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A Progress Report on the Building of the BRICs

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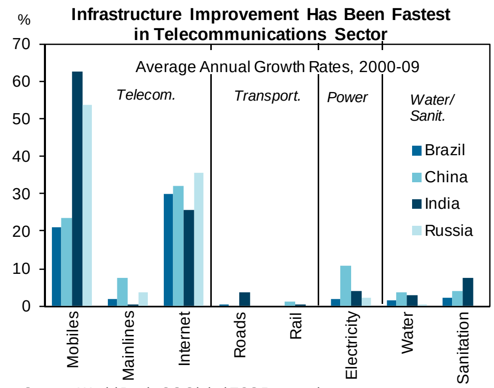
Infrastructure in the BRICs has improved notably in recent years, but still remains far behind developed country norms. Infrastructure investment will need to accelerate in the years ahead to prevent it from constraining future growth rates in the BRICs. While recent large-scale plans from the BRIC governments are encouraging in this regard, they will need to do more to attract private investment as well.

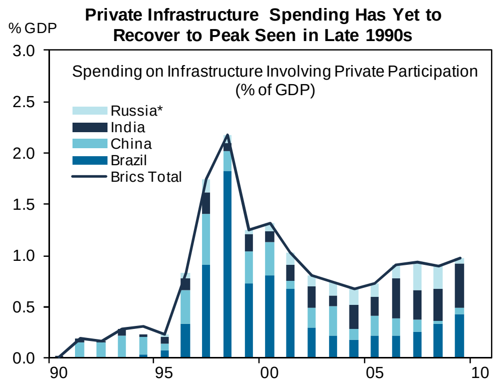
Infrastructure is a key determinant of economic growth potential, and thus plays a critical role in our longer-term BRICs' projections. The BRICs have made some progress in improving the generally weak state of their infrastructure in recent years. However, the degree of progress varies significantly by both country and sector, and levels remain far behind developed country averages.

China and India have experienced the fastest infrastructure growth rates nearly across the board, albeit from low levels. Brazil's infrastructure is relatively underdeveloped and has not seen the same high growth rates. Russia has much more advanced infrastructure in place than the others due to heavy investment during the Soviet era, but much of this has begun to fall into disrepair due to insufficient investment in maintenance. In terms of specific sectors, the most rapid progress in all four of the BRICs has come in telecommunications, particularly in mobiles and internet.

In order to realize our growth projections, the BRICs will need to invest substantially in infrastructure over the years to come. Encouragingly, all four have released large-scale plans for infrastructure investment. But due to their more strained fiscal positions since the crisis, the BRICs will also have to rely more heavily on private infrastructure funding. To access this, the BRICs have to continue to improve the business environment and expand financial intermediation in local capital markets.



Source: World Bank, GS Global ECS Research



*Russia is excluded until 1995, after conclusion of post-Soviet divestures
Source: World Bank/PPIAF, GS Global ECS Research

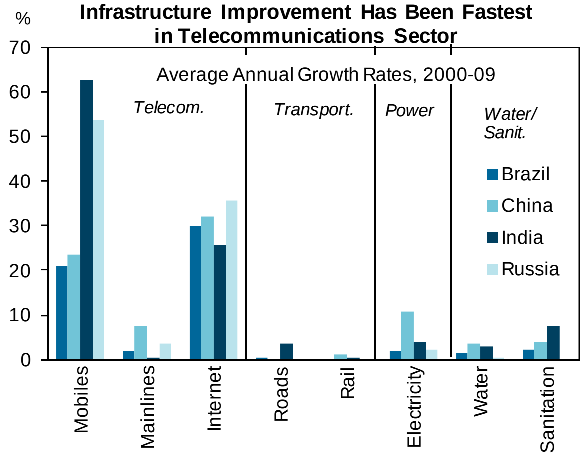
Recent Progress, But Large Gaps Remain

Infrastructure is a key determinant of economic growth potential, and thus plays a critical role in our longer-term BRICs' projections. More and higher-quality infrastructure has a direct impact on growth: it increases productivity, allowing an economy to produce more output with the same amount of labour and capital inputs. Infrastructure improvement also has a number of positive indirect effects; studies have found that it attracts foreign investment, encourages international trade, improves health and education, and reduces income inequality. On the flip side, insufficient investment in the provision of high-quality new infrastructure or the maintenance of existing stocks complicates the operation of business and can become a binding constraint on growth rates.

