



Global Economy Watch

Could infrastructure be the panacea for global growth?



Dear readers,

Eight years after the financial crisis, many large economies continue to have sizeable negative output gaps, which provide estimates for how close a country is to operating at potential levels of output. Of the G7, Italy is furthest adrift with France and Japan still running behind the GDP-weighted average for the group. Only Germany and the UK are near to closing the gap.

We don't expect this to change soon, since our main scenario sees global growth of around 2.5-3% this year, the fifth year of below trend growth (when measured in market exchange rate terms).

At the country level, the recent data has been mixed. The Eurozone grew at a punchy rate of 0.6% q-on-q in the first quarter of the year, which was higher than expected and slightly above trend. France, in particular, surprised on the up-side. In the coming months we will be monitoring the bloc for any signs of a further uptick in activity.

In contrast, the US grew by an anaemic rate of 0.1% q-on-q, which was slower than expected. The UK also saw growth slow to a slightly below trend rate of 0.4% in the first quarter.

So what could help to boost growth rates? One potentially attractive approach is to invest more

in infrastructure, in a manner similar to the recent announcement in Canada. Doing this effectively is a necessary condition to go beyond boosting short-term demand and to ensure that the supply-side of the economy also grows more strongly in the long-term.

We have set out four principles that policymakers should keep front of mind when considering where investment should be targeted (see page 4). First, investment should meet a well-defined need. Second, it should be in line with wider government objectives, including economic, social and environmental goals. Third, it should be financially viable and offer an acceptable return on capital and, fourth, it should benefit the wider economy both directly and indirectly.

The UK Government will be hosting an anti-corruption summit in May. With this in mind, we examined the topic on page 2, and the chart below, which suggests that even a small improvement in corruption perceptions can have a big impact on average income levels.

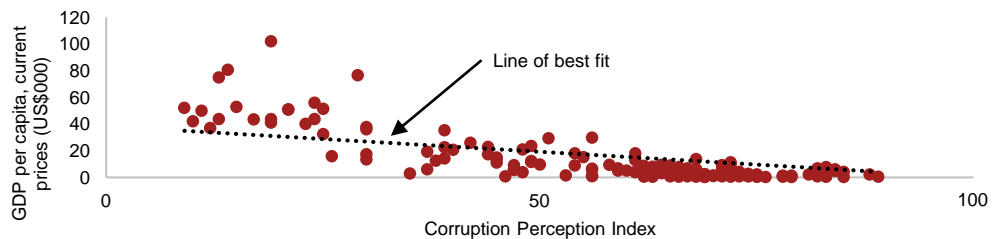


Kind regards

Richard Boxshall

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Fig 1: Rising country-level corruption is associated with decreasing GDP per capita, suggesting corruption creates barriers for businesses across all economies



Note: The Corruption Perception Index used here is based on the Corruption Perception Index published by Transparency International but has been inverted so that a score of 100 indicates the highest level of perceived corruption.
Sources: PwC analysis, Transparency International, IMF

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Economic update: Mind the gap

The missing \$500bn?

In its April 2016 World Economic Outlook, the IMF published its latest estimates of the so-called ‘output gap’ – these provide an indication of the amount of spare capacity in an economy by estimating how close it is to operating at its potential level of output. Output gaps are notoriously hard to estimate precisely, and are sometimes subject to large revisions, but they can provide some insights into whether policy should be focusing on boosting growth or reining in potential future inflationary pressures.

The IMF analysis (see Figure 2) shows that Germany and the UK have the least spare capacity among the G7 economies, a conclusion supported by their relatively low unemployment rates of 4.6% and 5.1% respectively. At present, however, projected annual GDP growth in the UK and Germany remains relatively modest at around 1.5-2%, which is probably at or slightly below trend. So there does not seem to be any immediate inflationary risk in these economies, though this is something that will need careful monitoring going forward.

The UK sets its own monetary policy and so could, if concerns about future inflation were to build up at some point, gradually increase interest rates in response, though this does not seem likely for the moment. However, the ECB sets Eurozone-wide monetary policy and is likely to hesitate before prioritising any future German inflation concerns above the economic recovery in the rest of the Eurozone.

