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Economic Research:

Global Infrastructure Investment: Timing Is Everything (And Now Is The Time)

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Economic Research:

Global Infrastructure Investment: Timing Is Everything (And Now Is The Time)

With global infrastructure investment needs now in the tens of trillions of dollars--figures that are essentially incomprehensible to most of us--it's easy to see the problem as insurmountable. The result is that too often, we forget that even a relatively small increase in spending on infrastructure can yield outsized returns--especially if investments are executed in a wise, targeted way.

And these returns aren't just for lenders, who often enjoy lower default rates and higher yields for infrastructure projects than they might reap from similarly rated corporate debt--especially in developed markets. Economies will also generally benefit from the so-called "multiplier effect" when they promote such investments, with each dollar of spending (again, when deployed judiciously) translating into much greater gains in terms of GDP.

Overview

- Standard & Poor's sees clear economic benefits to G20 countries' increased public spending on infrastructure--with the so-called "multiplier effect" of an increase in spending of 1% of real GDP running as high as 2.5 in a three-year period.
- The multiplier effect is generally greater in developing economies than for more developed countries; for example, China, India, and Brazil would all enjoy a boost to GDP of at least double the increase in investment.
- For Europe, it's clear that a concerted effort across the region would have a greater effect than country-specific increases in spending.
- For developed nations, the increase would boost employment substantially--adding more than 700,000 jobs in the U.S. and about a million in the EU.

In addition to the short-term boost to jobs and aggregate demand, infrastructure investment often yields long-term benefits by enhancing efficiency, for instance by allowing goods and services to be transported more quickly and at lower costs. There's no shortage of examples around the world in which a large infrastructure project has had a transformative effect. The 48-mile-long Panama Canal--which is in the final stages of a massive expansion, a century after its opening--instantly facilitated international maritime trade. Similarly, the Channel Tunnel connecting France and the U.K., which opened in 1994, now ushers an estimated 20 million passengers (and almost that many tons of freight) each year between the two countries.

However, while a clear correlation exists between the size of a project and the ensuing economic benefits, increased spending on projects doesn't always lead to commensurate effects, according to a 2011 study of U.S. infrastructure investment by the Economic Development Research Group (EDRG). Additionally, a 2013 study by management consultant McKinsey & Co. suggested that if a given country's infrastructure projects are evaluated, planned, and executed more carefully, they could generally be completed at two-thirds of current costs--a significant savings, especially as governments around the globe look to maximize their returns on investment.

Some governments, notably in the U.K. and Australia, have extensive experience using public-private partnerships (P3s) to finance infrastructure projects. Private-sector participation can allow governments to tap into design and engineering expertise, better manage construction timelines, reduce costs, and improve the delivery of services to the public. The track records for the U.K. and Australia suggest P3 projects generally suffer fewer construction delays and smaller cost overruns. However, these results can vary, and savings may not accrue to smaller projects where economies of scale can't be achieved. Nonetheless, we see P3s as an appealing alternative to relying solely on public spending.

At any rate, the causal link between prudent infrastructure spending, whether public or private, and the benefits to an economy is undeniable, in our view. In large part, this is especially true for transportation projects, which can boost an economy in many ways, including adding jobs (and not just during a project's construction), increasing income, and raising property values. But "infrastructure" entails much more than a country's transportation system. In addition to roads and bridges--as well as other transport-related projects such as rail systems, ports, and airports--we consider a country's essential infrastructure to include water and waste-management facilities, power grids, telecommunications networks, and social infrastructure, such as schools, courthouses, and hospitals.

Clearly, infrastructure needs vary greatly from country to country, depending, among other things, on where an economy is on its developmental timeline. In more developed economies, where transportation systems are sometimes more than a century old, refurbishment and replacement will eat up a larger share of necessary financing. In developing nations such as China and India, systems and networks must be built from scratch to keep pace with population growth and enhance economic expansion. Given that the U.N. projects the global population to rise to 9 billion by 2050--with most of that in the developing world, where the population could surge by almost one-half, to 7.8 billion--there's a clear need for substantial investment in new infrastructure in the areas of energy, water, transportation, telecommunications, and social facilities.

Getting It Right

Standard & Poor's believes private investors around the world have an opportunity to fill some of the giant gap created by public-funding shortfalls (see "Global Infrastructure: How To Fill A \$500 Billion Hole," published Jan. 16, 2014, on RatingsDirect). This is especially true as regulatory requirements limit banks' long-term lending, and governments face budgetary constraints. Infrastructure deals can be attractive to nontraditional lenders such as insurers and pension funds, which need to match long-term assets and liabilities. Additionally, such projects generally offer higher yields than lenders might get from more traditional assets such as investment-grade sovereign and corporate debt.

Whether the money comes from public coffers or private interests, it's crucial that spending is managed reasonably. Too often the primary criteria for a project's approval are political support and visibility, rather than more prudent cost-benefit analyses. Planners around the world and at all levels tend to try to address congestion and bottlenecks by pushing through new construction instead of considering upgrades to existing infrastructure. We believe that focusing on projects with the most advantageous returns is critical.

Along these lines, in a research paper published in December, Emil H. Frankel, a senior fellow at the nonpartisan think

tank the Eno Center for Transportation and former assistant secretary for Transportation Policy under President George W. Bush, suggests that it's essential for any investment in U.S. transportation infrastructure to go toward projects that offer the highest economic returns. Toward this end, increased leadership at the federal level is crucial, Mr. Frankel says, adding that Congress could substantially improve this process by requiring the agencies responsible for projects and programs to conduct transparent economic analyses as part of state and regional transportation improvement plans. Additionally, the Transportation Department should have the authority to reject plans that don't follow this path, he says.