The BRICs have made some progress in improving the generally weak state of their infrastructure in recent years. However, the degree of progress varies significantly by both country and sector, and levels remain far behind developed country averages (see table). China and India have experienced the fastest infrastructure growth rates nearly across the board, albeit from low levels. Brazil's infrastructure is relatively underdeveloped and has not seen such rapid growth. Russia faces a different situation; while it has more advanced infrastructure in place in most sectors due to heavy investment during the Soviet era, much of this has begun to fall into disrepair due to insufficient investment in maintenance.

In terms of specific sectors, the most rapid progress in all four of the BRICs has come in telecommunications, particularly in mobiles and internet, where the BRICs have experienced average annual growth rates since 2000 of 40% and 31%, respectively. Russia and Brazil now have a similar number of mobile subscribers (per 100 people) as the DM average, while internet levels remain somewhat farther behind. The BRICs appeared to have 'leapfrogged' mainline telephone technology, which has seen only anaemic growth in recent years, and jumped straight to more advanced communication methods. They have also made progress in water and sanitation, the two infrastructure sectors most closely linked to the urbanisation process. Russia and Brazil's higher initial urban concentrations are the primary driver of the much deeper penetration of 'improved' water and sanitation facilities. China and India have seen slow but steady growth in both areas in the past decade, and have nearly closed the gap in water-related infrastructure, but have some way to go in the sanitation sphere.

Infrastructure Improvement Has Been Fastest in Telecommunications Sector



Source: World Bank, GS Global ECS Research

In transportation, road and rail networks in the BRICs have seen little growth in recent years and remain far less developed than their developed country counterparts. This includes India's road and rail systems, which are dense by international standards but of poor quality, so require significant maintenance investments. The BRICs lag farthest behind the developed world in the power sector: India's per capita electricity consumption is equal to just 6% of DM levels, while Brazil and China's are only about 25% as high. Russia's power network is much more advanced: it consumes nearly 70% as much electricity as the DM average. Electricity penetration growth rates have been much higher in China than in the other BRICs.

Despite these noticeable improvements in most sectors, infrastructure investment in the BRICs has been insufficient to keep up with the rapid increase in demand. Back in 2006, we estimated the infrastructure investment required to satisfy growing demand over 2006-10 would be nearly $400bn a year (around 8.5% of GDP). Total infrastructure investment rates are not available on a reliable, cross-country basis. Based on the World Bank's estimates that the private sector finances around 20-25% of EM infrastructure investments and that private investment rates were around 1% of GDP a year over this period, we arrive at a rough approximation that the BRICs' annual infrastructure investment may have averaged about 4-5% of GDP. These calculations involve a large degree of uncertainty, but suggest that infrastructure investment will need to accelerate in the years ahead to prevent it from constraining future growth rates in the BRICs. Anecdotal evidence suggests this may already be an issue in places. For instance, the World Bank estimates that India loses 1ppt in growth every year

Infrastructure Indicators* in the BRICs Continue to Lag Behind in Most Sectors

	Telecommunications			Transportation		Power	Water and Sanitation	
	Mobile Subscribers	Mainline Phones	Internet Users	Roads	Rail	Electricity Consumption	Improved Water Facilities	Improved Sanitation Facilities
	(per 100 ppl)			(km per 1000 sq km of surf. area)		(Kwh per Capita)	(% pop w/ access)	
Brazil	89.8 *(81)*	21.4 *(48)*	39.2 *(54)*	205.7 *(50)*	3.5 *(27)*	2,232.1 *(23)*	97.0 *(97)*	80.0 *(80)*
China	56.1 *(50)*	23.6 *(52)*	28.8 *(40)*	388.6 *(95)*	6.8 *(52)*	2,455.2 *(26)*	89.0 *(89)*	55.0 *(55)*
India	45.5 *(41)*	3.2 *(7)*	5.3 *(7)*	1,288.7 *(313)*	19.2 *(148)*	566.0 *(6)*	88.0 *(88)*	31.0 *(31)*
Russia	162.5 *(146)*	31.6 *(70)*	42.1 *(58)*	56.3 *(14)*	5.0 *(38)*	6,435.4 *(68)*	96.0 *(96)*	87.0 *(87)*
DM	111.2	45.1	72.3	411.1	13.0	9,518.4	99.6	99.5

Parathenses indicate the percentage relative to the DM average; *most data are from 2009; Source: World Bank, GS Global ECS Research due to supply bottlenecks, while Russia has had several high-profile transportation system failures in recent years.

BRICs Commit to Improving Infrastructure....

In order to realize our growth projections, the BRICs will need to invest substantially in infrastructure over the years to come. Encouragingly, all four have released large-scale plans for infrastructure investment. Even if these plans are overly ambitious in places, they suggest the BRICs recognise the importance of infrastructure and have placed it squarely on the political agenda.