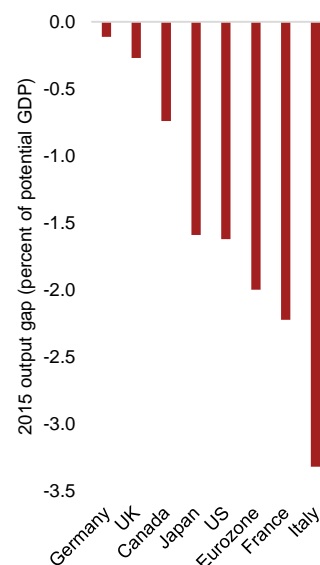
This is not an immediate issue and the recent influx of refugees into Germany provides a potential source of extra labour market capacity, though it may be some years before such immigrants can be fully integrated into the local labour market. Recent IMF research suggests an immigrant who just arrived in Germany is 18 percentage points less likely to participate in the labour market, but this difference disappears after 20 years, so in the long run this influx of workers could be of benefit to Germany given its ageing native population¹.

Policymakers continue to take action to close the gap

There have been policy changes in an attempt to address the level of spare capacity in the G7. The ECB stimulus package announced in March, for example, or the recent US\$95 billion infrastructure commitment in Canada are examples of a more direct approach. The US Federal Reserve has pursued a less direct response, slowing their planned interest rate rises in response to recent weaker US growth and global uncertainties.

Policymakers will be hoping these measures go some way to closing the output gaps. If all the G7 economies had done so, we estimate that worldwide output (at 2015 values) could have been around \$500 billion higher. As discussed further on page 3, increased infrastructure investment could be one key measure to try to realise these potential gains.

Fig 2: Of the G7, Germany's economy is operating closest to its potential



Source: PwC analysis, IMF

¹“The Labor Market Performance of Immigrants in Germany”, IMF (2016)

The cost of corruption – too big to ignore?

In May 2016, UK Prime Minister David Cameron will host an anti-corruption summit. With this in mind, and following on from our report on [the impact of corruption on Nigeria's economy](#), we have analysed the relationship between corruption and GDP per capita, a proxy for the standard of living. We have also used our 2016 Global CEO Survey to examine the views of business leaders on corruption across countries and sectors.

Paying the price for corruption

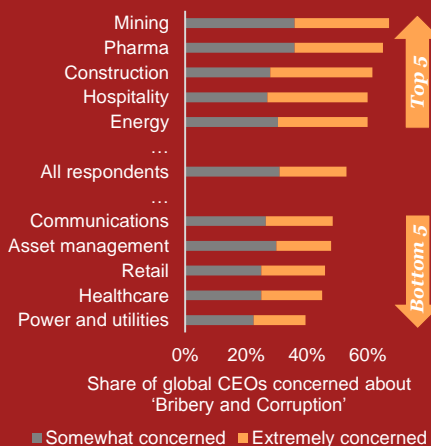
Figure 1 shows the real motivation behind stamping out corruption. Our analysis shows that a one notch-increase in perceived corruption levels is associated with a \$380 decrease in GDP per capita and so lower standards of living. Conversely, persistently lower levels of perceived corruption are associated with higher levels of GDP per capita. While correlation does not necessarily imply causation, as there could be many other factors driving income levels, there are good reasons to believe that reducing corruption should also boost economic prosperity, as discussed further below.

What does this mean for businesses?

High levels of corruption act like an additional tax on businesses and so tend to increase the cost of doing business. This has implications for consumer welfare as these costs are typically passed on to consumers, especially if demand for the associated products or services are less sensitive to changes in prices.

Figure 3 shows the top five and bottom five sectors where CEOs think bribery and corruption is a threat to business. We have sourced the data from our own Global CEO Survey, which is carried out annually. We have averaged the responses over the last two years.

Fig 3: According to CEOs the mining sector is most susceptible to corruption



Source: PwC CEO Survey (2015 and 2016)

Our analysis suggests that commodity-intensive industries such as mining, construction and oil and gas extraction are areas where CEOs feel that corruption poses a significant threat. This makes sense as extractive industries are often in less developed economies, where corruption tends to be more of a problem and require a set of permits and official interactions with government which can create opportunities for bribery, and so, corruption. Also, these are sectors where demand for commodities is expected to be inelastic partly due to the lack of alternatives.

Conversely, sectors like retail, healthcare (excluding pharmaceuticals) and utilities appear less threatened by the effects of bribery and corruption partly because of the transparency of some of these sectors, particularly in terms of pricing.

Awareness in the G7

Our CEO survey also provides insight as to how concerns about corruption vary across the G7 economies. For example, in Italy, the perception of corruption is high and this corroborates with the views of the CEOs in our survey, as one third of CEOs in Italy are concerned about corruption – the second highest of the G7 countries.

More surprisingly – given the relatively high level (among the G7) of perceived corruption indicated by the Transparency International Corruption Perception Index – France has the lowest proportion of ‘somewhat’ or ‘extremely concerned’ CEOs at just 14% according to our survey.