Meanwhile, in an October report, the International Monetary Fund (IMF) said that increased infrastructure investment could provide a much-needed boost to demand in advanced economies—and called it "one of the few remaining policy levers available to support growth, given already accommodative monetary policy." In developing regions, such investment could help alleviate existing and nascent infrastructure bottlenecks. And for all economies, it would boost productive capacity and medium-term output.

G20 finance ministers and central bank governors themselves have said that raising infrastructure investment is crucial to promoting growth in the global economy. As the IMF report pointed out, while increased public investment raises output in both the short and long terms, the effects vary with a number of factors, including the degree of slack in an economy and the efficiency of investment. Not surprisingly, if the selection and execution of a project are poor—and only a fraction of the money spent is converted into productive public capital stock—long-term output gains would be limited. Increasing investment efficiency is key to mitigating the potential trade-off between higher output and the increase in public debt.

The Multiplier Effect

Although the figures vary considerably, governments generally have spent less, as a percentage of GDP, on infrastructure in recent years. In the U.S., for example, government spending on projects as a percentage of GDP has dropped to a two-decade low of about 1.7%, according to the Federal Reserve Bank of St. Louis. In the eurozone, the austerity measures that many governments implemented in response to the recent debt crisis have significantly constrained spending on infrastructure development and repair.

By contrast, government allocation is notably higher in the developing economies of Asia. China, for example, is now the world's largest investor in infrastructure, with the government earmarking roughly 8.5% of GDP for projects (a large chunk of which, it should be noted, is outside its borders). India, meanwhile, has been allocating roughly 4.7% of GDP in recent years. And not only are these countries spending more than developed nations, but their already-fast-growing economies stand to benefit comparatively more if spending were to rise, according to our estimates of the multiplier effects for the majority of G20 countries.

In our analysis, Standard & Poor's economists estimated the benefit to various economies over a three-year period (2015-2017) of an increase in infrastructure spending of 1% of real GDP in the first year. Because disaggregated measures of infrastructure investment aren't widely available, our analysis looked at total public-sector investment as a proxy. This may include investment in non-infrastructure items, but to the extent that infrastructure investments are

generally found to have greater productivity-enhancing effects than other kinds of public investment, our multiplier estimates are conservative.

Generally speaking, we found the multiplier effect to be greater in developing economies than for more developed countries (with the notable exception of the U.K., which we determined to have the highest potential multiplier effect of the countries we looked at, for reasons detailed below). China, India, and Brazil would all enjoy a boost to GDP of at least double the increase in investment, while the multiplier effect for countries such as Australia, Germany, and Canada would be far smaller (see table 1).

Table 1

The Effects Of An Increase In Spending Of 1% Of GDP		
(Ranked by multiplier effect, highest to lowest)		
Country	Multiplier effect (2015-2017)	Projected job gains (maximum above baseline)
U.K.	2.5	343,000
Brazil	2.5	418,000
China	2.2	600,000
India	2.0	350,000
Argentina	1.8	68,000
U.S.	1.7	730,000
Japan	1.5	31,000
Canada	1.4	61,000
Italy	1.4	136,000
France	1.3	109,000
Mexico	1.3	193,000
South Korea	1.3	14,000
Germany	1.2	157,000
Indonesia	1.0	38,000
Australia	1.0	5,000
Eurozone	1.4	627,000

Note: Most of the results in this table are from our simulations for an increase in infrastructure investment of 1% of GDP in year one, using Oxford Economics' Global Economic Model. However, for projected job gains in emerging regions, we used the empirically based rule known as Okun's Law, which states that unemployment falls by 1% when GDP rises by 3%. Specifically, we used this for Asia-Pacific (Australia, China, India, Indonesia, Japan, and South Korea) and Latin America (Argentina, Brazil, and Mexico) since the structure of the labor markets in these regions typically differs significantly and renders most general equilibrium modeling techniques less useful.

The U.S.

For the U.S., we estimate that an increase in spending of 1% of real GDP--or about \$160 billion, spread out over four quarters--would boost economic output by \$270 billion over the three-year period. In other words, for each additional \$1 allocated for public-sector investment in 2015, about \$1.70 would be added to real GDP over the three years.

This jibes with our estimate in May, when we found that \$1.3 billion of public-sector investment would boost real GDP an additional \$2 billion in 2015. On top of that, such an increase would add 29,000 jobs to the U.S. construction sector, and even more to the broader economy when we counted positions in infrastructure-related industries. This is in line

with estimates from the Federal Highway Administration (FHWA), which has determined that a \$1.25 billion highway capital expenditure supports 34,779 jobs related to the project. (See "U.S. Infrastructure Investment: A Chance To Reap More Than We Sow," published May 5, 2014.)

In our latest analysis, we estimate that an increase in spending of 1% of real GDP could add as many as 730,000 jobs to the U.S. economy in 2015. Put differently, it would provide average monthly job gains of 61,000--pushing overall monthly payroll gains to 272,000 (compared with our baseline forecast of 211,000).

To be sure, time and place play key roles in how many jobs a project actually creates. During recessions or weak recoveries, private construction activity is soft and unemployment in related job markets is high. Therefore, many of the jobs that an infrastructure project creates and supports would be in those areas. However, the economy's productive capacity and output would also likely increase once the infrastructure is built--and so the investment would likely result in even more jobs long after the project ended. In other words, the bump in employment comes from the creation of direct jobs (in construction and immediate construction supporting sectors) and indirect jobs, following stronger demand and enhanced competitiveness in the area.

