potential to become large and important players (in many cases because they are just too small) or because we thought that fulfilling the conditions was an unrealistic assumption.

In this paper, we discuss the candidacy of other countries to be BRIC-like. We have estimated projections up to 2050 to include another broad group of possible candidates, a group we call the N-11—the Next Eleven. By and large, our new work confirms our initial belief. We still find that the BRICs stand out relative to the bulk of these other candidates, in terms of the potential to be a major economic force. Of the other countries we look at, only Mexico and perhaps Korea have the potential to rival the BRICs—economies that we excluded initially because we view them as already more developed. Mexico’s favourable demographics and scope to catch up place it among the BRICs in terms of economic size by 2050.

Korea, albeit somewhat smaller, is better placed than most others to realise its potential due to its growth-supportive fundamentals.

Nigeria and Indonesia emerge as interesting prospects, but they face serious fundamental weaknesses in the conditions that we identify as necessary. Each of the countries in the N-11, Korea and Mexico excluded, faces its own specific dilemmas, and perhaps unlike the four BRICs, they are not close to the heart of current and likely future globalisation developments. That does not mean that these other countries cannot achieve their own BRICs-like aspirations—indeed several probably will—but the probability is lower and their potential ultimate size is smaller.

### III. Bigger BRICs, Bigger Impact

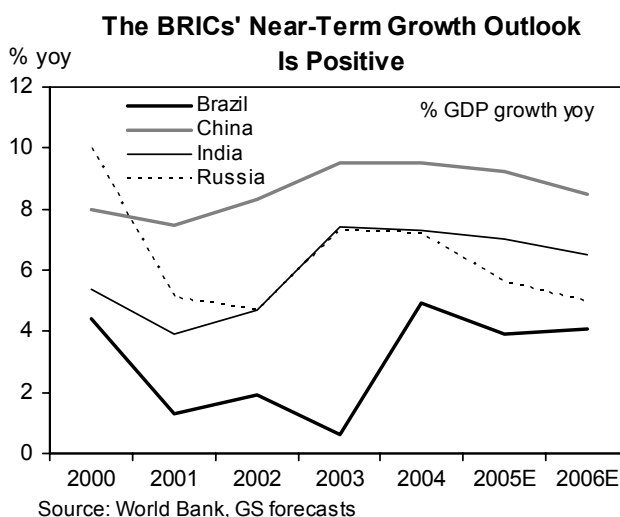
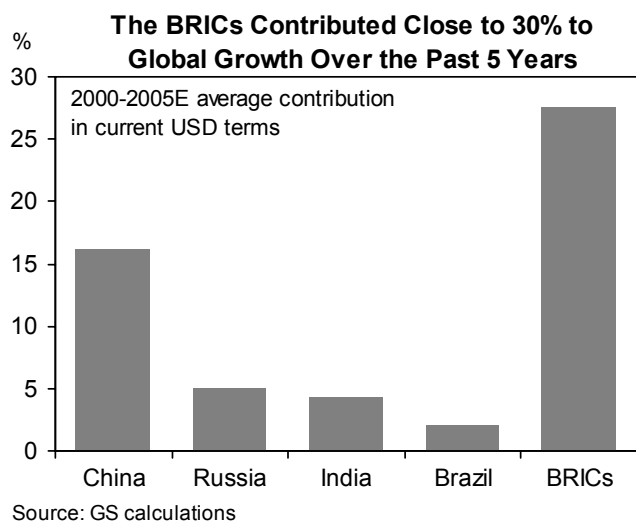
Since we first published our BRICs 2050 scenarios, the BRICs have grown significantly better than we assumed. Each of the BRICs exceeded its growth path in 2004 by at least a percentage point, and all but Brazil are expected to do so in 2005. Our regional economists’ forecasts show that the BRICs should continue to exceed our projections in the next couple of years, suggesting that in the near term our approach is proving conservative. Of course, global economic and financial conditions have been favourable, although the BRICs economies themselves have been central to these developments.

The BRICs’ impact on the global economy has continued to grow over the last few years, through a wide range of different dimensions:

#### Growth and Trade

Between 2000 and 2005, the BRICs contributed roughly 28% of global growth in US dollar terms, and 55% in Purchasing Power Parity (PPP) terms.

Their share of global trade continues to climb at a rapid rate. At close to 15% currently, it is now *double* its level in 2001.



Trade *among* the BRICs has also accelerated, with intra-BRICs trade now nearly 8% of their total trade compared with 5% in 2000. There have been numerous signs of developing trade relationships, including the sharp increase in Brazilian trade with China and Chinese investment commitments in Brazil. India (in intellectual property) and Brazil (in agriculture) have also illustrated their policymaking leadership among developing countries through the WTO negotiation process.

**Capital Flows**

The BRICs have played an important part in global financial developments. Latest estimates suggest that the BRICs now hold more than 30% of world reserves. China is the dominant contributor, but Russia, India and Brazil have all accumulated substantial reserves also.

Despite this reserve accumulation, real exchange rates in each country have appreciated over the last two years. Real exchange rate appreciation was and remains an important part of our projected paths out to 2050.

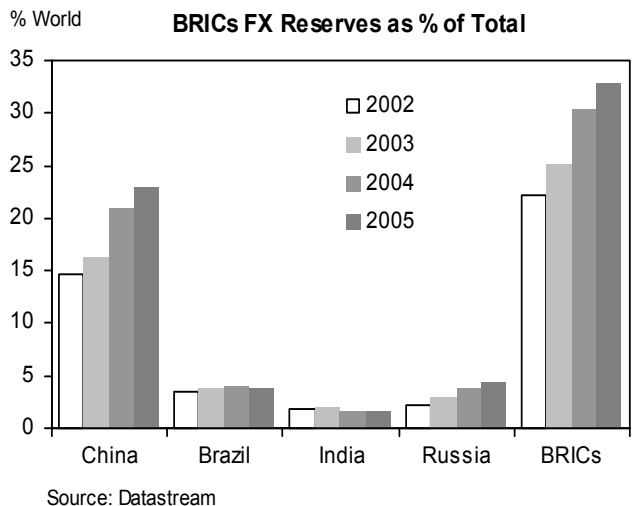
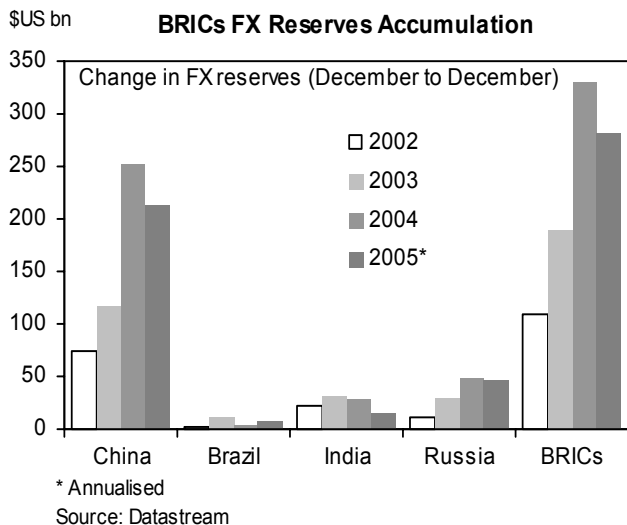
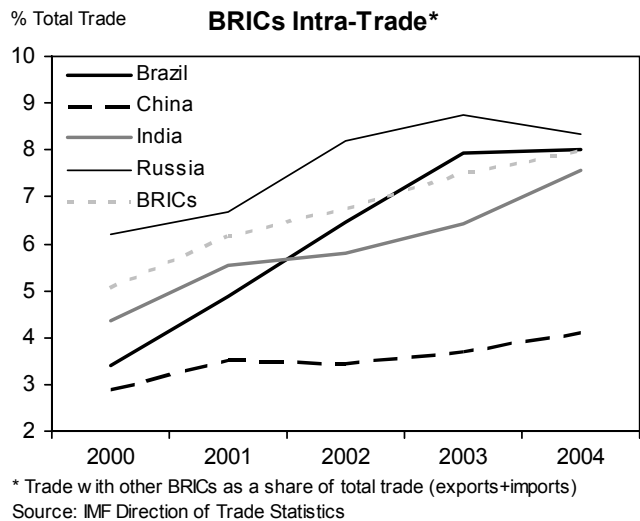
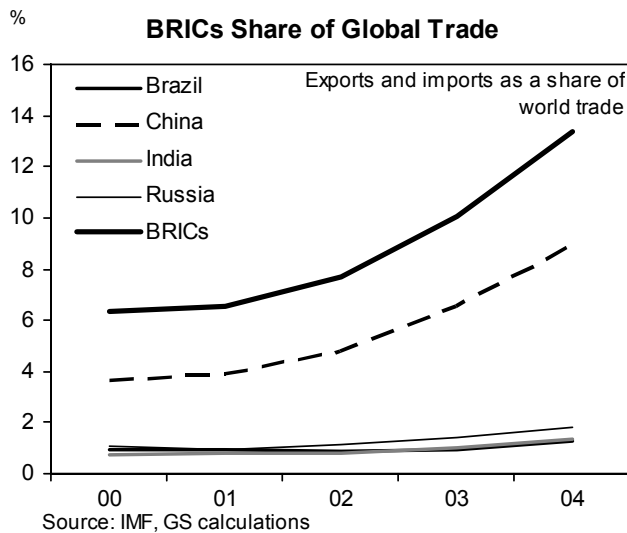
BRICs' current accounts continue to be in healthy surplus, reflecting the group's key role in the global

savings supply. With China's surplus increasing sharply, the BRICs' current account is likely to come in at around US\$240bn in 2005, or close to 6% of BRICs' GDP. The BRICs are increasingly important counterparts to the US current account deficit.

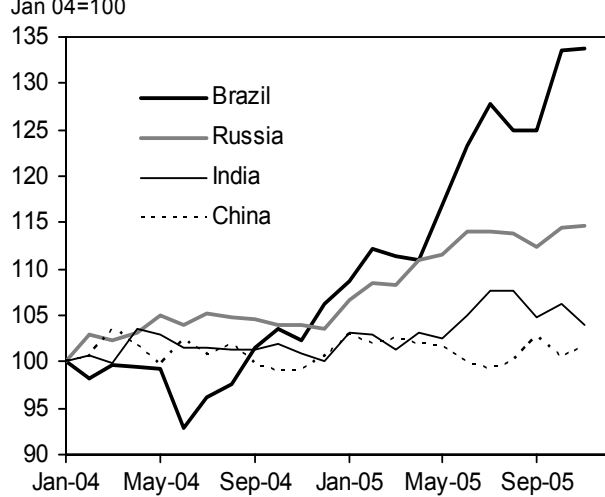
BRICs' share as a destination for global FDI also continues to rise (now 15% of the global total, nearly three times higher than in 2000). What is even more striking is that BRICs' FDI *outflows* have also picked up (to more than 3% of the global total, a sixfold increase since 2000) as BRICs companies expand their own global presence. M&A transactions have also picked up.

**Markets**

BRICs' share of oil demand is moving steadily higher, with an estimated 18% share, projected to rise further this year and next. This dynamic still has a long way to run, with the next decade in particular the likely point of maximum pressure on energy and other natural resources, as we showed in Global Economics Papers No.118 (*The BRICs and Global Markets: Crude, Cars and Capital*) and No.119 (*Can the G7 Afford the BRICs Dreams to Come True?*).