- Brazil announced its first 'Accelerated Growth Program' (PAC I) in 2007, aimed at investing nearly $250bn of public and private funds in infrastructure through 2010, and last year increased this goal to nearly $550bn for 2011-14. While PAC 1 did not achieve all of this (only about 63% of spending had been actualised by mid-2010), the government is under amplified pressure to implement PAC 2 more effectively, as Brazil will host two major international sporting events in the next five years (the 2014 World Cup and 2016 Olympics).

- China has long incorporated infrastructure targets in its Five-Year Plans, the 12th of which was released earlier this year. The 12th Plan outlines a range of goals for expanding China's transportation and power infrastructure, including lengthening road and express railway networks, improving electrical power penetration, and increasing access to oil and natural gas. China also recently boosted infrastructure spending beyond the goals of its last Plan due to the global crisis, during which it implemented a stimulus plan with over half of planned expenditures in the infrastructure sphere.

- India also uses Five-Year Plans that incorporate infrastructure investment goals. Although formal numbers for the upcoming 12th Plan are not finalised, the Indian Planning Commission has announced a projected increase in infrastructure spending from $500bn in the 11th Plan to $1trn in the 12th Plan.

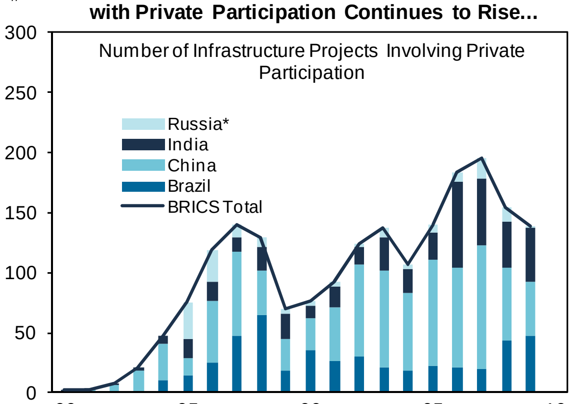
- Russia announced an ambitious plan in 2007 to spend up to $1trn over the next decade on infrastructure improvements. Unfortunately, much of the proposed spending was scaled back during the crisis, as money went to social spending and bailing out private firms. Only projects related to the 2014 Olympics, which Russia will host, were left untouched. More recently, Russia has announced plans for additional infrastructure projects (primarily in the transportation sector) linked to the 2018 World Cup, which it was awarded late last year.

...But Financing Concerns Remain

If the BRICs ostensibly seem to recognise infrastructure's critical role in future growth, then why does the under-provision of new stocks and insufficient maintenance of existing stocks continue to be a problem? One major factor is financing, given the unique features of infrastructure, including high capital intensity, elements of natural monopoly and long project lengths, which raise the cost and horizon of necessary investment and increase uncertainty about potential returns.

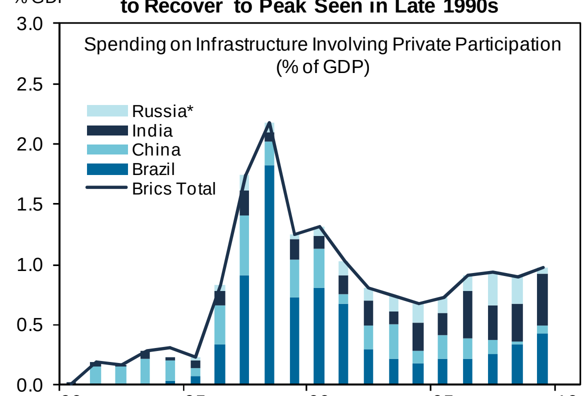
Once seen as a public-sector responsibility due to these issues, infrastructure financing shifted increasingly towards the private sector in the early 1990s as dissatisfaction with state-owned entities and fiscal pressures triggered a wave of privatisation. Brazil and China, in particular, saw a large increase in the number of projects with private participation. But the 1997-8 Asian crisis and some high-profile project failures led to a sharp retraction in private flows, as investors became wary of host-country risks (particularly government intervention and FX risk). Private flows have begun to pick up as the BRICs have sought to engage investors through creative financing structures, including public/private partnerships and government credit guarantees, but have yet to recover to earlier levels (although the number of projects with private involvement has recovered more convincingly). The vast majority of financing continues to come from public sources, with the private sector bearing only about 20-25% of the cost. But as public finances are more strained since the crisis, the BRICs will have to rely more heavily on private infrastructure funding. To access this, the BRICs have to continue to improve the business environment and expand financial intermediation in local capital markets.