Additionally, a 2012 report from trade group Associated Equipment Distributors (AED) found that every dollar invested in highways and streets returns about \$0.35 in tax revenue to government coffers (with \$0.23 of that going to the federal government). And U.S. states stand to benefit from infrastructure spending--typically much more than through other government expenditures. In a study of the effects of revisions to infrastructure grants on gross state products (GSPs) from 1990-2010, San Francisco Fed economists Sylvain Leduc and Daniel Wilson found that, on average, each dollar of federal highway grants translated into an increase to a state's GSP of at least twice that.

The study also suggests that the effects of increased spending may depend on the utilization of existing infrastructure. In particular, Leduc and Wilson looked at whether highway spending would have more beneficial effects in states that are growing fast--and thus more likely to suffer transportation congestion--than in slower-growing states where road capacity is underutilized. Their findings broadly support the notion that transportation infrastructure improvements have more beneficial effects in regions that are already growing rapidly--which implies that, in general, infrastructure spending may be more effective, at least in the short run, as a facilitator of strong economic growth rather than as a boost to weak growth.

At any rate, highlighting the beneficial economic effects of increased public-sector spending on projects is especially important given that the country's infrastructure is in desperate need of repair. In its most recent report card in 2013, trade group the American Society of Civil Engineers (ASCE) gave the U.S. a grade of D+, which marked the first improvement (from D) since the group began grading the condition of U.S. infrastructure in 1998. According to ASCE estimates, investment of \$3.6 trillion would be needed by 2020 to rectify the situation, and the group added that unless things change, the backlog of projects and deferred maintenance could cost each American family \$3,100 a year in personal disposable income. If more evidence is needed that U.S. infrastructure is in sorry shape, the World Economic Forum (WEF), in its Global Competitiveness Report for 2012-2013, ranked it 25th in the world (out of 144). The country's roads came in at No. 20.

Canada

For Canada (which came in slightly higher in the WEF report, with an overall infrastructure ranking of 15th), we estimate that each additional C\$1 spent by Canadian governments in 2015 would increase real GDP by C\$1.40 by 2017. With a government spending increase of 1% of real GDP totaling C\$17.3 billion (US\$14.8 billion), this would add C\$25 billion to GDP. On top of that, we assume governments would use P3s for a portion of the increase, lifting businesses' fixed investment in the three years and adding to the multiplier effect on real GDP. Most of the increase (0.6%) would come in 2015.

In this scenario, Canada's real GDP growth for 2015-2017 would average 2.7% annually, versus 2.5% in our base case, and the cumulative increase in real GDP would be C\$141.6 billion.

At the same time, the increase in investment would lift employment by an additional 45,000 jobs, beyond the 575,000 increase we expect for the Canadian economy over the years, and hourly wages would increase 3%, on average, versus 2.7% in our baseline scenario--not a significant improvement to consumers' ability to pay off their debt.

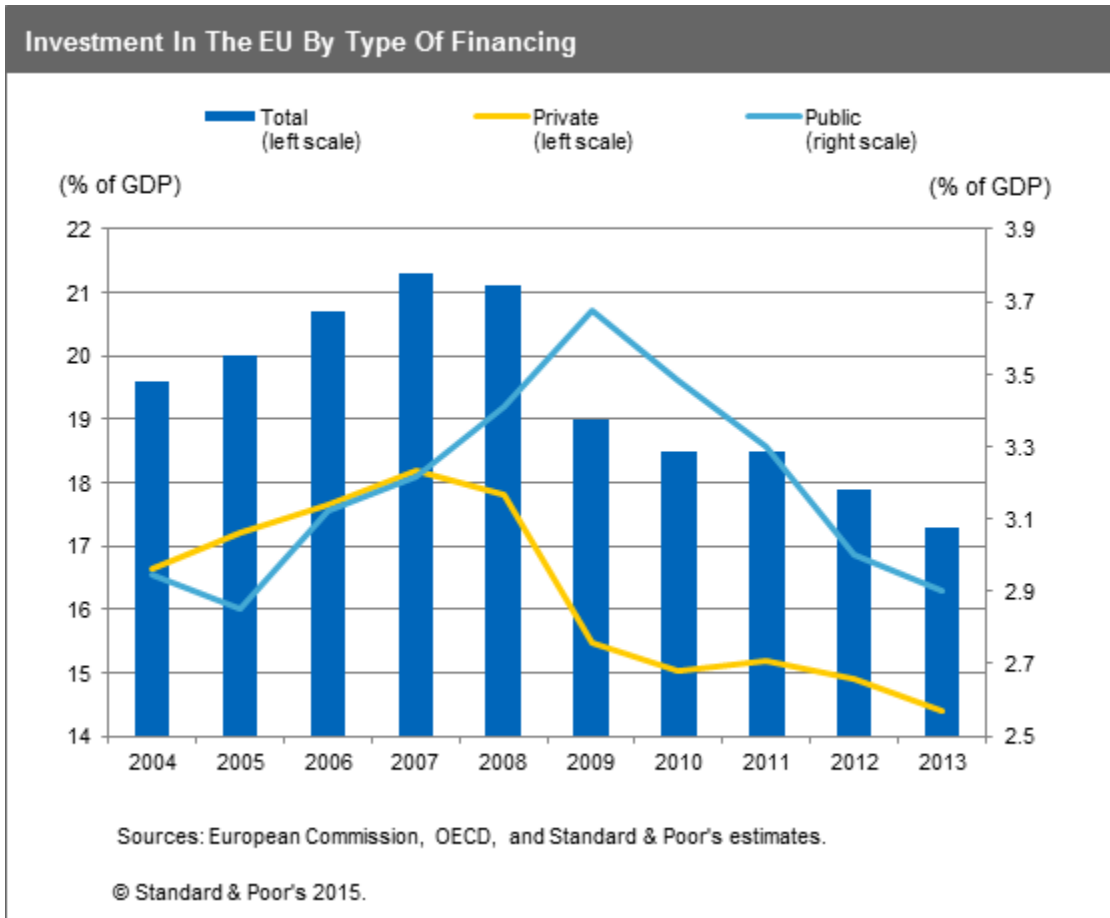
Notably, because Canadian governments were relatively early adopters of outsourcing investment in infrastructure through P3s, increased government investment in infrastructure also mobilizes private spending--obviously, an important aspect of economic expansion.