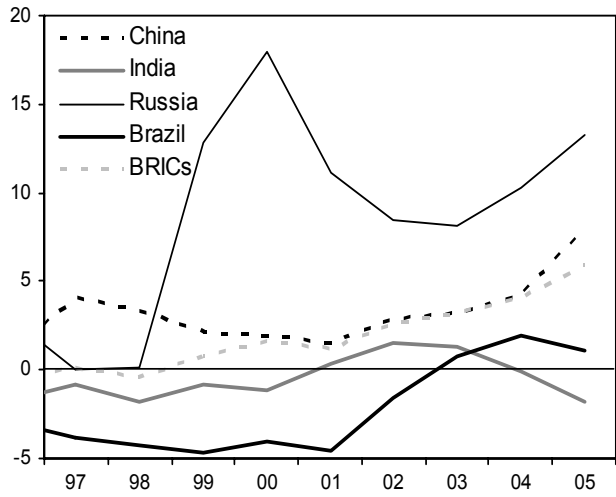


Index, Jan 04=100 **BRICs Real Trade Weighted Indices**



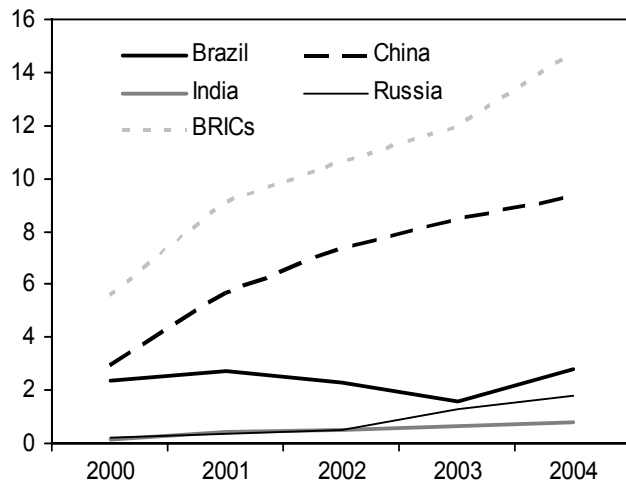
Source: GS calculations

% GDP **BRICs Current Account**



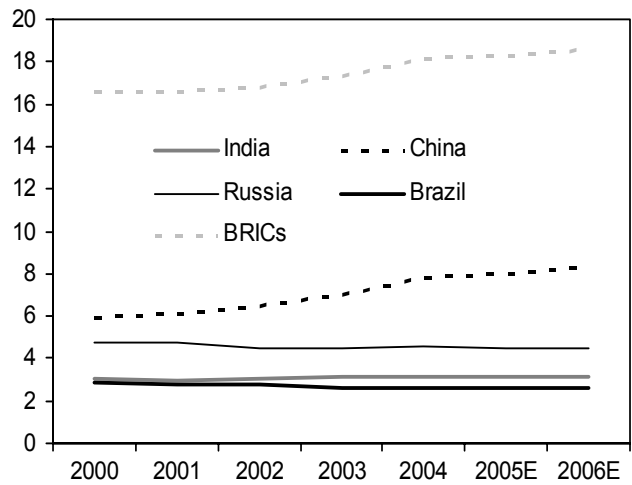
Source: IMF, GS calculations

% World **BRICs FDI Inflows**



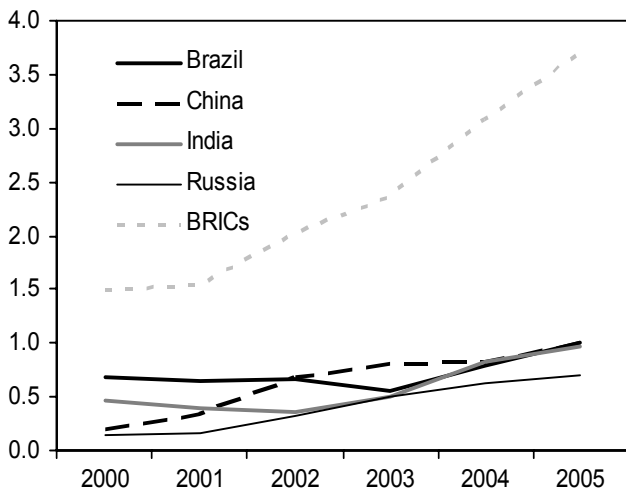
Source: UNCTAD

% World **BRICs Share in World Oil Demand**



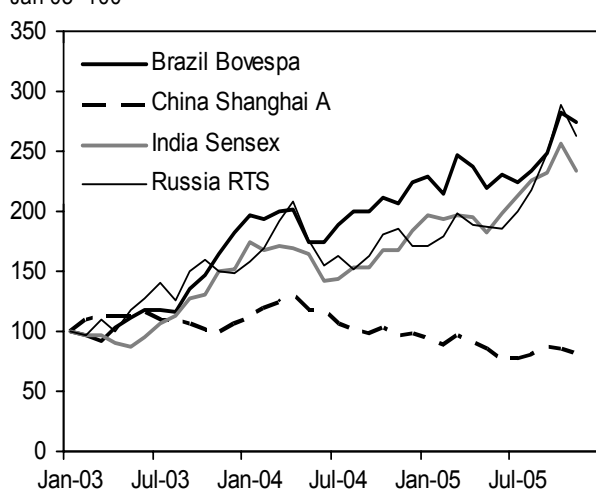
Source: IEA

% World **BRICs Market Capitalisation as % World**



Source: IMF, Datastream, GS calculations

Index, Jan 03=100 **BRICs Equity Performance**



Source: Datastream, GS calculations

<b>The N-11 Snapshot</b>				
	<b>Population (2005, mn)</b>	<b>2005 GDP (US\$bn)</b>	<b>5y Average GDP Growth Rate (2000-2005)</b>	<b>2005 GDP Per Capita (US\$)</b>
<b>Bangladesh</b>	144	61	5.4%	422
<b>Egypt</b>	78	91	4.0%	1,170
<b>Indonesia</b>	242	272	4.6%	1,122
<b>Iran</b>	68	203	5.7%	2,989
<b>Korea</b>	49	814	5.2%	16,741
<b>Mexico</b>	106	753	2.6%	7,092
<b>Nigeria</b>	129	94	5.1%	733
<b>Pakistan</b>	162	120	4.1%	737
<b>Philippines</b>	88	98	4.7%	1,115
<b>Turkey</b>	70	349	4.3%	5,013
<b>Vietnam</b>	84	47	7.2%	566

BRICs stock markets have also generally performed very strongly since 2003, with Brazilian, Russian and Indian indices all up by around 150% over that period. China is the one exception, where the idiosyncrasies of the local market have seen very lacklustre performance continue into this year. China provides a warning that the local market may not be the best investment vehicle for the local growth story. BRICs market capitalisation continues to climb, currently at close to 4% of the global total, a story we described in our report last year.

Current success is obviously no guarantee of future performance, but it is encouraging that the BRICs have so far grown faster than we envisaged.

We have now updated our projections to take into account the recent economic data and the latest demographic projections, rebasing our figures to 2005. Key elements of the initial projections remain in place, with minor variations. China would now overtake the US by 2040 (slightly ahead of our 2003 projections), while India would overtake Japan by 2033 (slightly later than earlier projections, due to the recent improvements in Japan's economic performance).

We have also added Canada to our analysis, given some suggestions that we specifically excluded Canada from our G6 developed country group (in reality, we initially analysed the G3—the US, Japan and the four large European economies, labeling it the G6). Canada would still be the smallest economy in the current G7 grouping by 2050.

#### **IV. Are There More 'BRICs' Out There? A Look at the N-11**

The BRICs story is not simply about developing country growth successes. What makes the BRICs special is that they have the scale and the trajectory to challenge the major economies in terms of influence on the world economy. Looking across the developing world today, the

BRICs nations clearly stand out on both their economic and demographic size. Thinking back to the original purpose of the BRICs analysis—an attempt to highlight those economies that could provide a challenge to the major developed economies in terms of their weight—these two criteria provide the basic foundations for the potential we map out.

Of course, this is not to say that we will not see other important growth success stories outside of the BRICs—and we expect to—but not with the scale to match the BRICs. Our 2003 paper included a similar long-term growth exercise for South Africa, in which we found real GDP growth to average roughly 3.5% over the projection period. Measures such as income per capita move rapidly towards G6 levels; however, we found that by 2050 South Africa's GDP would be much smaller than the smallest BRIC, making it difficult for the country to become a global economic heavyweight.

In thinking about other countries that might have BRICs-like potential, we focused on demographic profiles, which drive much of the analysis. Without a substantial population, even a successful growth story is unlikely to have a global impact. Hong Kong will never be a global power nor Luxembourg, despite the very high levels of income and living standards that they have achieved.

We call this larger developing-country set the Next Eleven (N-11), though whether they will 'emerge' is still an open question for many. This group shows broad representation by region and includes Bangladesh, Egypt, Indonesia, Iran, Korea, Mexico, Nigeria, Pakistan, Philippines, Turkey, Vietnam.<sup>1</sup>

We have chosen to include Korea and Mexico here, which as OECD members we excluded from our initial study. Korea and Mexico have the highest income levels of the N-11 group by some margin (roughly US\$17,000 in Korea and US\$7,000 in Mexico). Korea, in particular, is unique in this group. Income per capita is already at

1. Some of the smaller Central European economies come up frequently in discussions. With much higher income levels than the BRICs – and smaller populations – they have the capacity to be dynamic growth stories, but not to have the same kind of global impact. We also looked at Ethiopia and Thailand, which are on the verge of the same population bracket as the N-11, but both remain smaller than this group under most assumptions. For this reason, we chose to exclude them from the final N-11 set.

high-income levels, and across the components in our Growth Environment Score, Korea resembles more of a developed country than a developing one. However, both Korea and Mexico are important to include in any complete projection of the largest economies over the next 50 years. The fact that income per capita is already high somewhat limits their growth potential in our model of productivity convergence, which is driven by the income gap with the US. Korea's working-age demographics, which show a sharp fall-off after 2010, also pose a significant challenge to future growth.

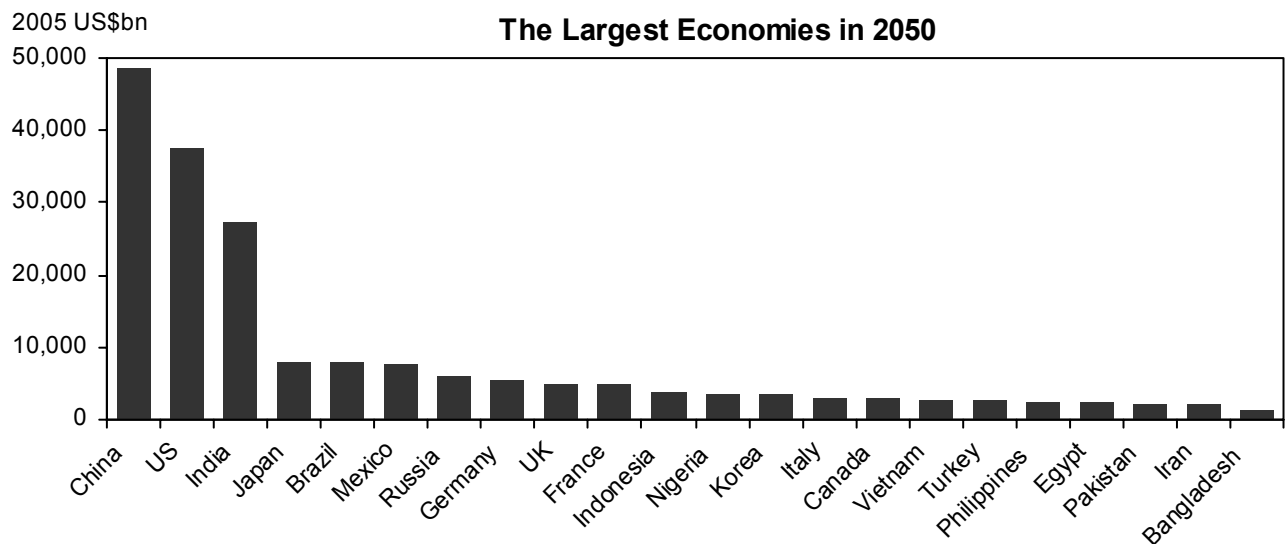
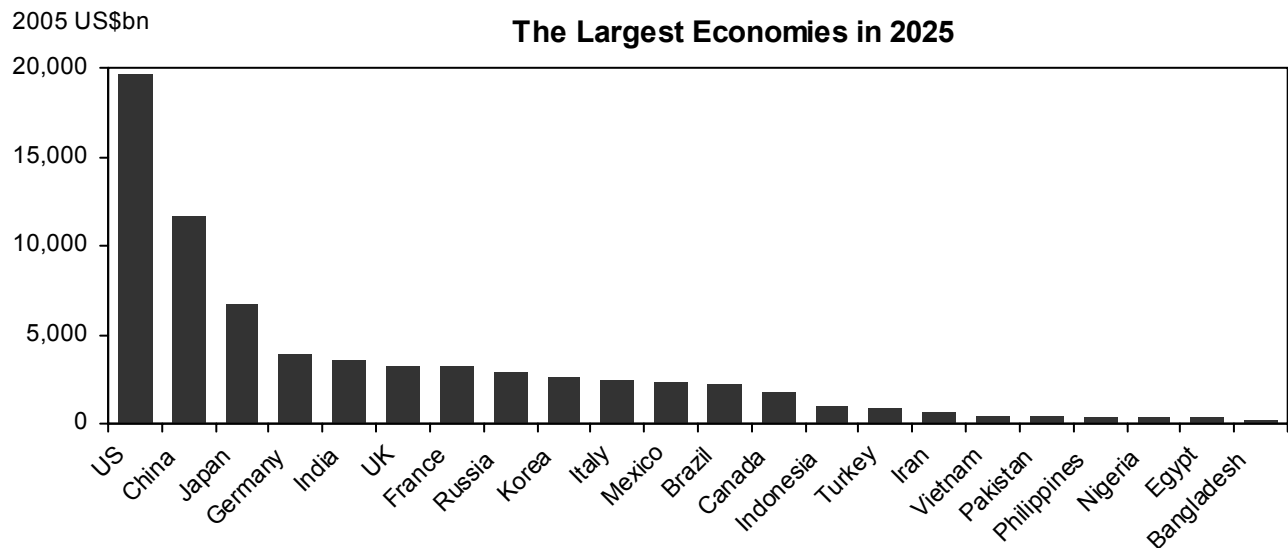
### V. Even With the N-11, Still Largely a BRICs Story

We ran projections of US\$GDP, real GDP growth, income per capita, incremental demand and exchange rate paths for each of these economies. Similar to our original analysis, about two-thirds of the increase in US\$GDP comes from the higher real GDP growth we project, with the balance coming from real currency appreciation.