Number of BRICs' Infrastructure Projects with Private Participation Continues to Rise...



*Russia is excluded until 1995, after conclusion of post-Soviet divestures
Source: World Bank/PPIAF, GS Global ECS Research

...but Private Infrastructure Spending Has Yet to Recover to Peak Seen in Late 1990s



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Source: World Bank/PPIAF, GS Global ECS Research

Main Economic Forecasts

	2009	2010	2011	2012	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4
Real GDP Growth (yoy%)												
Brazil	-0.6	7.5	**4.5**	**4.0**	4.2	**4.8**	**4.1**	**4.9**	**3.6**	**4.1**	**4.3**	**4.0**
China	9.2	10.3	**9.4**	**9.2**	9.7	9.5	**9.4**	**8.9**	**8.9**	**9.2**	**9.3**	**9.3**
India	8.0	8.5	**7.5**	**7.8**	7.7	**7.6**	**7.4**	**7.5**	**7.9**	**7.9**	**7.6**	**7.7**
Russia	-7.9	4.0	**5.3**	**5.6**	4.1	**4.4**	**6.4**	**6.4**	**5.9**	**5.9**	**5.5**	**5.1**
BRICs	5.6	8.8	**7.9**	**7.9**	7.9	**7.9**	**8.0**	**7.8**	**7.8**	**8.0**	**8.0**	**7.9**
World	-0.6	5.1	**4.3**	**4.7**	4.4	**4.0**	**4.1**	**4.2**	**4.3**	**4.6**	**4.6**	**4.6**
Inflation (yoy%)												
Brazil	4.9	5.0	**6.6**	**6.0**	5.4	**5.7**	**6.3**	**6.6**	**6.6**	**6.4**	**6.2**	**6.0**
China	-0.7	3.3	**4.7**	**3.0**	5.0	5.7	**5.0**	**3.6**	**3.0**	**2.8**	**2.9**	**3.2**
India	3.8	9.6	**8.6**	**5.1**	9.4	**9.6**	**8.9**	**6.6**	**5.6**	**5.0**	**4.9**	**5.0**
Russia	11.7	6.8	**8.7**	**6.4**	9.5	**9.5**	**8.4**	**7.2**	**6.6**	**6.6**	**6.4**	**6.2**
BRICs	2.6	5.4	**6.3**	**4.2**	6.5	**7.0**	**6.4**	**5.0**	**4.4**	**4.1**	**4.1**	**4.2**
World	1.7	3.4	**4.5**	**3.4**	4.0	**4.5**	**4.5**	**4.0**	**3.4**	**3.1**	**3.1**	**3.1**
Exchange Rate (eop)												
Brazil	1.74	1.67	**1.62**	**1.85**	1.63	**1.56**	**1.60**	**1.62**	**1.70**	**1.75**	**1.80**	**1.85**
China	6.83	6.62	**6.28**	**5.93**	6.55	**6.47**	**6.37**	**6.28**	**6.19**	**6.10**	**6.01**	**5.93**
India	45.14	44.70	**46.20**	**47.00**	44.70	**46.00**	**46.20**	**46.20**	**47.00**	**47.00**	**47.00**	**47.00**
Russia	30.24	30.54	**26.04**	**24.85**	28.22	**28.31**	**27.69**	**26.04**	**25.40**	**25.25**	**24.85**	**24.85**
Policy Rate (eop)												
Brazil	8.75	10.75	**13.25**	**13.25**	11.75	12.25	**12.75**	**13.25**	**13.25**	**13.25**	**13.25**	**13.25**
China	5.31	5.81	**6.56**	**6.56**	6.06	6.31	**6.56**	**6.56**	**6.56**	**6.56**	**6.56**	**6.56**
India	5.00	6.75	**8.00**	**7.50**	7.50	8.00	**8.00**	**8.00**	**8.00**	**7.75**	**7.50**	**7.50**
Russia	6.25	5.00	**6.00**	**7.25**	5.25	5.50	**5.50**	**6.00**	**6.25**	**6.50**	**6.75**	**7.00**
Nominal GDP per Capita (USD)												
Brazil	8389	10697	**12990**	**13193**								
China	3739	4398	**5275**	**6265**								
India	1194	**1440**	**1673**	**1825**								
Russia	8707	10510	**13338**	**15649**								
BRICs	3238	**3873**	**4582**	**5269**								
EM	3525	**4175**	**4951**	**5581**								
DM	38274	39510	**43009**	**44998**								
World	12059	**12778**	**14191**	**15195**								

Source: GS Global ECS Research