As it stands, Canada's three levels of government--federal, provincial, and municipal--share responsibilities for maintaining the country's public infrastructure. After a period of elevated investment in public projects in the 1950s and 1960s, governments reduced their spending, and it wasn't until recently, in the wake of the 2008-2009 recession, that they again focused on infrastructure funding. While government investment in infrastructure is again close to 3% of GDP (from a low of 1.4% in 2000), decades of underinvestment have opened up a funding gap that the Canadian Centre for Policy Alternatives estimated to be as much as C\$145 billion in 2011. Other estimates of the gap, for example from the Federation of Canadian Municipalities, include the cost of repairs that extend the service life of existing infrastructure plus new spending to keep up with projected population growth--according to these measures, Canada will need to invest more than C\$200 billion in the country's public infrastructure in the coming decade.

Europe

In Europe, fixed investment has failed to recover fully from the declines during the global economic and financial crisis. In fact, total fixed investment as a share of the region's GDP is now four percentage points below its precrisis peak (see chart 1). Private investment fell sharply during the crisis, which was partially offset by the spike in public investment as part of the stimulus measures implemented by the EU governments. Public investment has since been declining rapidly as governments consolidate their budgets.

Chart 1



Still, a sizable chunk of government spending--about one-third on average--is earmarked for infrastructure in the EU, according to estimates by economists at the European Investment Bank (EIB). However, in the majority of the region's countries, investment (both public and private) in transportation infrastructure as a percentage of GDP is lower than a decade ago. Meanwhile, the perceived quality of overall infrastructure in some EU countries, such as Italy, is low. And others, including Germany, have lost their previously high competitive position (see table 2).

Table 2

Perceived Quality Of Infrastructure, The Global Competitiveness Report, 2014-2015						
Country	Quality of overall infrastructure	Quality of roads	Quality of railroad infrastructure	Quality of port infrastructure	Quality of air transport infrastructure	Quality of electricity supply
Austria	7	3	11	60	33	7
Belgium	17	27	14	6	15	16
France	10	4	6	32	17	14
Germany	11	13	8	14	13	33
Ireland	36	25	31	29	23	17
Italy	56	57	29	55	70	35
Netherlands	6	5	9	1	4	9

Table 2

Perceived Quality Of Infrastructure, The Global Competitiveness Report, 2014-2015 (cont.)						
Spain	13	11	4	9	10	21
Sweden	18	20	19	18	21	22
U.K.	27	30	16	16	28	12

Source: World Economic Forum.

EU infrastructure investment needs are approaching €1 trillion (US\$1.2 trillion) in the next three years, according to European Commission (EC) estimates, including annual spending of more than €200 billion to meet agreed energy objectives. The EC also estimates that €1.5 trillion is required for transportation infrastructure through 2030, with the financing gap for broadband networks in the area of €30 billion a year until 2020.

Low investment has been a major cause for the slow recovery in the EU economy. Moreover, chronically weak capital spending endangers future growth. To address this, EC President Jean-Claude Juncker in November outlined the European Investment Plan that would increase spending by €315 billion from 2015-2017.

The commission has identified about 2,000 projects, with a potential investment of €1.3 trillion, that would help rejuvenate the eurozone's faltering economy through infrastructure spending, financed primarily by the capital markets. We think the key to raising the €315 billion is the newly created European Fund for Strategic Investments (EFSI), which will have €21 billion of capital at its disposal--€8 billion of new EU cash, €8 billion of existing EU budget funds, and €5 billion from the EIB.

Economic research shows that infrastructure spending boosts output growth through demand in the short term and supply in the long term. The demand-driven effect depends on where an economy stands in its economic cycle; it's stronger at the low point in a cycle. For instance, during the depressions of 1837-1842 and 1931-1935, investments in transportation infrastructure played a major role in lifting Europe's economies out of the trough. At the same time, the supply-driven effects depend on how productive investments are, which, in turn, could be linked to how they're financed.

Most economies in the region are at or near low points in their cycles, as shown by each country's output gap--the difference between potential and actual GDP--and the fact that the eurozone as a whole has suffered two recessions since 2008. There are, however, differences across countries with respect to their positions in the cycle. Of all eurozone countries, Germany is closest to full employment, and we estimate its output gap to be about 1.2 percentage points of GDP, compared with 3.8 percentage points for the eurozone as a whole.

Another important dimension to keep in mind is the strong trade links between EU countries. On average, 60% of European exports/imports remain within the union. Our research has shown that boosting spending in one country would have few effects on its own growth and on that of its neighbours. (See "A Stimulus Package From Germany Alone Would Have Little Effect On The Rest Of The Eurozone," published Oct. 21, 2014). This is because the leakage through imports reduces the direct impact on Germany's GDP but is diluted across its major trading partners.

In this light, it makes more sense to look at the region as a whole. For our model, we assumed that public investment (coordinated across the EU) would increase by 1% of GDP in 2015. We also assumed that monetary policy in Europe

would remain accommodative, with neither the Bank of England, the European Central Bank, nor Sweden's Riksbank raising benchmark interest rates above what we assume in our baseline scenario. The results we got were in sharp contrast to those from our "boost in a single country" simulation. In fact, for the eurozone as a whole, the multiplier effect is quite strong: Each additional euro spent on infrastructure would add €1.4 to real GDP over three years (see table 3).