The composite projections reinforce the notion that, by 2050, the largest economies in US Dollar terms will look

very different from today. China would still become the largest economy, followed by the US, India, Japan and Brazil. Mexico, however, now becomes the sixth-largest economy, slightly ahead of Russia, though Russia still emerges as the wealthiest BRIC nation in terms of GDP per capita. Indonesia, Nigeria and Korea could overtake Italy and Canada by 2050, but the other N-11 members do not 'catch up' with the current G7 group. Other than Mexico and perhaps Korea, the rise of the rest of the N-11—while potentially significant in absolute terms—would contribute quite modestly on a global basis. Although Korea does not overtake the BRICs economies by 2050, it is more likely to achieve its potential based on its solid growth environment. Korea overtakes Italy by 2020, while Indonesia overtakes Italy only in 2044 and Nigeria outpaces Italy by 2048.

In terms of income per capita, the picture is slightly different. By 2050, Korea's income per capita is higher than each of the G7, except for the US. Russia and Mexico also converge to developed country income levels at roughly US\$55,000. Brazil, China and Turkey have incomes per capita similar to that of the US today.



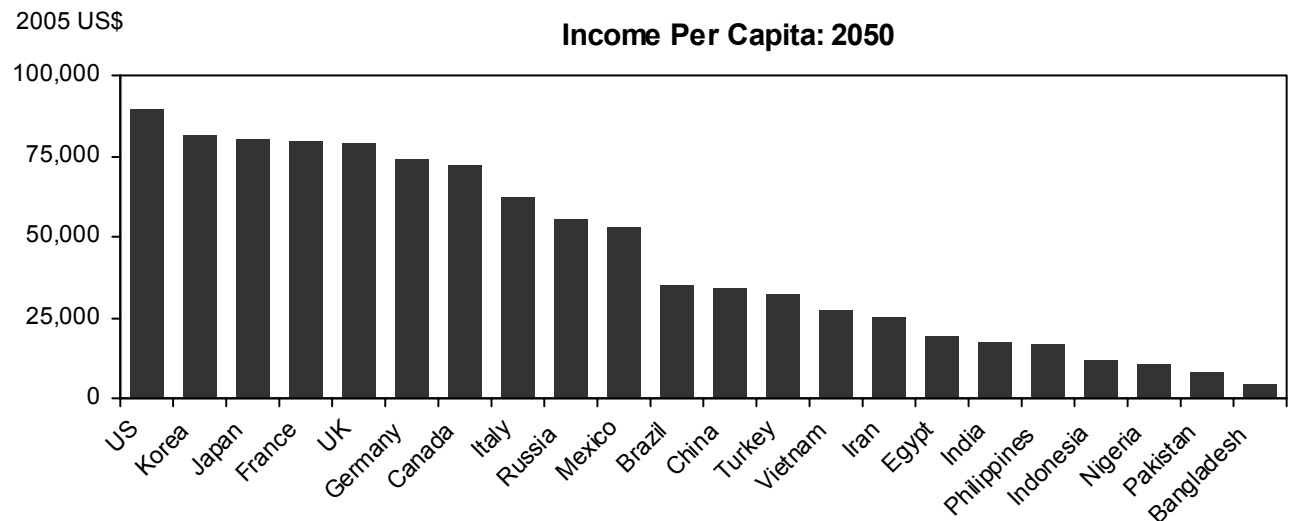
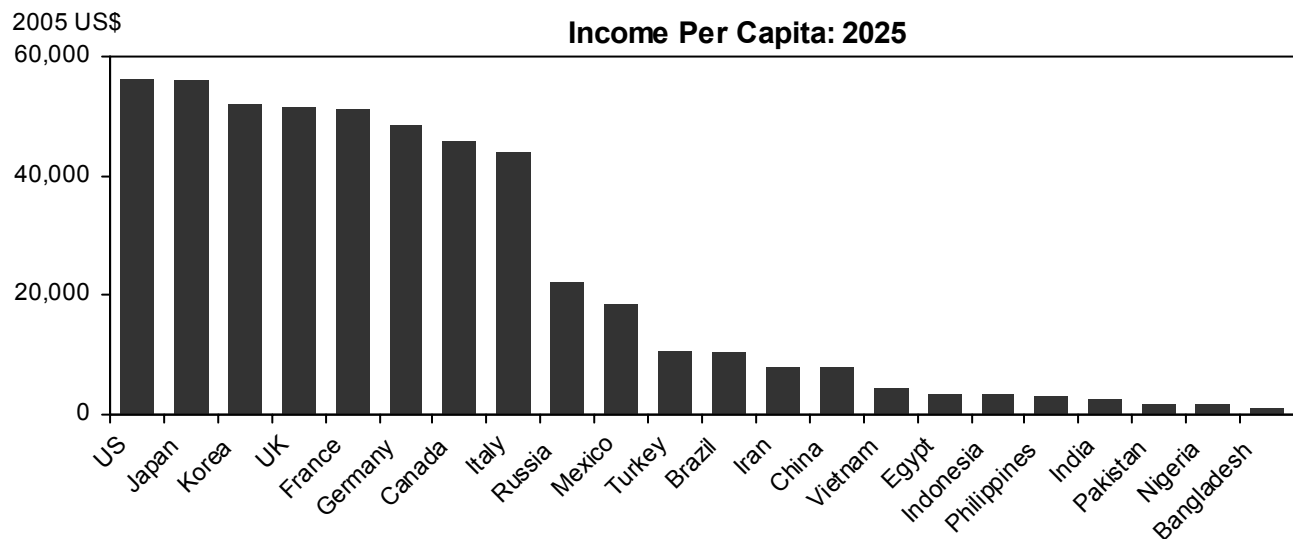
India’s income per capita in 2050 looks more like Korea’s today. By 2025, most of the BRICs and N-11 would be entering (or have crossed) the US\$3,000 threshold, a crucial sweet spot for consumption. By 2050, all of the BRICs and seven of the N-11 (Egypt, Iran, Korea, Mexico, Philippines, Turkey and Vietnam) cross the high-income US\$15,000 threshold. At the end of the period, Bangladesh’s income remains by far the lowest of the entire group at US\$4,500.

These expanded projections reinforce our initial 2003 conclusion, Korea and Mexico aside, that the BRICs really are different. For the N-11 ex-Korea and -Mexico, the productivity catch-up potential is even more important, as their demographics alone will not allow growth of BRICs-type proportions. The next section underlines how cautious we are about the current likelihood of many of these countries being in a position to reach their potential, as well as underscoring the significant tasks ahead for each of the BRICs nations.

## VI. Getting Conditions Right—the Growth Environment Score (GES)

Deciding how plausible the N-11 might be as candidates for a BRICs-type story once again highlights the centrality of getting growth conditions right in understanding the scenarios we have mapped out, both for the BRICs and the broader grouping. There is no doubt that the BRICs are currently performing well and the near-term outlook looks quite favourable. The big question is whether they can keep growing over the longer horizon that our projections map out.

In our original projections, we argued that getting the *conditions* for growth in place—and keeping them there—was critical to whether the scenario we described would in fact occur. We showed that running the same model from 1960 would have accurately predicted growth for the developed economies, and some key emerging Asian economies (except India), but not others.



It helps to think of a country's growth performance as a combination of its potential and its conditions. In general, developed countries have lower potential (they are already developed), but the chances of meeting that modest potential are good. Developing countries have much higher potential for rapid growth, but the difficulty is to achieve and sustain the conditions that allow that potential to be realised.<sup>2</sup>

We are often asked to rank the BRICs and assess their prospects of staying on the projected path. In our previous research we resorted to a number of ways to tackle this challenging question, but largely stuck with a qualitative assessment of the growth environment, identifying the most probable risks the BRICs might face in the future. We try to answer this question now in a more fundamental way.

In order to rank countries' abilities to meet their growth potential more formally and to monitor growth conditions over time, we have developed a Growth Environment Score (GES) that aims to summarise the overall environment in an economy, emphasising the dimensions that are important to economic growth.

Relying on the large body of research on the determinants of economic growth, we have constructed our GES using 13 sub-indices, which can be divided into five basic areas:

- **Macroeconomic stability**  
Inflation; government deficit; external debt
- **Macroeconomic conditions**  
Investment rates; openness of the economy
- **Technological capabilities**  
Penetration of PCs; phones; internet
- **Human capital**  
Education; life expectancy
- **Political conditions**  
Political stability; rule of law; corruption

*Appendix 2* describes the methodology in greater detail, but the basic notion is that strong growth is best achieved with a stable and open economy, healthy investment, high rates of technology adoption, a healthy and well-educated workforce, and a secure and rule-based political environment. We rank a country's performance on each measure on a 0-10 scale and create an overall score, the GES, which also ranges from a possible minimum of 0 (poor conditions) to a possible maximum of 10 (perfect conditions).

The GES is consistent across countries and over time, can be easily updated and tracked on an ongoing basis, and is based on hard evidence.

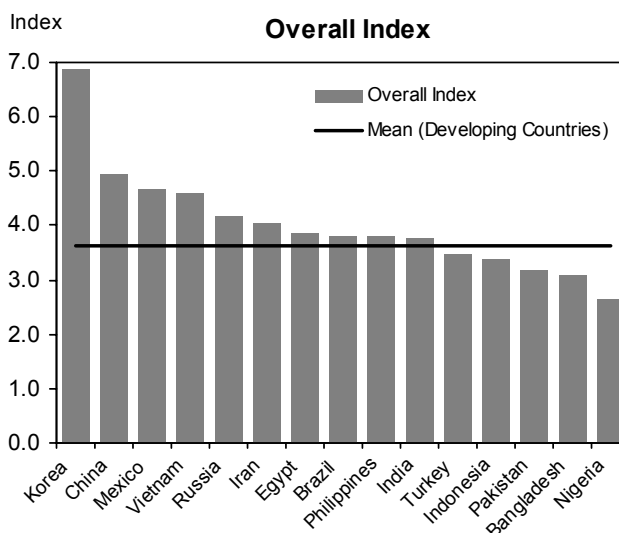
## VII. How the BRICs and N-11 Score on Growth Environments

The GES shows how the BRICs and N-11 fit into the broader picture. *Appendix 3* sets out the full list and rankings across 170 countries. In general, not surprisingly, the most developed economies are better at maintaining the conditions for growth and score more highly. This means that they are more likely to deliver stable growth and meet their potential, though, as our BRICs projections have shown, that potential is itself much lower than for the BRICs economies. For this reason, we also divided economies relative to their peer group and split the GES into a developing and developed country sample to allow like-for-like comparisons.

