

Global Infrastructure in the Financial Crisis

7 Arguments for Optimism

While difficult to appreciate in the midst of the current deep crisis, the next five years will see a boom in infrastructure project creation around the world. The reasons are important, subtle and logical. The finance driven model of infrastructure project creation - that appeared ten years ago, after the collapse of privatization - worked well in only a few countries. Overall infrastructure investment globally averaged about 2.2% during the period.

A new, refined, PPP model will now appear. The balance of influence will shift to the public sector for financial leadership, and the E&C sector for design leadership. The fuzzy thinking of the last ten years will disappear. Equipment and technology pure plays in infrastructure will do very well.

CG/LA's Baseline Scenario is that global infrastructure investment will be at least \$1 trillion per year over the next five years, with the pace picking up at the end of the period to as much as \$1.4 trillion.

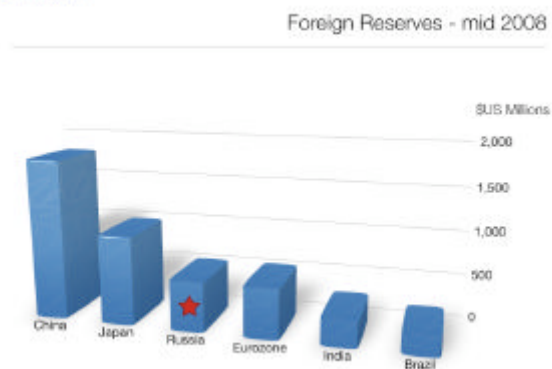
This note focuses on 7 arguments why infrastructure will be more than a port in the storm in the coming years. We believe that it is the one economic sector capable of leading the economy out of the crisis.

Note: This note is based on trips over the last month throughout the US, as well as visits to Latin America (Mexico & Brazil) and Asia (Singapore, Malaysia, the Philippines, Vietnam & Japan). Over the next two weeks I will visit Russia, the UK, Spain & Turkey. Insights are derived from those visits, in preparation for the 2° Annual Global Infrastructure Leadership Forum.

#1 - The Public Sector Increases its Activity

"Spending money on needed investments - infrastructure... - will yield double dividends...increase incomes today, while laying the foundations for future employment and economic growth." Joe Stiglitz in the November issue of Vanity Fair

Point: Public sectors around the world, for so long under performers in infrastructure, will prime the pump by taking leadership - selection, design, financing, operation & maintenance - of infrastructure projects. We are beginning to see this happen. Last week China announced its decision to maintain growth by investing in internal infrastructure development, at a 10% of GDP rate. Most governments around the world are in a position to channel reserves into major infrastructure projects. Brasil's foreign reserves top \$200 billion; Russia's are greater than \$600 billion; India's are nearly \$300 billion; and of course China's reserves are nearly \$2 trillion.



This potential - powered by necessity - dovetails with a generational shift toward a more powerful, but surgical, role for the public sector - in the overall economy, in infrastructure (along with education and health care). The approach also gives politicians the opportunity to directly and powerfully assist the 'real economy' at a time of incredible vulnerability.

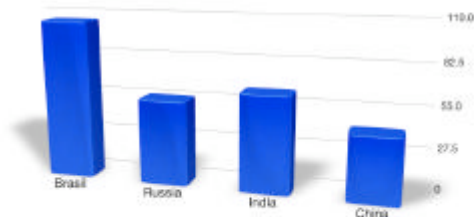
Takeaways: *There is a PPP model in place throughout the world. In most countries it has not worked well, principally because of a game of chicken between government and the private sector over the apportionment of risk. This will end. Governments will engage their sovereign capacity to ensure risk, creating new and large opportunities for private sector participation.*

** For the first time ever, according to our sources, Russia has a larger portion of its national budget earmarked for infrastructure than for military spending. The plan is to put the*

country's extraordinary reserves to work building transport infrastructure, in the major cities and in support of the 2014 Sochi Winter Olympics.