Table 3

EU Simulation: 1% Increase In Public Investment In 2015		
Country	Multiplier	Maximum gain in employment
Germany	1.2	157,000
France	1.3	109,000
Italy	1.4	136,000
Spain	2.0	107,000
Eurozone	1.4	627,000
Netherlands	1.8	34,000
Austria	1.3	18,000
Belgium	1.1	24,000
Ireland	1.6	12,000
U.K.	2.5	343,000
Sweden	1.1	20,000
EU		1,068,000

At the same time, such an increase would add an estimated 627,000 jobs in the eurozone, and more than 1 million in the EU (with the U.K. accounting for 343,000). All told, a concerted plan encompassing the EU as a whole would, in our view, have a much more meaningful effect on growth and employment than would isolated, country-specific increases.

The U.K.

Inadequate investment in infrastructure has become a significant obstacle to doing business in the U.K., and the WEF's Global Competitiveness Report ranks the quality of the country's overall infrastructure 27th in the world. Output per hour in the U.K. is below the average for the rest of the G7 industrialized economies; last year, one hour of work in the U.S. produced 40% more than one hour of work in Britain. In our view, insufficient investment in infrastructure has been one of the key factors explaining weak productivity performance in the U.K.

Road congestion is a fact of life in the U.K., hurting the economy and the environment, and diminishing Britons' quality of life. According to INRIX, a road traffic and driver-services company, the U.K. is the third-most-congested country among major developed economies in Europe and North America. The average U.K. driver spends approximately 30 hours a year in traffic jams--and that figure rises to 84 hours in the London commuting area. To address this, Prime Minister David Cameron has announced that the government will earmark £15 billion in the next 10 years to improve the country's major roads. At the same time, we expect spending to increase in the next decade, which will create significant opportunities for private capital investment in the sector. In our view, this could boost the country's economic growth, both in the short term and over time. (See "Building For Growth: Can The U.K. Close Its Infrastructure Investment Deficit?" published Nov. 17, 2014.)

With an accumulated infrastructure investment deficit of more than £60 billion (US\$95 billion), a clear opportunity exists. We estimate that an increase in public spending in one year of 1% of GDP (coordinated across the EU) would result in a multiplier effect for the U.K. of 2.5 over three years. This is a higher effect compared with the boost to spending in the U.K. alone, which we estimated at 1.9. The main reason is the additional boost to U.K. GDP due to increased demand from its European trade partners. We also project that such investment would add more than 300,000 jobs in the same year as the increase occurred.

Germany

In Germany, the region's biggest national economy, total capital spending has been low, by international comparison, and has decreased over time--plummeting to just above 17% of GDP in 2013, from 21.5% in 2000. Public investment has slipped below 3% of GDP (see charts 2 and 3). In fact, public investment in the country has continuously been 1 percentage point lower than the EU average for the past decade, and this trend continued even as numerous European countries trimmed public spending amid fiscal consolidation.