How do the BRICs fare? Encouragingly, the BRICs themselves are all in the top half of the rankings for developing countries and above the developing country mean. China ranks most highly (16<sup>th</sup>), followed by Russia (44<sup>th</sup>), while Brazil and India are further behind (58<sup>th</sup> and 60<sup>th</sup>, respectively, out of a total of 133 developing countries). This validates our decision in our BRICs projections to use a lower convergence speed in the initial period projections for Brazil and India. Importantly, China clearly tops the list of the big-population developing economies (BRICs plus N-11), and by a sizeable margin.

The GES sub-components highlight the strengths and weaknesses of each of the BRICs, and where there is room for improvement:

- **Brazil** scores relatively well on measures of political stability, life expectancy and technology adoption, but quite poorly on investment, education levels, openness to trade and government deficit.
- **Russia** also scores well in terms of education, fiscal position, external debt position, openness to trade,



2. This corresponds to the notion of 'conditional convergence' in growth research that underpins our BRICs projections (that research essentially shows that with the right conditions in place, lower-income countries tend to catch up with richer ones).

technology adoption and life expectancy, but it does less well in terms of political measures (political stability, corruption), investment rates and inflation.

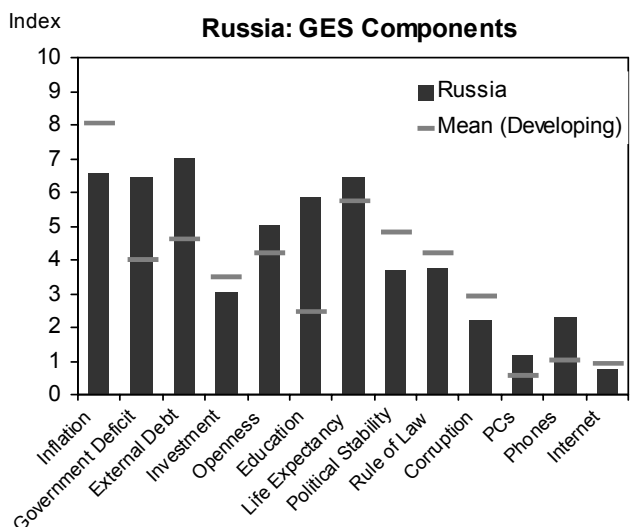
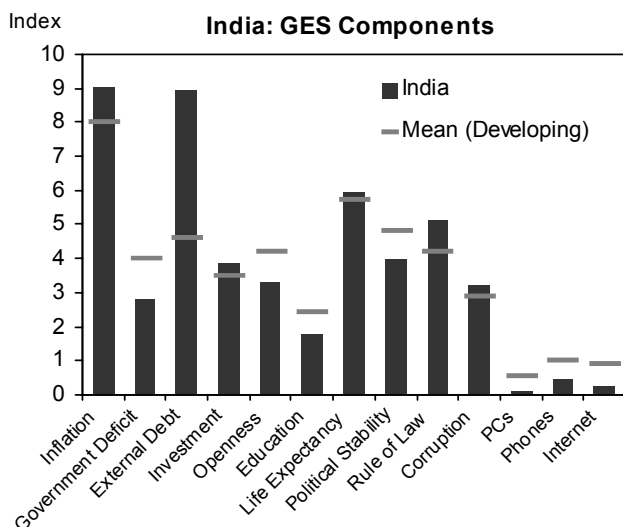
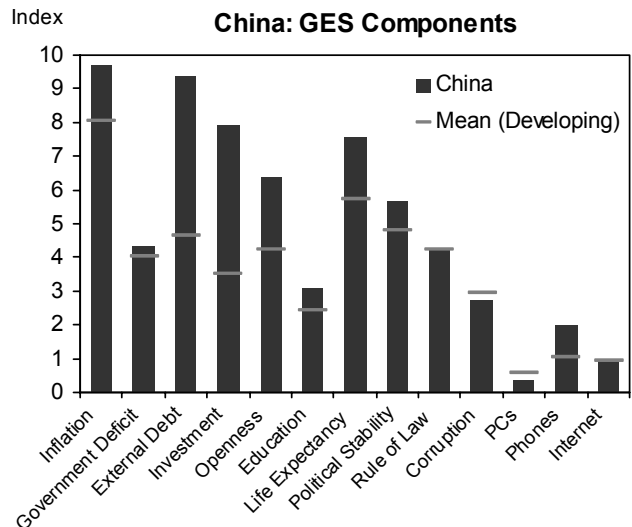
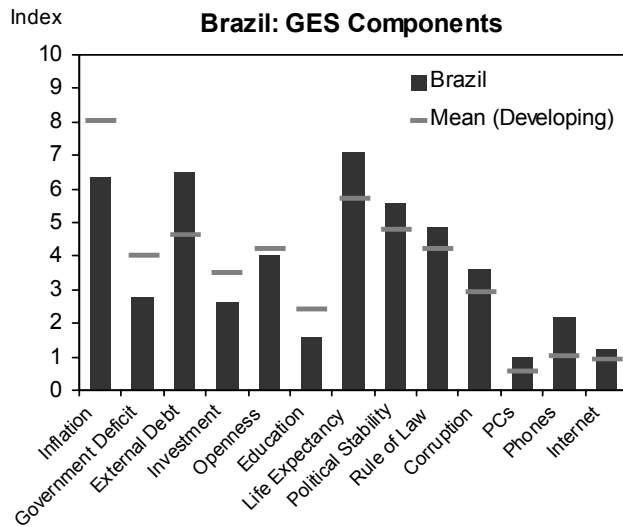
- **India** scores relatively well in terms of rule of law, external debt and inflation, but quite poorly in terms of levels of secondary education, technology adoption, fiscal position and openness.
- **China** ranks well above the mean on macro stability, investment, openness to trade and human capital. Its rankings on technology adoption are more mixed (PC usage is still quite low) and corruption measures are also a little worse than the mean.

The GES also shows that some of the N-11 are quite well-placed. Korea is the standout, highlighting how different it is to the rest of the group. But Mexico and Vietnam (and to a lesser extent Iran, Egypt and Philippines) also score relatively well currently in terms of growth conditions. At the other end of the spectrum, Nigeria, Bangladesh and Pakistan all score poorly. Nigeria's standing, in particular, highlights the large amount of work that will be needed if it is to have a serious claim in

achieving the potential growth outlined in the new 2050 projections. Turkey and Indonesia lie somewhere in between. Turkey's low score is somewhat surprising. If macroeconomic stability (its biggest weakness in the GES) continues to improve, however, its score could rise substantially. Even given an optimistic view of the path for some of the better-placed members of the N-11, the overall picture suggests that only Korea and Mexico are serious candidates that are both large enough and plausible enough to lay claim to a BRICs-like impact.

While the BRICs and N-11 have been our main focus, a few other highlights from the broader scores are also interesting:

- Within the developed countries, Luxembourg ranks first and Canada (in 8<sup>th</sup> place) is the highest of the current G7, with the US close behind (in 10<sup>th</sup> place).
- Of the G7, Italy is currently the lowest ranked (in 37<sup>th</sup> place), while Poland is the lowest ranked of the 'developed' group (though still very favourably ranked compared with developing economies). In 17<sup>th</sup> place, Korea ranks more highly than the UK, Japan, France and Italy.



- Africa is unsurprisingly heavily represented in the worst-ranked economies, while Asia's developing economies fair relatively well. Zimbabwe is currently the lowest ranked economy in the group, while Iraq and Afghanistan are the only countries in the bottom 15 that are outside of Africa.
- Among the developing economies, as well as Asian economies (Malaysia, Thailand), several Latin American and Central European economies score well (Chile, Costa Rica, Bulgaria, Romania). The richer oil-producers are also at the very top of the 'developing country' list.

The GES suggests that the BRICs as a whole are doing a reasonable job in keeping favourable growth conditions in place, but that more work needs to be done. For India and Brazil in particular, more progress is needed if they are to continue to deliver the best possible outcomes over a longer period of time.

## VIII. The BRICs: A Lasting Global Theme

Three key points emerge from our research:

- Since our initial reports, the BRICs' impact on the world has grown substantially across a broad range of areas. Given their importance to a wide range of global economic issues, the case for including them more actively in policy-making is overwhelming.
- Other economies may be able to share in a 'BRICs-like' story, but (Mexico aside, perhaps) the probability of their having a similar impact is small, at least as individual markets. Strong regional growth themes may emerge—Brazil and Mexico in Latin America for instance; China, India, Korea and Vietnam in Asia; or possibly India, Pakistan and Bangladesh in South Asia. But the BRICs are likely to remain the only ones at the core of truly global growth themes.
- There is quite wide variation in setting the conditions that should allow countries to stay on course for the 'dream' projections we set out. The BRICs are generally doing a reasonable job now, but there are clear weaknesses in each case. Dealing with them remains critical.

The BRICs theme continues to have major implications for investments in local markets. It does not (and never did) necessarily follow that due to the BRICs' potential, investing in the BRICs stock markets is the best investment theme. However, BRICs equity markets have performed extremely well, except for China. Even after strong recent performances, on current P/E ratios, the BRICs markets do seem cheap relative to their more developed competitors. If BRICs' potential is fulfilled, then local stock markets *will* probably continue to be good investments over the long haul.

So will their currencies, probably. Our 2050 projections, and the specific dramatic forecast that the BRICs' GDP will exceed the G6 by 2041, depend on an assumption of real FX appreciation for one-third of the potential. While there are some fast-growing economies of the past 40 years that did not see real currency appreciation, the fastest-rising of them all, Japan, did. We think the case for further appreciation in BRICs currencies is very good, if their strong growth continues.

Local market opportunities are only a small part of the story. In fact, what distinguishes the BRICs theme from an 'emerging markets' story is that they appear to be a crucial driver of markets and investment opportunities *outside* those countries also. The ongoing bull run in commodities is the most striking example of global trends being driven in part by BRICs' growth.

The interplay between the four BRICs economies, especially in terms of commodities, has been, and is increasingly likely to be during the next decade, the critical aspect of developments in the energy and commodity markets. Related to this, and as we suggested in 2003, the commodity investment theme is likely to remain a strong one for much of the next decade.

Just as commodity investments have been an excellent BRICs-related theme, investing in other non-BRICs located companies might become a more rewarding experience in the near future, such as the luxury goods market leaders of today or the big consumer products areas. Our earlier work showed that the natural sequence of opportunities is likely to move from basic materials to consumer products to services, but there will be plenty of variation around that broad trend.

There are a multitude of risks to all of these projections, as we continually point out. But with the BRICs continuing to grow in importance and their inter-relationship with each other and the world still rising, we think they will remain a critical factor in the global investment theme of today and for many years to come.

# Appendix 1: N-11 Convergence and Projection Speeds

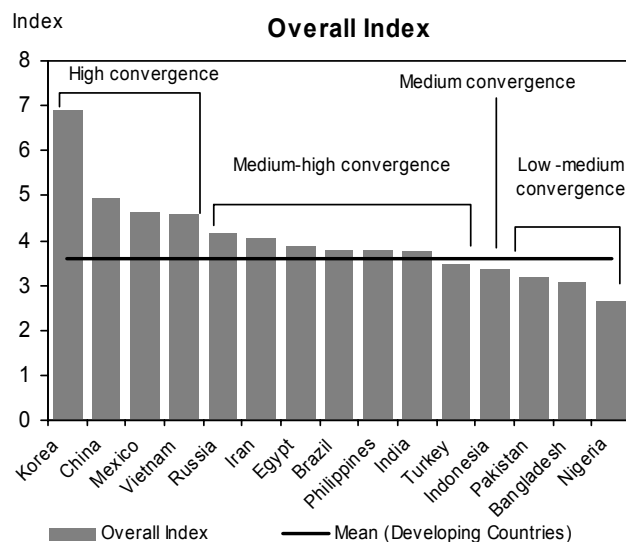
As we have argued in this paper, the capacity for countries to catch up or converge on developed country income levels is highly dependent on underlying conditions. Even in setting out ‘optimistic’ projections, it is important to take some account of these differences, and in the past we have varied our convergence assumptions in our research, both within the BRICs and when looking at other non-BRICs regions, such as Africa.

To capture this systematically across the N-11, we use our Growth Environment Score (GES) as a gauge. The GES is designed explicitly to capture factors that the growth literature shows affect that convergence process. Benchmarking to the assumptions that already underpinned our BRICs projections, we vary convergence speeds systematically across the N-11 on a similar scale.