2007 Reserve Increases - %/Previous Year



#2 - Infrastructure Investment has been historically low over the last 10 years

"M&A is over, I'm moving into Infrastructure" British attorney in Hanoi, October 2008

Point: Most recent discussion of infrastructure has been predicated on the idea that we were in the midst of a growth spurt in the sector. In fact, we were at the beginning of a *posited* period of growth. Infrastructure throughout the world, in the US and in developing countries, is best understood in terms of massive pent-up demand.

Three choke points, critical to making projects happen - to financing projects - were never addressed, and will now get the attention they deserve:

- **Finance Mismatch:** In the competition for resources in an environment awash in liquidity, infrastructure (slow and steady) operated at a mortal disadvantage;
- **Project Quality:** The quality of projects has been extremely poor, so real targets for investment - with feasibility studies taking up to one year to complete - were much rarer than demand figures suggested; and
- **Public Sector Quality:** The deep mismatch between the private sector's leading role, and the

responsibility (and capacity) of the public sector for public goods creation had a chilling effect on investment.

Throughout the world, including in Latin America, North America, Africa and Eastern Europe infrastructure investment never exceeded 2.0% of GDP, and was persistently well under this figure in many countries.

CG/LA's Global Infrastructure Demand Model estimates that if governments around the world increased infrastructure investment by 0.5% of GDP, the overall market would grow by \$215 billion (more than 20%); at a 1.0% increase the market would grow by \$450 billion (more than 45%).

An aggressive public sector approach to infrastructure investment is the logical extension of current public policies, and the only way to protect the productive sectors of the global economic system. The vehicles, whether sovereign wealth funds, national infrastructure banks, or national infrastructure funds, have in many cases already emerged, and will now be sharpened.



Priming the Pump - Infrastructure Investment



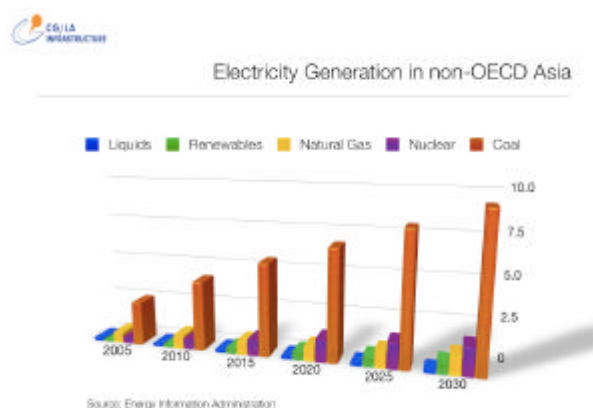
Takeaway: The common reaction to the above is 'that makes so much sense, the governments will never do it.' That was certainly the case up until about two weeks ago -- now opinion is aligning rapidly in favor of just this kind of a concerted drive. It should not wait for Stage 1 of the rescue effort (saving the financial system) to be completed but should proceed in a massively parallel approach. As mentioned, the big winners may

be international E&C firms, certainly local E&C firms, and global equipment and technology firms.

#3 - Extreme Sweet Spots

"You have to keep the Lights on" U.S Attorney in Tokyo, October 2008

Profile: Infrastructure is critical, and - in many cases - absolutely essential for political stability. For example, most of the countries in the world can afford to keep the lights on. The rapid demand for energy generation globally -- and for the generators, transmission lines, fuels and transformers -- will continue to increase under any but the most negative scenarios.



If you look at non-OECD Asia (graph above) solid investment opportunities exist in needed power generation. Overall, demand will increase by 5 times through 2030, mostly in coal but also in bio-fuels. The one requirement that these projects need are solid off-taker agreements - a public sector function - and these will be forthcoming.

Focusing on the Asian countries that I recently visited, Vietnam has a target of increasing electricity generation capacity by 900% in the next 12 years, and has solid projects in hydro, renewables and thermal power; the Philippines has prioritized a process of selling electricity generation assets; and on the fuels side, Malaysia - along with Indonesia - is one of the world's great LNG producing and exporting countries.