For the remaining five G7 countries, levels of concern range from 20% in Canada to 37% in Japan. But all remain well below the global average concern figure of 53%, suggesting that the advanced economies have made greater progress in minimising the presence of corruption.

A more global problem

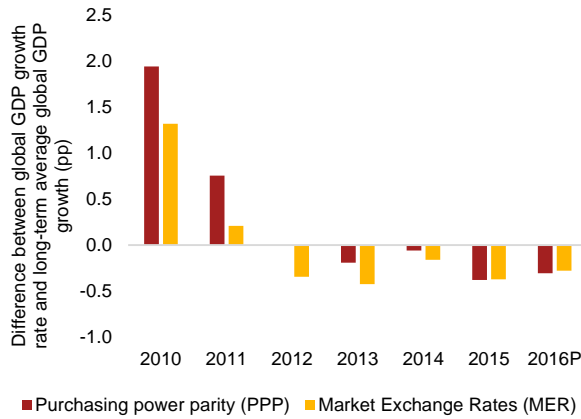
According to Transparency International, corruption could be even more pervasive than our survey suggests, with 68% of countries worldwide identified as having a serious corruption problem.

It is in the interest of businesses to contribute to eliminating this problem. Research from the World Bank² has found that firms who pay bribes are likely to face higher costs and spend more, not less, management time dealing with red tape and regulatory burden. While reducing systemic corruption is difficult and requires many years of sustained effort, the opportunities are significant for governments and businesses alike.

²“Does ‘Grease Money’ speed up the wheels of commerce”, World Bank (1999)

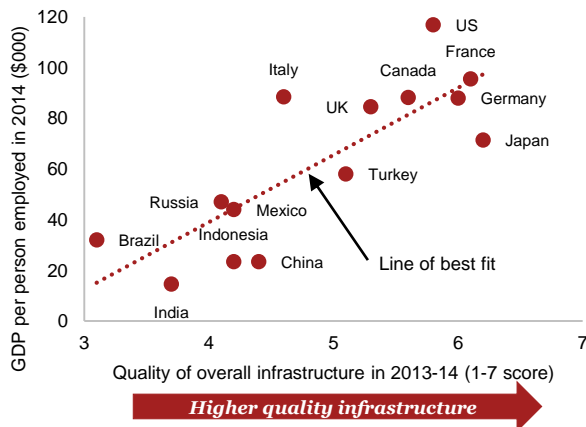
How to prioritise public infrastructure investments

Fig 4: Global GDP growth is expected to be below its long-term trend again in 2016



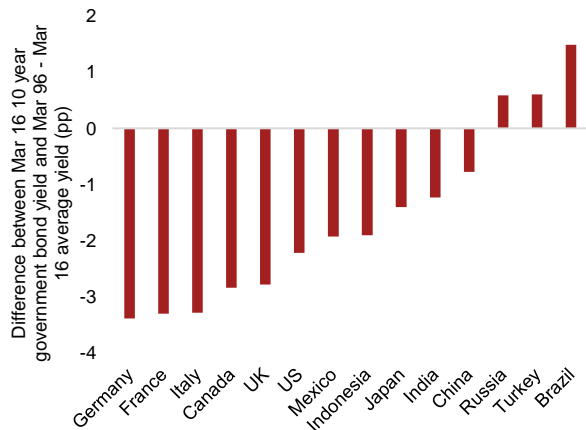
Note: Long-term average defined as 1980-2015
Sources: PwC analysis, IMF

Fig 5: The correlation coefficient between labour productivity and overall infrastructure quality is 0.81



Sources: PwC analysis, OECD, WEF Global Competitiveness Report 2014-15

Fig 6: Long-term government bond yields are below their historical average in every G7 economy



Note: We do not have data for the E7 from Mar 96 so the average is calculated based on the closest available data to that date.
Sources: PwC analysis, Datastream, OECD, Thomson Reuters, Reserve Bank of India

More of the same in 2016

The global economy is facing a growth challenge. In our main scenario for this year, we project global GDP to grow at a similar rate as last year, around 2.5-3%. Figure 4 shows that this will be the fifth consecutive year of below trend growth when measured in MER terms (this is less pronounced when measured in PPP terms as more prominence is given to emerging markets). There are many possible ways to try to boost growth but one option that is often recommended is to accelerate public investment in infrastructure. Recently, for example, Christine Lagarde, head of the IMF, said that “investing in badly-needed, but well-designed, infrastructure is an obvious area of great potential”.