- Countries that score highest on the GES (Korea, China, Mexico, Vietnam and Russia) have a higher convergence speed, which is consistent with strong developing country performers throughout their growth phase (and with the assumptions we have always used for China and Russia in our BRICs projections).
- Countries ranging around the GES average (Iran, Egypt, Brazil, Philippines and India) have a convergence speed set at a slower rate in the early part of the projection period. By the middle of the period, we make the assumption that these countries converge to speeds seen in the higher group. These are the assumptions we have always used for Brazil and India in our BRICs projections.
- Indonesia, our transitional country, has a convergence speed that stays at mid-level throughout the period.

- We set Pakistan, Bangladesh and Nigeria, the lowest performers on the GES, at an even slower convergence speed, gradually moving up to the average performers by mid-period.

Of course, this is an exercise that is flexible. We built this in a way that, given the different views on these economies, we can see resulting changes in potential growth paths.



## Appendix 2: Measuring Conditions: How the GES is Compiled

The GES aims to capture the principal factors that are known to affect an economy's ability to grow. We based our choice of the components on the extensive literature on the determinants of growth.<sup>3</sup> Each of the variables we include has been found to have a significant and relatively robust effect on growth in various cross-country growth regressions. We also favoured the variables that are available for a large number of countries and updated on a regular basis. Our main source is the World Bank's World Development Indicators database, though some data (such as schooling, political environment indices and, partially, government consumption) come from other sources.<sup>4</sup>

The 13 variables are:

**Inflation**—high inflation discourages investment and erodes growth performance.

**Government deficit** (as % of GDP)—high budget deficits can hurt economic stability and push up borrowing costs.

**External debt** (as % of GDP)—large foreign borrowing raises the risk of external crises and tends to push up real interest rates.

**Investment rates**—high investment rates encourage capital accumulation and growth, though investment should be productive.

**Openness of the economy**—proxied by the share of trade as a proportion of GDP (adjusted for population and geographical area<sup>5</sup>). A wide range of studies find that more open economies have tended to show greater tendency for 'convergence'.

**Penetration of phones**—proxied by mainlines per 1,000 people. Telephone penetration is a basic proxy for technology adoption. Communications technology may help the transfer of broader technology and techniques that aid growth.

**Penetration of PCs**—estimates of Personal Computers per 1,000 people are another dimension of communications technology.

**Penetration of internet**—estimates of internet usage per 1,000 people, like PC usage, provide another important measure of technology adoption and interconnectedness.

**Average years of secondary education**—higher levels of education aid the growth process, with secondary education most consistently identified.

**Life expectancy**—as a basic measure of health conditions, higher life expectancy has been shown to have been powerfully associated with growth performance.

**Political stability**—stable political regimes promote confidence and therefore entail higher investment and growth.

**Rule of law**—well-defined property rights and generally well-functioning institutions are believed to be conducive to higher investment and growth.

**Corruption**—increased corruption is likely to have an adverse effect on growth via distorting incentives.

The latest available data points (mostly for 2002 and 2003) are converted to a 0-10 scale (from 0=bad for growth to 10=good for growth) in the following way:

**Sub-index** =  $10 * (\text{actual observation} - \text{sample minimum}) / (\text{sample maximum} - \text{sample minimum})$

Those variables where higher values are *bad* for growth (external debt, inflation) are also inverted so that the scales work in the opposite direction (high observations give lower scores). In addition, to prevent extreme outliers from skewing the distribution of some variables, we chose cut-off points to replace the sample maxima and/or minima, as necessary (for instance, we used a maximum of 120% for external debt as a percentage of GDP; a 0 to 40% range for inflation; and a 100% of GDP cut-off for openness).

The total score is then calculated by finding a simple average of all 13 sub-indices of the components. We tried alternative weighting schemes, such as aggregating the technological capability variables into one component, or assigning weights implied from the estimated coefficients in Barro's cross-country regressions. Those alternatives do not alter the overall picture much and the strategy of equal-weighting reduces the risks associated with overplaying any one particular factor.

We also considered including other variables, such as railway passengers carried, container port traffic and mobile phone penetration as part of the technological

3. Our main reference is Robert Barro's influential research, in particular Robert J. Barro and Xavier Sala-i-Martin (2004) "Economic Growth", second edition, MIT.

4. Schooling data comes from Robert J. Barro and Jong-Wha Lee, "International Data on Educational Attainment: Updates and Implications", Centre for Institutional Development Working Paper No.42, April 2000; political stability, rule of law and corruption indices come from Kaufmann D., A. Kraay, and M. Mastruzzi 2005: "Governance Matters IV: Governance Indicators for 1996-2004"; government deficit numbers (not provided in the WDI database) are taken from country-specific IMF public information notices and national sources.

5. As large countries tend to be less open because their large internal markets serve as substitutes for international markets, openness and country size are related. We filter out this relationship by regressing openness on population and geographical area variables; the residual of this regression is the adjusted openness variable reflecting the policy-specific effects (tariffs, trade restrictions) on international trade, and therefore growth.

capabilities group, and customs and other import duties as one of the macroeconomic conditions variables. However, due to limited availability we could not use these data in the score. Admittedly, mobile phone penetration would be a better substitute for the telephone mainlines component (which we ended up using), as for most low income countries in Africa, mobile phones are having an increasingly important effect on growth. As more data becomes available over time, we might replace the mainlines series with this one.

We also considered using government consumption as one of the macroeconomic stability indicators but decided against it. In growth literature, government consumption is considered to be non-productive and leading to distortions of private decisions, directly (crowding out) and indirectly through negative impacts on public finances. It is thus assumed that a higher ratio of government consumption reduces the growth rate, all other things being equal. In our view, however, this inverse relationship is not clear-cut and likely to be non-linear, in the sense that in a low income country low government consumption does not necessarily mean higher private productivity-augmenting expenditures, but rather a sign of unhealthy public finances.

The GES has some commonality with the World Economic Forum's Growth Competitiveness Index (and the correlation between the two indices is quite high – around 87%). The underlying variables are not identical, however, and in some cases the scores are quite different. The use of life expectancy in our index, for instance, which is critical to growth performance, has the effect of downgrading several economies, particularly in Africa.

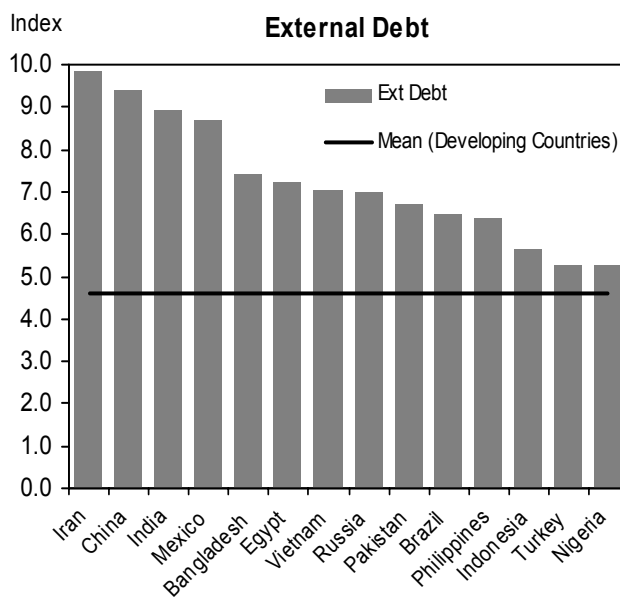
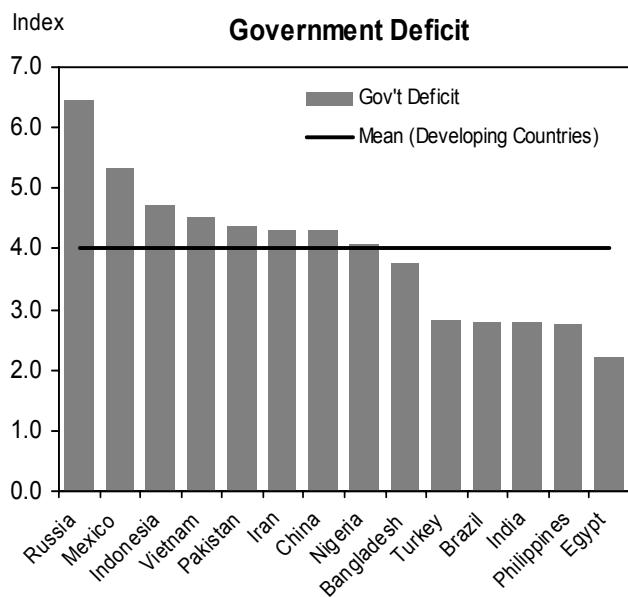
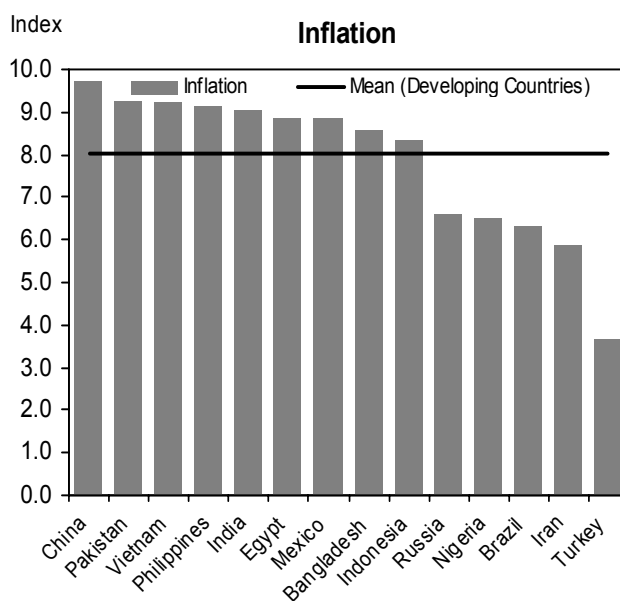
The GES is designed as a simple representation of the conditions necessary for convergence (i.e. catch-up growth) to occur. For an equivalent GES, less developed countries should grow faster. Some simple regressions of

growth on income per capita and the index show and suggest that one point on the index adds about 0.6% to a country's growth rate and there is also evidence that it increases the convergence speed significantly.

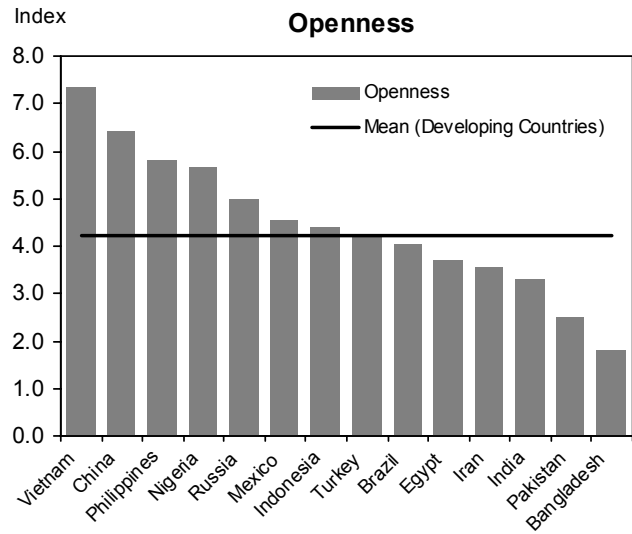
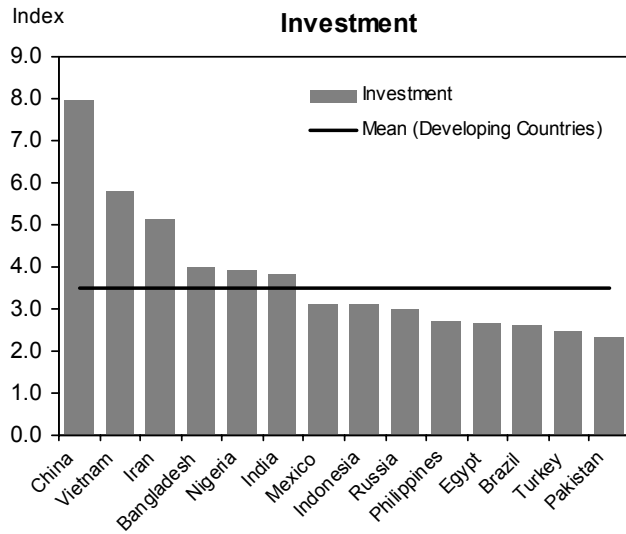
The fact that developed countries score well highlights the notion that good conditions tend to reinforce each other. In general, countries that score very well in some areas do so in most areas.