Other areas in which we see high demand, and high prices, are those that combine job creation with long-term competitiveness:

- Urban mass transit (Philippines, lead by the Chinese)
- Inter-urban toll roads (Hanoi-Haiphong)
- Ports & logistics systems, especially hinterland distribution systems (LA/Long Beach)

In virtually every country private investment in infrastructure is the critical missing ingredient.

Takeaway: There is real demand in the global infrastructure marketplace that will be met, and that - because of the diminution of private sector appetite for risk - governments will begin to guarantee. The 'work' will now be to (a) identify the projects with the best potential IRR's, and (b) reduce risk and increase IRR's by forcing wide-gauge government participation.

#4 - The Bilateral & MDB Sectors Increase their Relevance

"Look at What JBIC has done over the last 30 years, and imagine what China will do," U.S Attorney in Tokyo, October 2008

Profile: There is enormous capacity in the Multilateral Development Bank (MDB) and Bilateral sectors, for rapid investment action, guarantee provision and public sector backstopping. Last week, as reported in the FT, the "World Bank issued a \$1.5 billion five year bond at 35 basis points below midswaps...at a coupon rate of 3.5% per cent." This resource has not been used effectively over the last 10 years, and will now come fully into play.

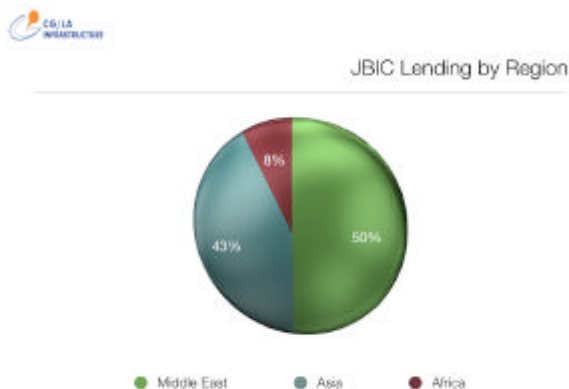
In this regard, it is instructive to highlight JBIC - the Japanese bilateral assistance agency. JBIC is capable of massive, coordinated, infrastructure investments -- having lent \$25.5 billion into developing countries in 2007, the majority for infrastructure-related projects.

The World Bank, the EBRD, the Asian Development Bank, the Inter-American Development Bank, as well as regional development banks (CAF, Islamic Develop-

ment Bank, etc.) could easily pump \$200 billion per year into new infrastructure projects -- their capital requirements would have to be addressed, in extraordinary session, something easily arranged.

National development banks (BNDES in Brazil, the China Development Bank, Vnesheconombank in Russia) could easily invest another \$200 billion. These monies, under the right conditions, would begin to be disbursed immediately, and would be - again under the right conditions - fully disbursed within 12 months.

Takeaways: *There are enormous resources available to invest in infrastructure, in developing and developed countries alike, building productivity into real economies around the world.* Once the decision is made to invest out of this crisis there will arguably be a kind of infrastructure gold rush. Budgets will rapidly appear, projects - well-structured or not - will be put in play, and smart firms with deep capacities will quickly generate unprecedented order books.

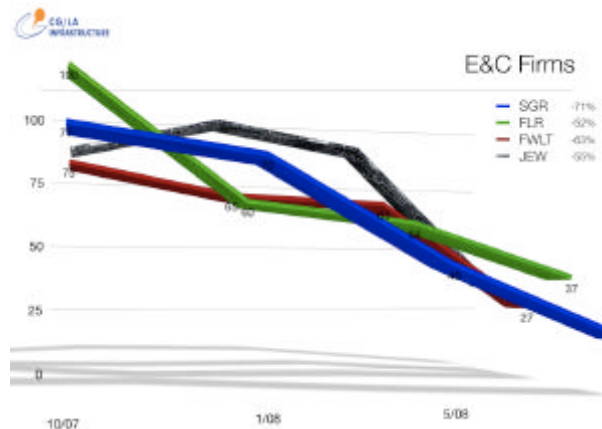


#5 - Love an Engineer or at Least an E&C

"Establishing a long-term plan for the country's infrastructure must become a national priority, but in the short term, there are realistic and immediate steps that must be taken," said ASCE President William F. Marcuson III