Chart 2

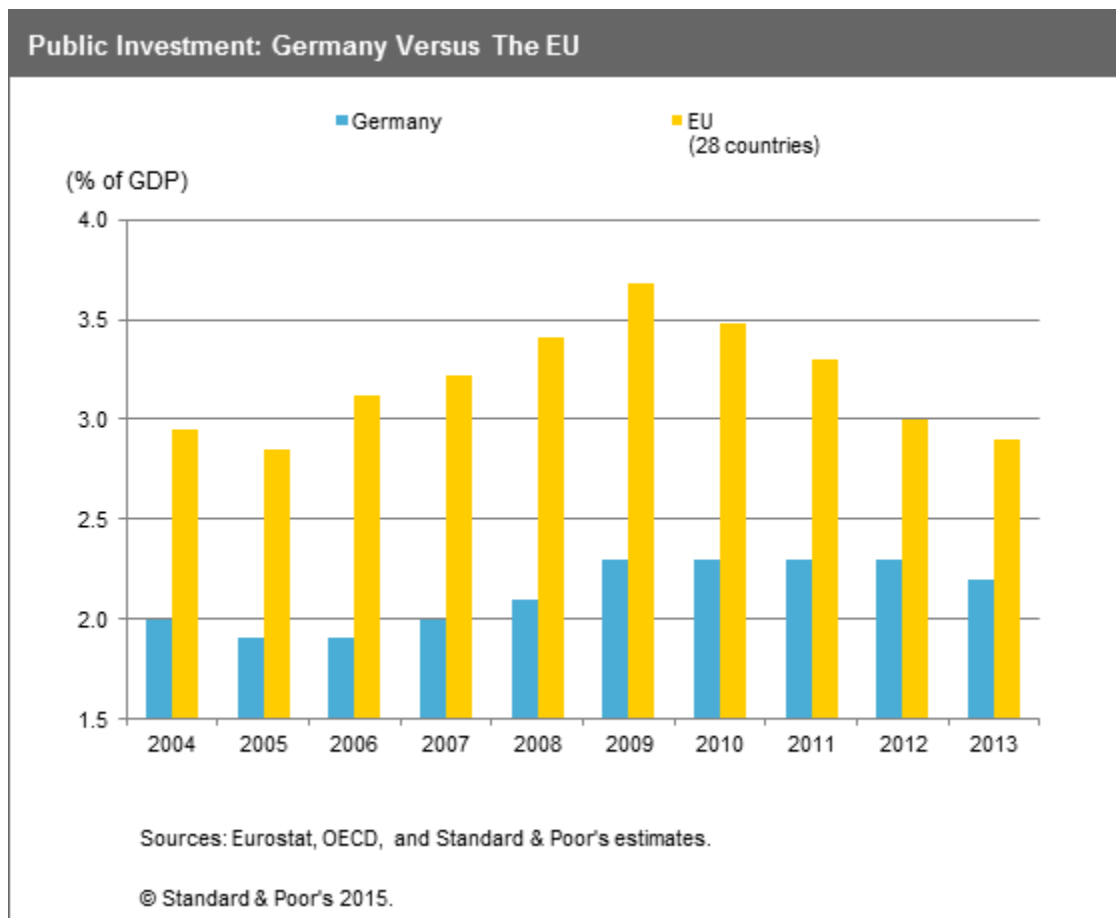
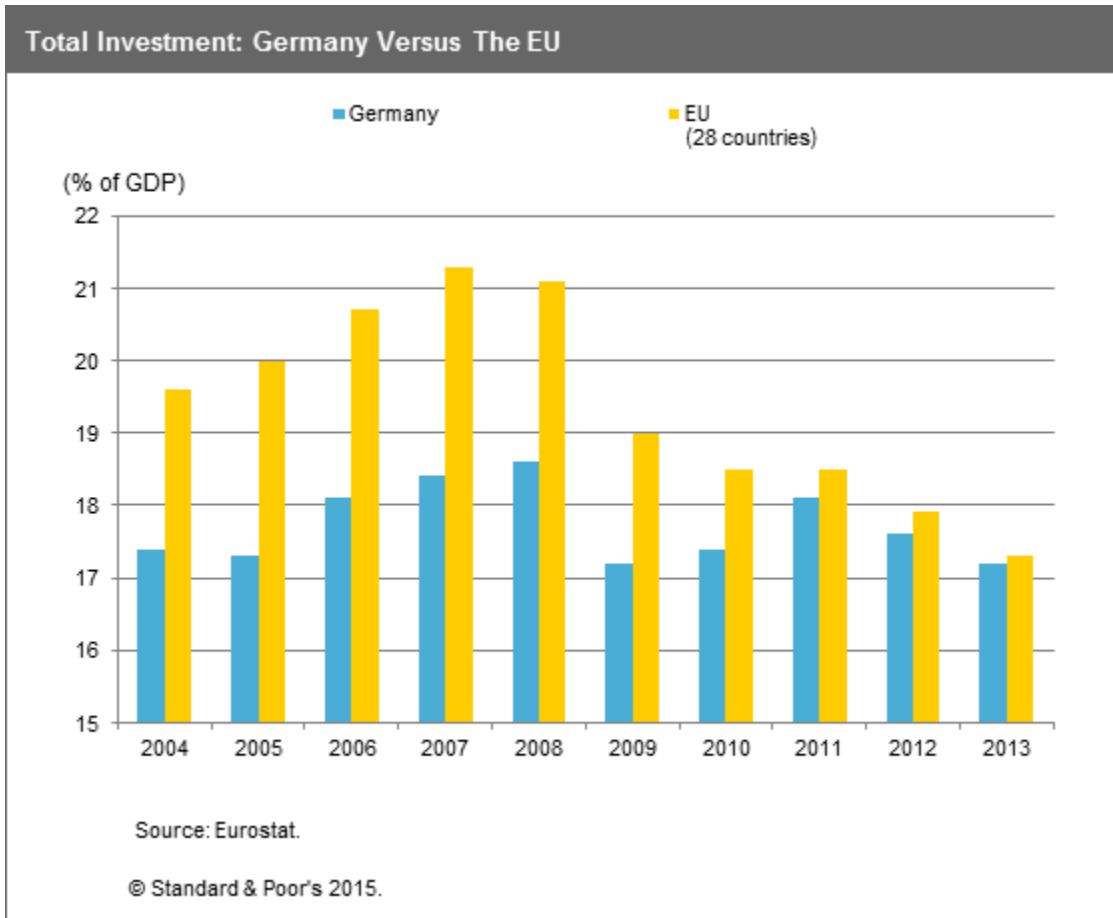


Chart 3



Underinvestment in Germany's transportation infrastructure investment alone has led to an accumulated shortfall of €60 billion since 2004, according to our calculations. The deteriorating quality of German roads is reflected in the WEF's rankings: Germany ranked 13th in those terms in 2014, down from fourth in 2008.

Meanwhile, investments are needed in renewable energy systems for electricity and heat supply, and for power grids. Significant funding is also needed to improve energy efficiency--to insulate buildings, for instance. This energy transition will require €31 billion to €38 billion per year until 2020, according to the Deutsches Institut für Wirtschaftsforschung (the German institute for economic research).

On the bright side, we estimate that an increase in public spending in one year of 1% of GDP (coordinated across the EU) would result in a multiplier effect of 1.2 for Germany over three years.

France

In France, public investment has been comparatively high, remaining constant at 4% of GDP over the past decade despite fiscal consolidation constraints (see charts 4 and 5). However, a reduction in state transfers to local and regional governments, which account for the bulk of public investments, could soon curb infrastructure spending.