We stress that any attempt to quantify these types of conditions has the advantage of providing a consistent framework across countries. However, it is important to keep in mind that this type of measure may also be overly rigid at times in capturing and quantifying macro and policy variables.

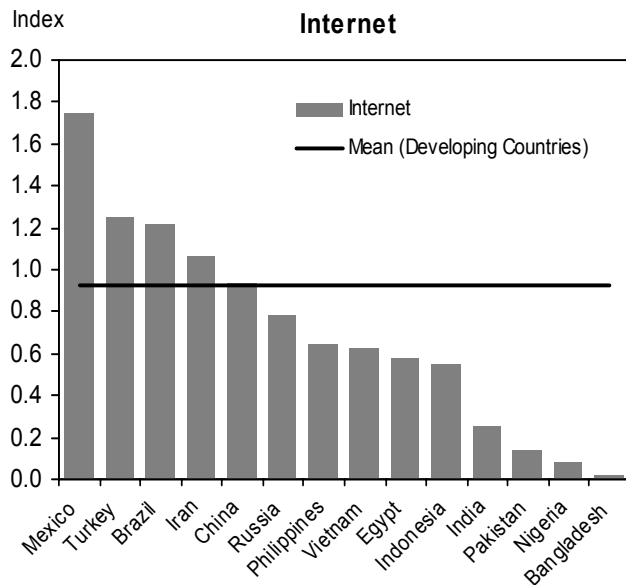
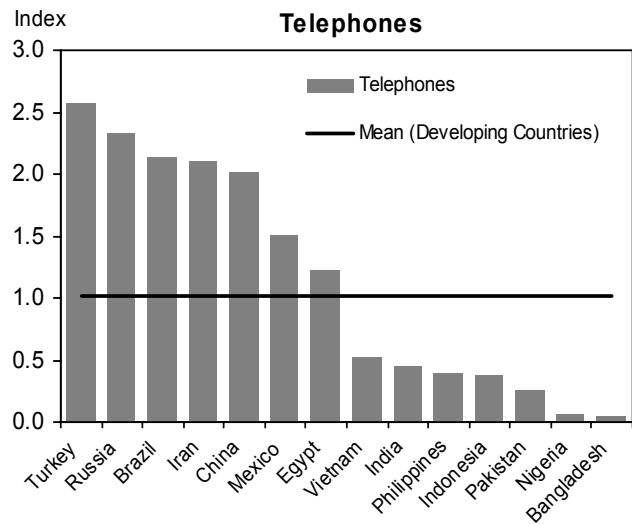
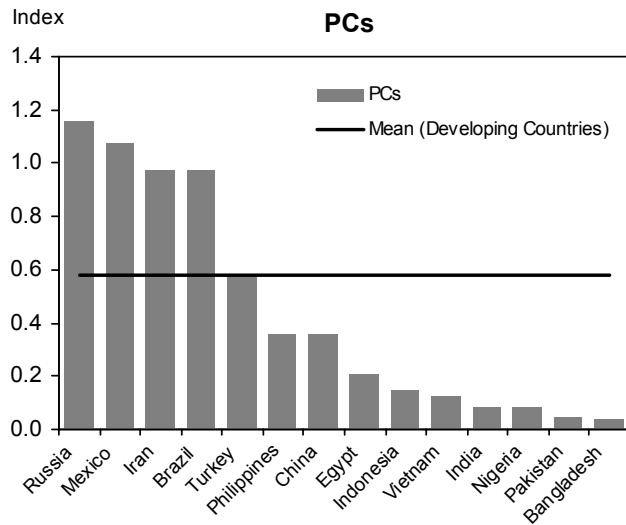
### Macroeconomic Stability Variables



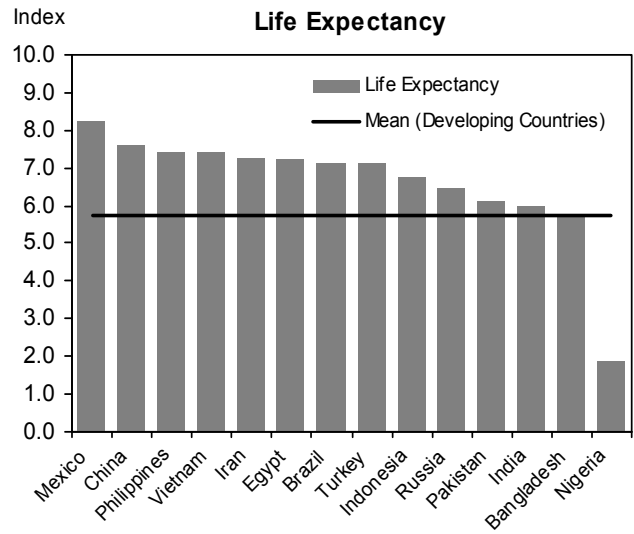
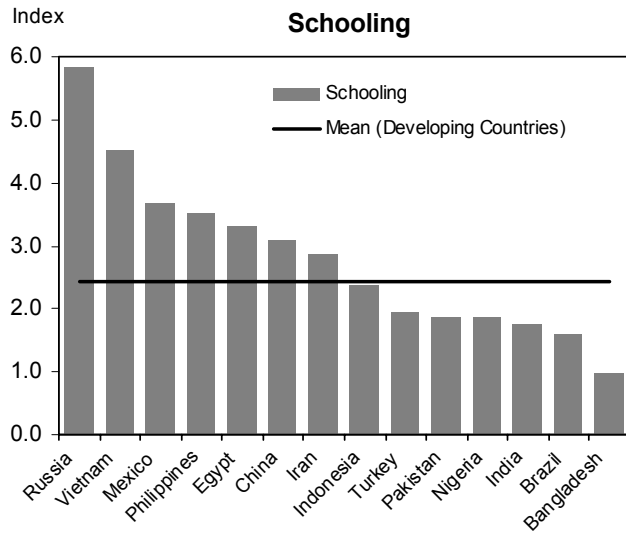
## Macroeconomic Conditions Variables



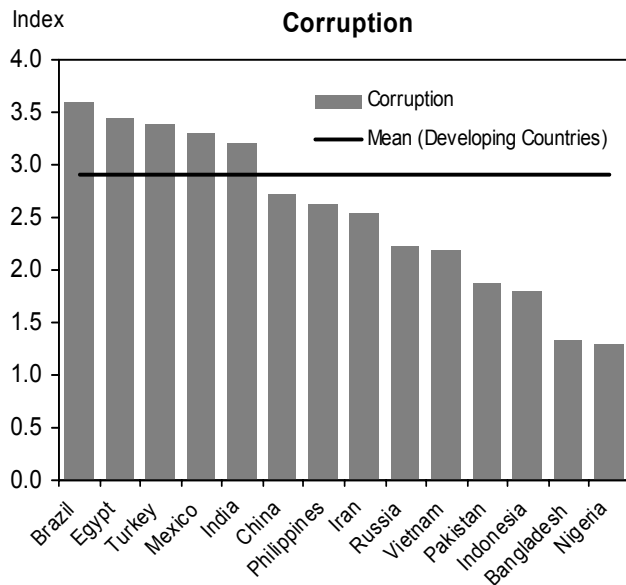
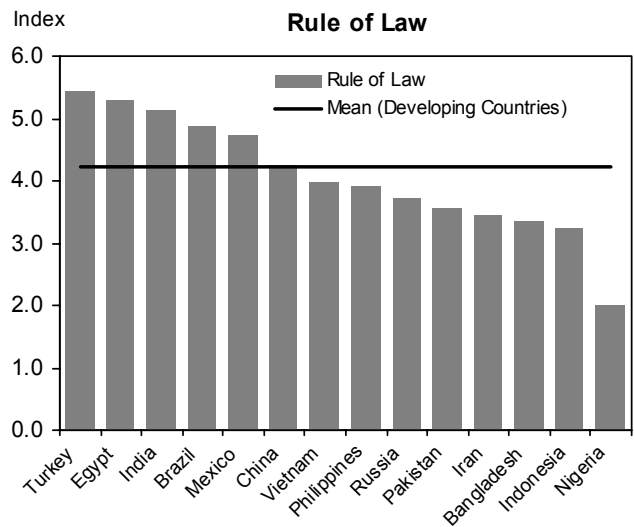
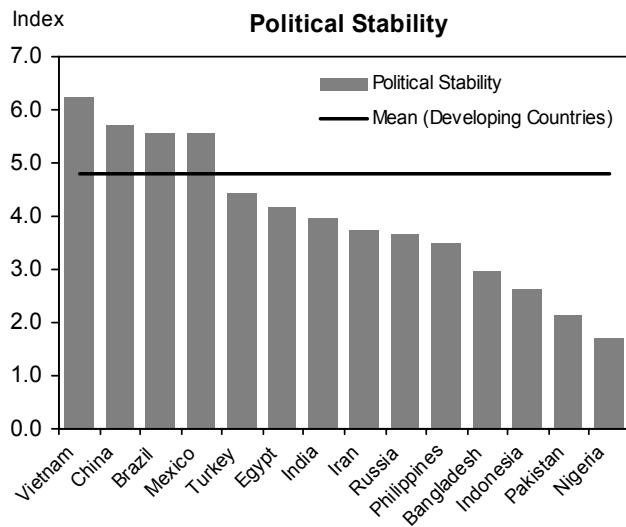
## Technological Capabilities Variables