Infrastructure investment boosts short-term demand and long-term supply

In the short-term, building or upgrading transport or energy networks, for example, can boost aggregate demand through increased construction activity and employment. In the long-term, infrastructure investment can boost economic growth by increasing the potential supply capacity of an economy. For example, improving transport facilities could make workers more mobile, so making labour markets more efficient and increasing productivity. While there are a number of other factors which influence labour productivity, including skills and technology, Figure 5 shows that there is a strong positive correlation between the quality of physical infrastructure and labour productivity in the G7 and the E7.

The long-term benefits of infrastructure investment are supported by the literature. For example, there are estimates that one extra dollar spent on infrastructure in Canada could increase GDP by between \$2.46 and \$3.83 in the long-term, discounted to present value terms.¹ But this money does need to be spent effectively to realise these gains.

Principles for prioritising infrastructure investments

Policymakers are constantly wrestling with decisions on how to prioritise and allocate infrastructure funds. Based on our experience of working on infrastructure projects, we have set out four principles to help their decision making process. These are applicable across all stages of the economic cycle, whether policymakers are planning to invest more, or when spending must be reined in as government finances come under pressure. Our principles are as follows:

- 1. Ensure it meets a need** – This can be done by identifying current and future needs. The former could be by analysing usage data, or through surveys. However, future needs are generally a more important consideration and hard to estimate. A standard approach is to project forward demand, but there is some evidence that these projections could be subject to optimism bias e.g. Flyvbjerg (2008).² Ideally, a range of scenarios including optimistic and pessimistic cases should supplement the base case analysis.
- 2. Ensure consistency with other objectives** – Infrastructure projects should fit with the government’s broader policy agenda, including social and environmental as well as economic goals. For example, in the UK, the Government’s commitment to invest £13 billion in transport in the North of England is consistent with its objective to develop a ‘Northern Powerhouse’. Or in the case of Canada, building stronger communities and cities by renewing attention on public transit and green infrastructure.
- 3. Ensure the numbers add up** – Successful infrastructure projects need to be financially viable. This includes making sure funds are available to finance the project, but at present this does not seem like a major constraint as Figure 6 shows that long-term government bond yields are trading well below their historical average rates across the G7. For governments with a relatively low net debt position and healthy public finances (e.g. Germany and Canada), embarking on an infrastructure-led programme seems like a sensible way to boost aggregate demand and long-term supply capacity. But even where budget deficits remain relatively high, as in the UK, there could be a case for prioritising infrastructure investment over current spending.
- 4. Ensure it will benefit the wider economy** – all of the potential impacts of an infrastructure project should be considered. The assessment should factor in both the long-term effects as well as the direct and indirect impacts relative to a scenario where the project does not go ahead.

Good investment decisions could boost the global economy

In response to the Great Depression in the 1930s, the US enacted the Public Works Administration, investing \$6 billion in infrastructure over a number of years (equivalent to around 11% of US GDP in 1933, the year the PWA was established) to kick start growth and productivity. This type of investment is once again being touted as the key to unlock our low growth environment – but the effectiveness of this policy will ultimately depend on how many shovel-ready projects in different economies meet the four principles outlined above.

¹“The Economic Benefits of Public Infrastructure Spending in Canada”, The Centre for Spatial Economics (2015)

²“Curbing Optimism Bias and Strategic Misrepresentation in Planning: Reference Class Forecasting in Practice”, Flyvbjerg (2008)