Chart 4

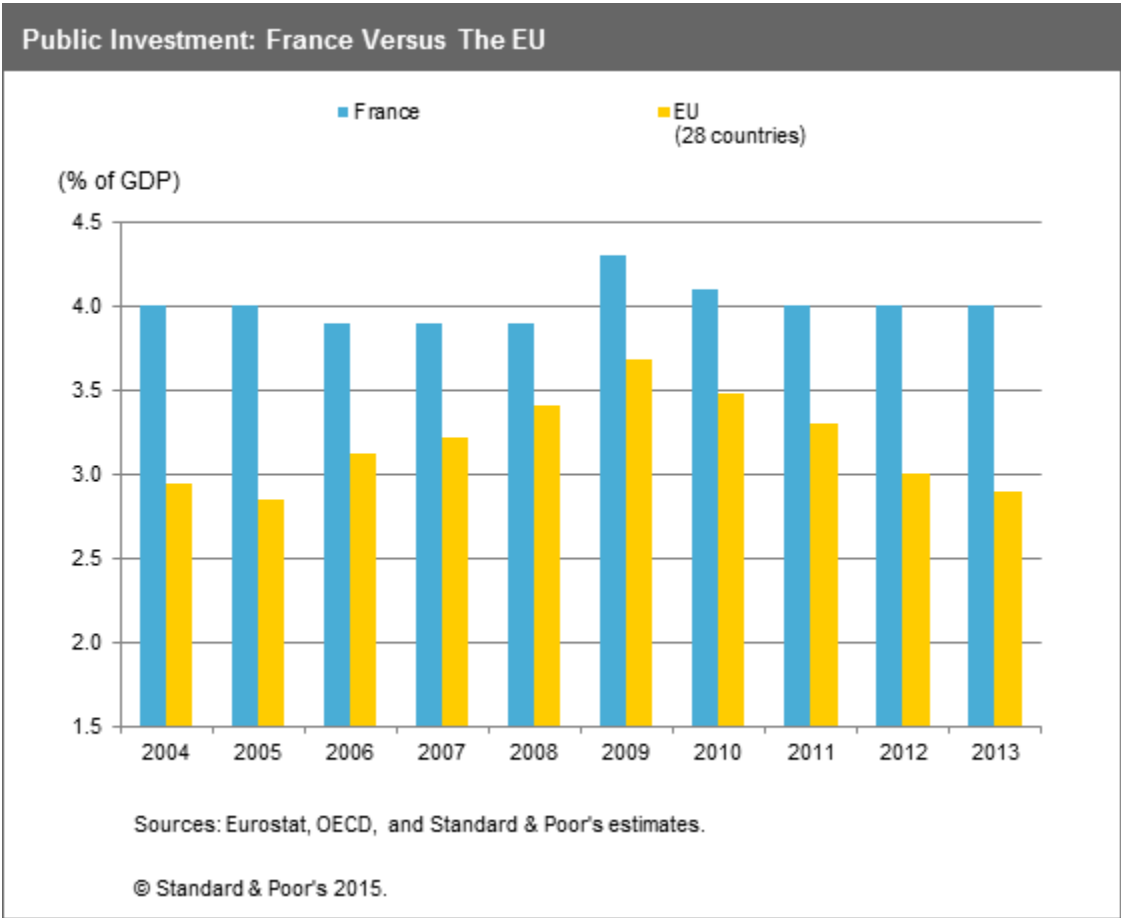
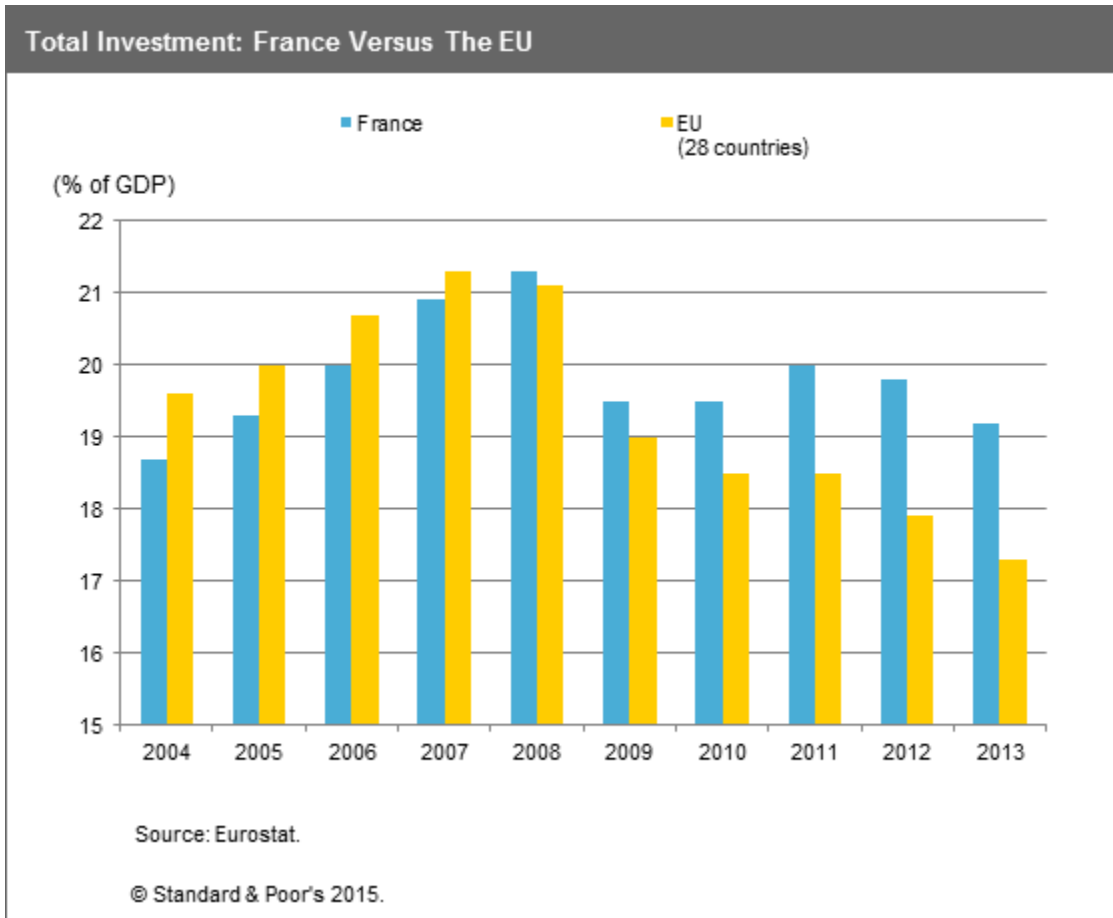