## Human Capital Variables



## Political Conditions Variables



## Appendix 3: The GES Across All Countries

Countries	Index	Ranking	Countries	Index	Ranking	Countries	Index	Ranking
Luxembourg	8.0	1	Mauritius	4.7	58	Sao Tome and Principe	3.4	115
Switzerland	7.9	2	<b>Mexico</b>	<b>4.6</b>	<b>59</b>	Guyana	3.4	116
Sweden	7.7	3	Panama	4.6	60	Guatemala	3.3	117
Hong Kong	7.7	4	Azerbaijan	4.6	61	Nicaragua	3.3	118
Norway	7.6	5	Romania	4.6	62	Senegal	3.3	119
Iceland	7.6	6	<b>Vietnam</b>	<b>4.6</b>	<b>63</b>	Mauritania	3.3	120
Singapore	7.6	7	Fiji	4.6	64	Honduras	3.3	121
Canada	7.6	8	Jordan	4.5	65	Serbia and Montenegro	3.3	122
Australia	7.6	9	Saudi Arabia	4.5	66	Bolivia	3.2	123
United States	7.4	10	Vanuatu	4.4	67	Yemen	3.2	124
Denmark	7.4	11	Belize	4.4	68	Tajikistan	3.2	125
New Zealand	7.4	12	Tunisia	4.4	69	<b>Pakistan</b>	<b>3.2</b>	<b>126</b>
Finland	7.3	13	Jamaica	4.3	70	Gabon	3.2	127
Netherlands	7.2	14	Ukraine	4.3	71	Burkina Faso	3.2	128
Austria	7.1	15	Morocco	4.3	72	Benin	3.1	129
Germany	7.0	16	Belarus	4.3	73	Lebanon	3.1	130
Korea	6.9	17	Cape Verde	4.2	74	Paraguay	3.1	131
Ireland	6.7	18	Mongolia	4.2	75	Kyrgyz Republic	3.1	132
Belgium	6.5	19	Botswana	4.2	76	Uzbekistan	3.1	133
Cyprus	6.4	20	Dominica	4.2	77	<b>Bangladesh</b>	<b>3.1</b>	<b>134</b>
United Kingdom	6.4	21	Tonga	4.2	78	Mali	3.1	135
Malta	6.3	22	Uruguay	4.2	79	Venezuela	3.0	136
Estonia	6.2	23	South Africa	4.2	80	Papua New Guinea	3.0	137
Japan	6.2	24	<b>Russia</b>	<b>4.2</b>	<b>81</b>	Tanzania	3.0	138
France	6.2	25	Armenia	4.1	82	Ghana	2.9	139
Slovenia	6.1	26	Macedonia	4.1	83	Gambia	2.8	140
Czech Republic	5.9	27	Suriname	4.1	84	Nepal	2.8	141
Barbados	5.9	28	Bosnia and Herzegovina	4.1	85	Togo	2.8	142
Spain	5.8	29	<b>Iran</b>	<b>4.1</b>	<b>86</b>	Congo	2.7	143
Macao	5.8	30	Lesotho	4.0	87	Guinea-Bissau	2.7	144
Qatar	5.8	31	Albania	4.0	88	Eritrea	2.7	145
Portugal	5.7	32	Sri Lanka	4.0	89	Cameroon	2.7	146
United Arab Emirates	5.6	33	Kazakhstan	3.9	90	<b>Nigeria</b>	<b>2.6</b>	<b>147</b>
Malaysia	5.6	34	<b>Egypt</b>	<b>3.9</b>	<b>91</b>	Kenya	2.6	148
Oman	5.6	35	Syrian Arab Republic	3.8	92	Niger	2.6	149
Chile	5.5	36	Algeria	3.8	93	Lao PDR	2.5	150
Italy	5.4	37	Chad	3.8	94	Mozambique	2.4	151
Lithuania	5.3	38	<b>Brazil</b>	<b>3.8</b>	<b>95</b>	Uganda	2.4	152
Slovak Republic	5.3	39	<b>Philippines</b>	<b>3.8</b>	<b>96</b>	Haiti	2.4	153
Latvia	5.3	40	<b>India</b>	<b>3.7</b>	<b>97</b>	Rwanda	2.3	154
Israel	5.3	41	El Salvador	3.7	98	Cote d'Ivoire	2.2	155
Hungary	5.3	42	Libya	3.7	99	Ethiopia	2.1	156
Costa Rica	5.3	43	Georgia	3.7	100	Zambia	2.1	157
Grenada	5.2	44	Peru	3.7	101	Angola	2.1	158
Kuwait	5.2	45	Namibia	3.7	102	Sierra Leone	2.1	159
Greece	5.2	46	Colombia	3.6	103	Malawi	2.1	160
Bahrain	5.1	47	Ecuador	3.6	104	Iraq	2.0	161
Croatia	5.1	48	Swaziland	3.6	105	Central African Republic	1.8	162
Bulgaria	5.0	49	Dominican Republic	3.6	106	Sudan	1.6	163
French Polynesia	5.0	50	Cuba	3.6	107	Guinea	1.6	164
Bhutan	5.0	51	Turkmenistan	3.6	108	Congo	1.6	165
Poland	5.0	52	Moldova	3.5	109	Comoros	1.6	166
<b>China</b>	<b>5.0</b>	<b>53</b>	Madagascar	3.5	110	Afghanistan	1.5	167
Trinidad and Tobago	4.9	54	Cambodia	3.5	111	Liberia	1.4	168
Seychelles	4.8	55	<b>Turkey</b>	<b>3.5</b>	<b>112</b>	Burundi	1.2	169
Maldives	4.7	56	Argentina	3.4	113	Zimbabwe	1.1	170
<b>Thailand</b>	<b>4.7</b>	<b>57</b>	<b>Indonesia</b>	<b>3.4</b>	<b>114</b>			

## Appendix 3: The GES Across Developing Countries

Countries	Index	Ranking	Countries	Index	Ranking
Barbados	5.9	1	Swaziland	3.6	68
Macao	5.8	2	Dominican Republic	3.6	69
Qatar	5.8	3	Cuba	3.6	70
United Arab Emirates	5.6	4	Turkmenistan	3.6	71
Malaysia	5.6	5	Moldova	3.5	72
Oman	5.6	6	Madagascar	3.5	73
Chile	5.5	7	Cambodia	3.5	74
Costa Rica	5.3	8	<b>Turkey</b>	<b>3.5</b>	<b>75</b>
Grenada	5.2	9	Argentina	3.4	76
Kuwait	5.2	10	<b>Indonesia</b>	<b>3.4</b>	<b>77</b>
Bahrain	5.1	11	Sao Tome and Principe	3.4	78
Croatia	5.1	12	Guyana	3.4	79
Bulgaria	5.0	13	Guatemala	3.3	80
French Polynesia	5.0	14	Nicaragua	3.3	81
Bhutan	5.0	15	Senegal	3.3	82
<b>China</b>	<b>5.0</b>	<b>16</b>	Mauritania	3.3	83
Trinidad and Tobago	4.9	17	Honduras	3.3	84
Seychelles	4.8	18	Serbia and Montenegro	3.3	85
Maldives	4.7	19	Bolivia	3.2	86
<b>Thailand</b>	<b>4.7</b>	<b>20</b>	Yemen	3.2	87
Mauritius	4.7	21	Tajikistan	3.2	88
<b>Mexico</b>	<b>4.6</b>	<b>22</b>	<b>Pakistan</b>	<b>3.2</b>	<b>89</b>
Panama	4.6	23	Gabon	3.2	90
Azerbaijan	4.6	24	Burkina Faso	3.2	91
Romania	4.6	25	Benin	3.1	92
<b>Vietnam</b>	<b>4.6</b>	<b>26</b>	Lebanon	3.1	93
Fiji	4.6	27	Paraguay	3.1	94
Jordan	4.5	28	Kyrgyz Republic	3.1	95
Saudi Arabia	4.5	29	Uzbekistan	3.1	96
Vanuatu	4.4	30	<b>Bangladesh</b>	<b>3.1</b>	<b>97</b>
Belize	4.4	31	Mali	3.1	98
Tunisia	4.4	32	Venezuela	3.0	99
Jamaica	4.3	33	Papua New Guinea	3.0	100
Ukraine	4.3	34	Tanzania	3.0	101
Morocco	4.3	35	Ghana	2.9	102
Belarus	4.3	36	Gambia	2.8	103
Cape Verde	4.2	37	Nepal	2.8	104
Mongolia	4.2	38	Togo	2.8	105
Botswana	4.2	39	Congo	2.7	106
Dominica	4.2	40	Guinea-Bissau	2.7	107
Tonga	4.2	41	Eritrea	2.7	108
Uruguay	4.2	42	Cameroon	2.7	109
South Africa	4.2	43	<b>Nigeria</b>	<b>2.6</b>	<b>110</b>
<b>Russia</b>	<b>4.2</b>	<b>44</b>	Kenya	2.6	111
Armenia	4.1	45	Niger	2.6	112
Macedonia	4.1	46	Lao PDR	2.5	113
Suriname	4.1	47	Mozambique	2.4	114
Bosnia and Herzegovina	4.1	48	Uganda	2.4	115
<b>Iran</b>	<b>4.1</b>	<b>49</b>	Haiti	2.4	116
Lesotho	4.0	50	Rwanda	2.3	117
Albania	4.0	51	Cote d'Ivoire	2.2	118
Sri Lanka	4.0	52	Ethiopia	2.1	119
Kazakhstan	3.9	53	Zambia	2.1	120
<b>Egypt</b>	<b>3.9</b>	<b>54</b>	Angola	2.1	121
Syrian Arab Republic	3.8	55	Sierra Leone	2.1	122
Algeria	3.8	56	Malawi	2.1	123
Chad	3.8	57	Iraq	2.0	124
<b>Brazil</b>	<b>3.8</b>	<b>58</b>	Central African Republic	1.8	125
<b>Philippines</b>	<b>3.8</b>	<b>59</b>	Sudan	1.6	126
<b>India</b>	<b>3.7</b>	<b>60</b>	Guinea	1.6	127
El Salvador	3.7	61	Congo	1.6	128
Libya	3.7	62	Comoros	1.6	129
Georgia	3.7	63	Afghanistan	1.5	130
Peru	3.7	64	Liberia	1.4	131
Namibia	3.7	65	Burundi	1.2	132
Colombia	3.6	66	Zimbabwe	1.1	133
Ecuador	3.6	67			

## Appendix 4: Our Projections in Detail

US\$ GDP													
2005 USDbn	Brazil	China	India	Russia	Canada	France	Germany	Italy	Japan	UK	US	BRICs	G7
2005	747	1,918	746	754	1,156	2,314	3,062	1,885	5,293	2,261	12,454	4,165	28,425
2010	916	3,450	1,129	1,200	1,315	2,509	3,339	2,030	5,543	2,513	14,215	6,695	31,464
2015	1,295	5,539	1,680	1,702	1,467	2,733	3,602	2,197	5,853	2,798	15,838	10,217	34,487
2020	1,803	8,176	2,455	2,326	1,610	2,985	3,811	2,358	6,291	3,061	17,582	14,759	37,698
2025	2,280	11,677	3,617	2,873	1,758	3,240	3,932	2,466	6,708	3,290	19,644	20,447	41,038
2030	2,930	16,206	5,468	3,609	1,952	3,506	4,072	2,536	7,001	3,549	22,315	28,214	44,930
2035	3,827	21,999	8,430	4,364	2,181	3,783	4,383	2,592	7,087	3,887	25,522	38,621	49,435
2040	4,968	29,408	12,851	5,072	2,433	4,127	4,751	2,714	7,276	4,288	29,166	52,299	54,755
2045	6,351	38,345	18,994	5,652	2,698	4,483	5,105	2,903	7,587	4,683	33,157	69,342	60,616
2050	8,028	48,571	27,235	6,162	2,983	4,870	5,440	3,128	8,040	5,067	37,666	89,995	67,194

US\$ GDP													
2005 USDbn	Bangladesh	Egypt	Indonesia	Iran	Korea	Mexico	Nigeria	Pakistan	Philippines	Turkey	Vietnam	N-11	
2005	61	91	272	203	814	753	94	120	98	349	47	2,902	
2010	81	123	356	292	1,290	967	126	164	134	430	88	4,051	
2015	107	171	503	394	1,845	1,333	175	222	187	553	158	5,647	
2020	147	237	706	514	2,366	1,804	247	300	261	698	268	7,545	
2025	208	338	977	677	2,625	2,401	361	412	371	877	436	9,683	
2030	301	499	1,331	912	2,831	3,140	556	579	542	1,111	693	12,495	
2035	439	758	1,781	1,224	2,999	4,026	889	833	810	1,425	1,067	16,249	
2040	637	1,148	2,331	1,573	3,213	5,103	1,434	1,191	1,202	1,804	1,569	21,204	
2045	897	1,701	3,031	1,894	3,414	6,383	2,309	1,670	1,746	2,242	2,176	27,464	
2050	1,260	2,461	3,923	2,251	3,684	7,838	3,708	2,287	2,473	2,757	2,899	35,541	

US\$ GDP Per Capita											
2005 USD	Brazil	China	India	Russia	Canada	France	Germany	Italy	Japan	UK	US
2005	4,013	1,468	691	5,257	35,226	38,151	37,146	32,446	41,538	37,411	42,114
2010	4,685	2,560	977	8,523	38,403	40,702	40,577	34,939	43,583	41,009	45,979
2015	6,347	3,975	1,369	12,352	41,157	43,833	43,950	38,078	46,540	45,005	49,095
2020	8,523	5,715	1,893	17,305	43,536	47,523	46,802	41,346	51,037	48,541	52,323
2025	10,466	8,035	2,656	22,013	46,057	51,359	48,762	43,858	55,896	51,549	56,181
2030	13,149	11,089	3,849	28,539	49,885	55,493	51,176	45,805	60,177	55,186	61,336
2035	16,906	15,058	5,718	35,628	54,683	59,985	55,992	47,664	63,031	60,265	67,499
2040	21,746	20,217	8,442	42,759	60,116	65,896	61,848	50,976	67,138	66,525	74,369
2045	27,719	26,575	12,140	49,261	65,863	72,383	67,847	55,948	72,840	72,859	81,650
2050	35,143	34,105	17,011	55,630	71,993	79,807	73,904	62,083	80,492	79,203	89,663