Profile: Traditionally it is engineers that have drive project conception and design. Engineers think in the long-term, creating designs for projects that will last for 20 to 30 years.

The balance will shift back to a time when engineers were included in every conversation -- rather than, as now, simply carrying out the jobs designed for them by the financial community.



Takeaways: Overall we believe that this argument does not necessarily favor US E&C firms. Over the last 30 years the creation in emerging markets of first class E&C firms has been steady and sufficient; these firms are well positioned, but under-capitalized.

US firms will do well if and when the critical US infrastructure market begins to grow. Otherwise firms from Latin America (lead by the Brazilians Odebrecht and Andrade-Gutierrez) and Asia (Keppel in Singapore, the emerging Chinese firms) will offer unique and very attractive opportunities.

#6 - US Infrastructure Build

"...We have to rebuild America. I am proposing a National Infrastructure Reinvestment Bank that will invest \$60 billion over ten years."

--Sen. Barack Obama, February 13, 2008

Profile: The US economy is the largest in the world, and one of the three largest infrastructure markets (after China and the EU). Quick action here makes enormous sense, and would begin to lay the groundwork for a renewal in US productivity.

The situation is ripe for aggressive US investment. Rather than indulging in another \$150 billion consumer

stimulus package it makes sense to invest that money, immediately, into infrastructure. This would have three enormously positive impacts:

First, job & productivity creation - \$150 billion in new infrastructure investment would yield 2.25 million new direct jobs, and 4.5 million indirect jobs.

Second, people would see that their governments – and international institutions – were not only taking decisive action, but were taking action focused directly on them. This is critical in a crisis – generating confidence in an environment characterized by the sudden absence of confidence.

Third, and most clearly, it would wall-off - or at least cushion - the real economy from the dramatic melt-down in the global financial system.

Coincidentally, \$150 billion is precisely the amount that the US spends on infrastructure each year. This is just over 1% of GDP, so we would be doubling that figure to 2% of GDP.



Takeaways: This one time stimulus, for 2008/2009 would then be followed by regular, massive, infrastructure funding from the National Infrastructure Bank. The US would then (a) set in stone an investment level of 2% of GDP, which would cover some new investment, as well as Operations & Maintenance on our old infrastructure stock, and (b) hopefully set the stage for an increase in investment to 3% of GDP -- the “Next Generation” scenario that I described in “The Future of Infrastructure” chapter in the North America 2025 book.

#7 - Getting the Model Right

“It doesn’t exist any more, the infrastructure financing model of the past is completely gone,” Spanish Banker, Washington, DC, October 2008.

Profile: The new model is going to be a PPP model in which the public sector aggressively accepts risk as a means of ensuring that projects are quickly set in motion. This will be a much easier process for developed economies (62% of overall infrastructure demand); emerging markets -- particularly at the tail end of developing -- will have problems in distributing resources. See the graph below, and the Opportunity Score matrices at the end of this document.



Takeaways: The new model will present a series of strong and relatively predictable opportunities for financial investors, including:

- Equity investment in global equipment & technology firms (not confident about US E&C firms);
- Financial partnerships with development companies who can quickly put projects in the field (including fast-moving elements of global E&C firms, but more likely E&C firms that lack capital);
- Direct investment in projects, guaranteed by local public sectors, with strong MDB backstops.

CG/LA's diagnostic model highlights the strengths and weaknesses of countries around the world in terms of the capacity for infrastructure project creation.