Projections: May 2016

	Share of 2015 world GDP		Real GDP growth				Inflation			
	PPP	MER	2015e	2016p	2017p	2018-2022p	2015e	2016p	2017p	2018-2022p
Global (Market Exchange Rates)		100%	2.8	2.7	2.9	3.0	1.7	2.1	2.6	2.7
Global (PPP rates)	100%		3.2	3.1	3.4	3.4				
G7	31.5%	46.6%	1.8	1.7	1.9	1.9	0.2	0.8	1.8	1.8
E7	36.1%	25.8%	4.7	4.7	4.9	5.0	0.4	1.4	3.2	3.3
United States	15.8%	24.5%	2.4	2.0	2.3	2.3	0.1	1.0	2.1	2.0
China	17.1%	15.0%	6.8	6.5	6.0	5.7	1.5	1.8	1.8	2.8
Japan	4.3%	5.6%	0.5	1.0	0.8	0.8	0.8	0.4	1.4	1.5
United Kingdom	2.4%	3.9%	2.3	2.0	2.3	2.3	0.0	0.6	1.6	2.0
Eurozone	11.9%	15.8%	1.6	1.6	1.7	1.5	0.0	0.5	1.3	1.4
France	2.3%	3.3%	1.2	1.4	1.6	1.6	0.1	0.4	1.2	1.2
Germany	3.4%	4.6%	1.4	1.5	1.6	1.4	0.1	0.7	1.5	1.7
Greece	0.3%	0.3%	-0.3	-0.8	0.8	2.0	-1.1	0.0	2.0	1.3
Ireland	0.2%	0.3%	7.8	5.0	3.9	2.5	-0.0	0.8	1.4	1.7
Italy	1.9%	2.5%	0.6	1.1	1.2	1.2	0.1	0.3	1.0	1.4
Netherlands	0.7%	1.0%	2.0	1.7	1.8	1.8	0.2	0.8	1.5	1.3
Portugal	0.3%	0.3%	1.5	1.3	1.2	1.2	0.5	0.8	1.1	1.5
Spain	1.4%	1.6%	3.2	2.6	2.3	2.0	-0.6	-0.0	1.3	1.2
Poland	0.9%	0.6%	3.6	3.7	3.7	3.5	-0.9	0.0	1.2	2.4
Russia	3.3%	1.8%	-3.8	-1.9	0.9	1.5	15.5	7.5	7.1	4.0
Turkey	1.4%	1.0%	4.0	3.5	3.6	3.5	7.7	8.5	7.5	7.0
Australia	1.0%	1.7%	2.2	2.4	2.5	2.7	1.5	2.3	2.5	2.5
India	7.0%	2.9%	7.1	7.7	7.7	6.5	4.9	4.1	4.3	5.0
Indonesia	2.5%	1.2%	5.2	4.8	4.8	5.4	6.8	6.1	6.1	5.1
South Korea	1.6%	1.9%	2.6	2.6	2.7	3.1	0.7	1.5	1.8	3.3
Argentina	0.9%	0.8%	1.5	0.0	2.3	2.5	17.0	25.0	25.0	20.0
Brazil	2.8%	2.4%	-3.8	-3.8	-0.0	3.0	9.0	9.0	6.5	5.0
Canada	1.4%	2.1%	1.2	1.4	1.8	2.2	1.1	1.4	1.8	2.0
Mexico	2.0%	1.6%	2.5	2.7	3.0	3.3	2.7	3.2	3.1	3.0
South Africa	0.6%	0.4%	1.3	0.8	1.8	2.5	4.6	6.2	5.8	5.5
Nigeria	1.0%	0.7%	2.7	3.3	3.8	4.5	9.0	10.5	10.0	8.5
Saudi Arabia	1.5%	0.9%	3.4	1.3	1.5	2.5	2.2	3.0	3.2	2.5

Sources: PwC analysis, National statistical authorities, Datastream and IMF. All inflation indicators relate to the Consumer Price Index (CPI). Argentina has declared a national statistical emergency, and as such, GDP and inflation data releases have been suspended. Therefore our projections are based on the latest available data from 2015. Also note that the tables above form our main scenario projections and are therefore subject to considerable uncertainties. We recommend that our clients look at a range of alternative scenarios.

Interest rate outlook of major economies

	Current rate (Last change)	Expectation	Next meeting
Federal Reserve	0.25-0.5% (December 2015)	Next rate rise may be delayed until later in 2016	14-15 June
European Central Bank	0.0% (March 2016)	No rise until after March 2017	02 June
Bank of England	0.5% (March 2009)	No immediate rate rise likely	12 May



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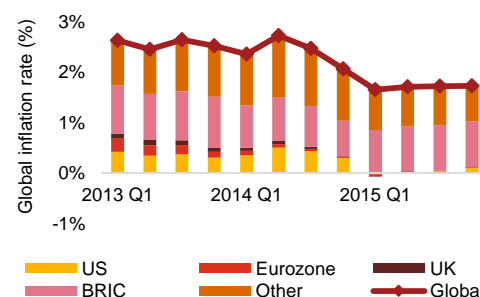
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Chart of the month

The global inflation rate in the final quarter of 2015 was 1.7% year-on-year, holding steady from the preceding two quarters of the year.

Inflation in the BRIC economies remained steady while inflation in the UK and Eurozone remained relatively flat. A small increase in US inflation offset the dip seen in other nations.

Chart of the month: BRIC economies continue to contribute more to global inflation than the rest of the world combined



Note: Based on 2015 market exchange rate (MER) GDP weights
Sources: PwC analysis, Datastream, National Statistical Agencies

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