US\$ GDP Per Capita											
2005 USD	Bangladesh	Egypt	Indonesia	Iran	Korea	Mexico	Nigeria	Pakistan	Philippines	Turkey	Vietnam
2005	422	1,170	1,122	2,989	16,741	7,092	733	737	1,115	5,013	566
2010	505	1,461	1,376	4,062	26,028	8,596	872	915	1,396	5,858	1,001
2015	611	1,879	1,836	5,175	36,789	11,235	1,070	1,128	1,801	7,209	1,715
2020	773	2,439	2,451	6,424	46,860	14,468	1,342	1,407	2,341	8,755	2,777
2025	1,018	3,272	3,255	8,141	51,923	18,443	1,753	1,800	3,122	10,662	4,357
2030	1,371	4,576	4,275	10,660	56,352	23,231	2,405	2,373	4,314	13,199	6,743
2035	1,865	6,630	5,554	14,031	60,625	28,873	3,440	3,222	6,137	16,641	10,170
2040	2,540	9,643	7,110	17,770	66,473	35,676	4,970	4,382	8,722	20,869	14,754
2045	3,379	13,806	9,103	21,183	72,812	43,760	7,187	5,881	12,208	25,844	20,274
2050	4,501	19,387	11,668	25,102	81,462	52,990	10,402	7,753	16,752	31,880	26,899

## Appendix 4: Our Projections in Detail (cont.)

Projected Real GDP Growth												
Avg %yoy	Brazil	China	India	Russia	Canada	France	Germany	Italy	Japan	UK	US	
2005-2010	4.0	7.6	6.2	4.5	2.7	1.6	1.6	1.3	1.2	2.1	2.8	
2010-2015	4.0	6.0	5.7	3.4	2.3	1.7	1.5	1.6	1.0	2.2	2.2	
2015-2020	3.7	5.0	5.5	2.9	1.9	1.8	1.2	1.4	1.4	1.9	2.1	
2020-2025	3.7	4.5	5.4	2.8	1.8	1.7	0.7	1.0	1.3	1.5	2.2	
2025-2030	3.8	4.0	5.7	3.0	2.1	1.6	0.7	0.6	0.9	1.5	2.5	
2030-2035	3.9	3.8	5.8	2.6	2.2	1.5	1.4	0.5	0.3	1.8	2.7	
2035-2040	3.8	3.8	5.7	2.2	2.2	1.8	1.6	0.9	0.5	2.0	2.7	
2040-2045	3.5	3.4	5.3	1.8	2.1	1.7	1.5	1.3	0.8	1.8	2.6	
2045-2050	3.4	2.8	4.9	1.5	2.0	1.7	1.3	1.5	1.1	1.6	2.6	

Projected Real GDP Growth												
Avg %yoy	Bangladesh	Egypt	Indonesia	Iran	Korea	Mexico	Nigeria	Pakistan	Philippines	Turkey	Vietnam	
2005-2010	5.0	5.0	5.1	5.3	4.8	4.3	5.0	5.6	5.1	4.6	7.9	
2010-2015	4.8	5.1	5.2	4.7	3.9	4.8	5.5	5.0	5.2	4.1	7.6	
2015-2020	5.0	5.1	5.0	4.3	2.7	4.6	5.7	4.9	5.1	3.8	6.9	
2020-2025	5.3	5.2	4.8	4.2	2.1	4.4	6.1	5.0	5.2	3.6	6.4	
2025-2030	5.5	5.5	4.5	4.3	1.7	4.1	6.6	5.1	5.5	3.6	6.1	
2030-2035	5.5	5.7	4.3	4.2	1.4	3.9	7.0	5.3	5.6	3.7	5.7	
2035-2040	5.5	5.7	4.0	3.8	1.5	3.7	7.1	5.2	5.5	3.5	5.1	
2040-2045	5.2	5.4	3.8	3.1	1.3	3.5	7.0	4.9	5.2	3.3	4.5	
2045-2050	5.0	5.1	3.7	2.8	1.4	3.2	7.0	4.6	4.9	3.1	4.0	



## Recent Global Economic Papers

Paper No.	Title	Date	Author
133	China's Ascent: Can the Middle Kingdom Meet Its Dreams?	11-Nov-05	Hong Liang and Eva Yi
132	60 Is the New 55: How the G6 Can Mitigate the Burden of Aging	28-Sep-05	Sandra Law son, Roopa Purushothaman and David Heacock
131	Is Foreign Direct Investment An Engine for Economic Growth?	16-Sep-05	Binit Patel, Mónica Fuentes and Anna Stupnytska
130	What Italy Needs to Do	14-Sep-05	Kevin Daly and Inês Calado Lopes
129	China and Asia's Future Monetary System	12-Sep-05	Jim O'Neill
128	The Impact of Pension Reform on the Capital Markets	08-Sep-05	Dambisa F. Moyo
127	The "ABC" of Asia's FX Regime Shift	01-Sep-05	Sun-Bae Kim and Tetsufumi Yamakawa
126	Europe: Challenged by Globalisation	13-Jul-05	Erik F. Nielsen and Nicolas Sobczak
125	Inflation Targeting —The Case for More?	15-Jun-05	Jim O'Neill
124	Merging GSDEER and GSDEEMER: A Global Approach to Equilibrium Exchange Rate Modelling	16-Apr-05	Jim O'Neill, Alberto Ades, Hina Choksy, Jens J. Nordvig and Thomas Stolper
123	Africa's Long Road Ahead: Laying Down the Potential	14-Mar-05	Carlos Teixeira, Roopa Purushothaman and Mike Buchanan
122	Germany Profits From Restructuring	24-Feb-05	Dirk Schumacher
121	The Lisbon Strategy and the Future of European Growth	21-Jan-05	Kevin Daly
120	Thoughts on Social Security Reform	18-Jan-05	William C. Dudley, Edward F. McKelvey and Jan Hatzius
119	Can the G7 Afford the BRICs Dreams to Come True?	30-Nov-04	Jim O'Neill
118	The BRICs and Global Markets: Crude, Cars and Capital	14-Oct-04	Dominic Wilson, Roopa Purushothaman and Themistoklis Fiotakis
117	US Consumers: Living Beyond Their Means	01-Oct-04	Jan Hatzius
116	Bush vs. Kerry: Budget Deterioration Limits the Scope for New Policy Initiatives	17-Sep-04	William Dudley, Ed McKelvey, Alec Phillips and Chuck Berwick
115	Making the Most of Global Migration	06-Aug-04	Sandra Law son, Roopa Purushothaman and Sabine Schels
114	House Prices: A Threat to Global Recovery or Part of the Necessary Rebalancing?	15-Jul-04	Mike Buchanan and Themistoklis Fiotakis
113	South Africa: Capital Controls Constraining Growth	15-Jul-04	Carlos Teixeira, Rumi Masih and Jim O'Neill
112	The G8: Time for a Change	03-Jun-04	Jim O'Neill and Robert Hormats
111	Introducing the Goldman Sachs China Financial Conditions Index (GS China-FCI)	19-May-04	Sun-Bae Kim, Hong Liang and Enoch Fung

## GOLDMAN SACHS GLOBAL RESEARCH CENTRES

### New York

Goldman Sachs & Co.  
New York Plaza, 45th Floor  
New York, New York 10004, USA  
Tel: +1 212 902 1000

### London

Goldman Sachs International  
Peterborough Court  
133 Fleet Street  
London, EC4A 2BB, England  
Tel: +44 (0)20 7774 1000

### Paris

Goldman Sachs Inc et Cie  
2, rue de Thann  
75017 Paris, France  
Tel: +33 (0)1 4212 1341

### Hong Kong

Goldman Sachs (Asia) L.L.C.  
Cheung Kong Center,  
68th Floor  
2 Queen's Road Central  
Hong Kong  
Tel: +852 2978 1000

### Frankfurt

Goldman Sachs & Co. oHG  
MesseTurm  
D-60308 Frankfurt am Main,  
Germany  
Tel: +49 (0)69 7532 1000

### Tokyo

Goldman Sachs (Japan) Ltd.  
Roppongi Hills Mori Tower  
47th Floor, 10-1, Roppongi 6-chome  
Minato-ku, Tokyo 106-6147, Japan  
Tel: +81 (0)3 6437 9960

### Singapore

Goldman Sachs (Singapore) Pte.  
1 Raffles Place, #07-01 South Lobby,  
Singapore 039393  
Tel: +66 889 1000

### Washington

Goldman Sachs & Co.  
101 Constitution Ave, NW  
Suite 1000 East  
Washington, DC 20001  
Tel: +1 202 637 3700

Copyright 2005 The Goldman Sachs Group, Inc. All rights reserved.

This material should not be construed as an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. We are not soliciting any action based on this material. It is for the general information of clients of The Goldman Sachs Group, Inc. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Before acting on any advice or recommendation in this material, clients should consider whether it is suitable for their particular circumstances and, if necessary, seek professional advice. The price and value of the investments referred to in this material and the income from them may go down as well as up, and investors may realize losses on any investments. Past performance is not a guide to future performance. Future returns are not guaranteed, and a loss of original capital may occur. The Goldman Sachs Group, Inc. does not provide tax advice to its clients, and all investors are strongly advised to consult with their tax advisers regarding any potential investment. Certain transactions - including those involving futures, options, and other derivatives as well as non-investment-grade securities - give rise to substantial risk and are not suitable for all investors. The material is based on information that we consider reliable, but we do not represent that it is accurate or complete, and it should not be relied on as such. Opinions expressed are our current opinions as of the date appearing on this material only. We endeavor to update on a reasonable basis the information discussed in this material, but regulatory, compliance, or other reasons may prevent us from doing so. We and our affiliates, officers, directors, and employees, including persons involved in the preparation or issuance of this material, may from time to time have "long" or "short" positions in, act as principal in, and buy or sell the securities or derivatives (including options) thereof of companies mentioned herein. For purposes of calculating whether The Goldman Sachs Group, Inc. beneficially owns or controls, including having the right to vote for directors, 1% of more of a class of the common equity security of the subject issuer of a research report, The Goldman Sachs Group, Inc. includes all derivatives that, by their terms, give a right to acquire the common equity security within 60 days through the conversion or exercise of a warrant, option, or other right but does not aggregate accounts managed by Goldman Sachs Asset Management. No part of this material may be (i) copied, photocopied, or duplicated in any form by any means or (ii) redistributed without The Goldman Sachs Group, Inc.'s prior written consent.

The Global Investment Research Division of Goldman Sachs produces and distributes research products for clients of Goldman Sachs, and pursuant to certain contractual arrangements, on a global basis. Analysts based in Goldman Sachs offices around the world produce equity research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs JBWere Pty Ltd (ABN 21 006 797 897) on behalf of Goldman Sachs; in Canada by Goldman Sachs Canada Inc. regarding Canadian equities and by Goldman Sachs & Co. (all other research); in Germany by Goldman Sachs & Co. oHG; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in Japan by Goldman Sachs (Japan) Ltd; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs JBWere (NZ) Limited on behalf of Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman, Sachs & Co. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom and European Union. This material has been issued by The Goldman Sachs Group, Inc. and/or one of its affiliates and has been approved for the purposes of section 21 of the Financial Services and Markets Act 2000 by Goldman Sachs International, which is regulated by the Financial Services Authority, in connection with its distribution in the United Kingdom, and by Goldman Sachs Canada, in connection with its distribution in Canada. Goldman Sachs International and its non-US affiliates may, to the extent permitted under applicable law, have acted on or used this research, to the extent that it relates to non-US issuers, prior to or immediately following its publication. Foreign-currency-denominated securities are subject to fluctuations in exchange rates that could have an adverse effect on the value or price of, or income derived from, the investment. In addition, investors in securities such as ADRs, the values of which are influenced by foreign currencies, effectively assume currency risk. In addition, options involve risk and are not suitable for all investors. Please ensure that you have read and understood the current options disclosure document before entering into any options transactions.

Further information on any of the securities mentioned in this material may be obtained on request, and for this purpose, persons in Italy should contact Goldman Sachs S.I.M. S.p.A. in Milan or its London branch office at 133 Fleet Street; persons in Hong Kong should contact Goldman Sachs (Asia) L.L.C. at 2 Queen's Road Central; persons in Australia should contact Goldman Sachs JBWere Pty Ltd. (ABN 21 006 797 897), and persons in New Zealand should contact Goldman Sachs JBWere (NZ) Ltd. Persons who would be categorized as private customers in the United Kingdom, as such term is defined in the rules of the Financial Services Authority, should read this material in conjunction with the last published reports on the companies mentioned herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risk warnings is available from the offices of Goldman Sachs International on request. A glossary of certain of the financial terms used in this material is also available on request. Derivatives research is not suitable for private customers. Unless governing law permits otherwise, you must contact a Goldman Sachs entity in your home jurisdiction if you want to use our services in effecting a transaction in the securities mentioned in this material.