Chart 5



The country, with the region's second-largest economy, ranks fourth and sixth in the quality of its roads and railways infrastructure, respectively, in the WEF's assessment--when investing 0.9% of GDP in transportation infrastructure, in line with the Organisation for Economic Co-operation and Development (OECD) average. However, demographic changes in some metropolitan areas, Paris in particular, have made the existing public transport network inadequate to meet the growing needs of mobility. Meanwhile, the high-speed broadband coverage rate was only 41% in France in 2013, compared with 62% across Europe. To reach 100% coverage, the country may need to spend an estimated €20 billion through 2022.

At any rate, we estimate that an increase in public spending in one year of 1% of GDP (coordinated across the EU) would result in a multiplier effect of 1.3 for France over three years.

Italy

Similarly, an increase in public spending in one year of 1% of GDP across the EU would result in a multiplier of 1.4 for neighboring Italy. This is especially noteworthy, given that the country's infrastructure is regarded as poor by international standards, ranking 56th in the quality of overall infrastructure, according to the WEF.

Italy's public investment averaged 3% in the decade preceding the global economic and financial crisis. After a temporary boost as part of stimulus measures during the crisis, public investment has been trending down, and was

just 2.4% of GDP in 2013 (see charts 6 and 7).

At the same time, transportation-infrastructure spending amounted to an average of 1.3% of GDP annually from 2004-2008 (above the OECD average of 0.9%) and dropped to 0.5% in 2010, according to the International Transport Forum. Meanwhile, the perceived quality of Italy's transportation infrastructure is poor, with rankings of 57th for the quality of roads, 29th for rail, 55th for ports, and 70th for air transport, according to the WEF report. And Italy is the fourth-most-congested country among major developed economies in Europe and North America (after Belgium, the U.K., and the Netherlands), according to INRIX.

Chart 6

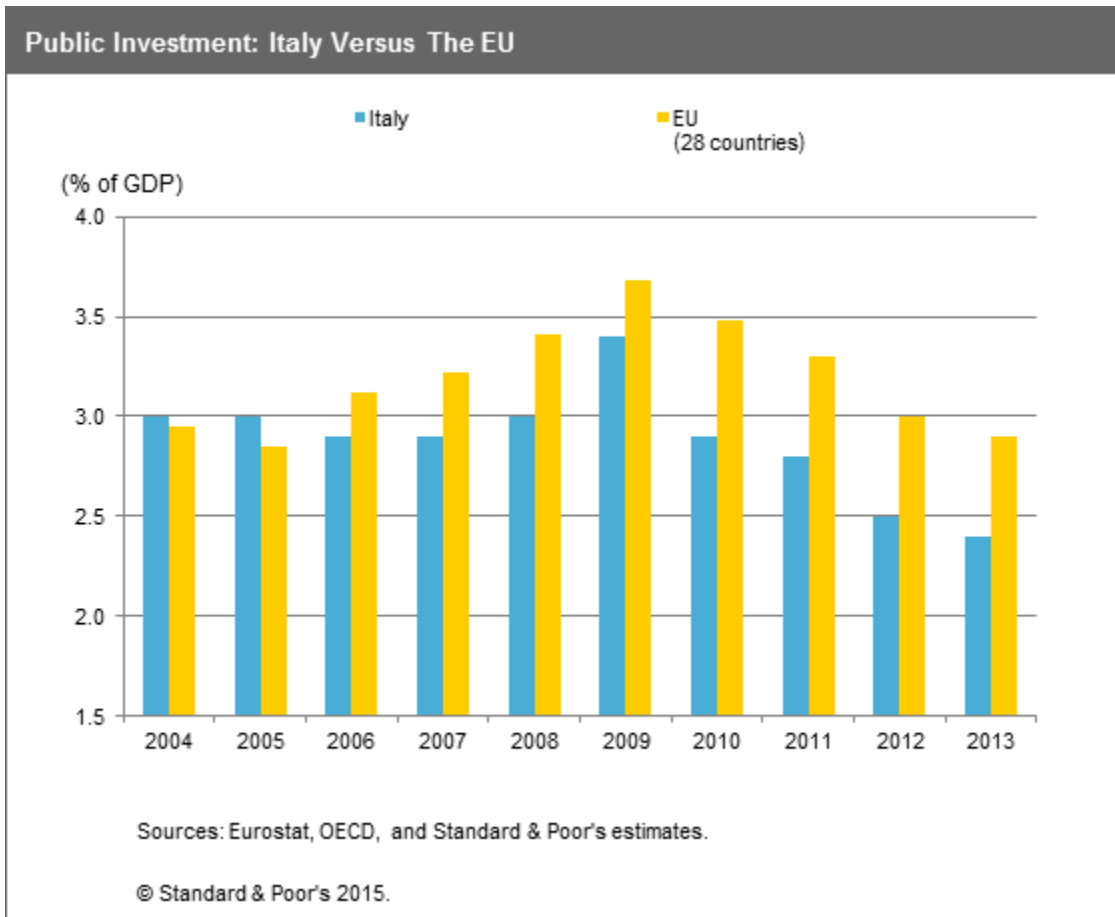
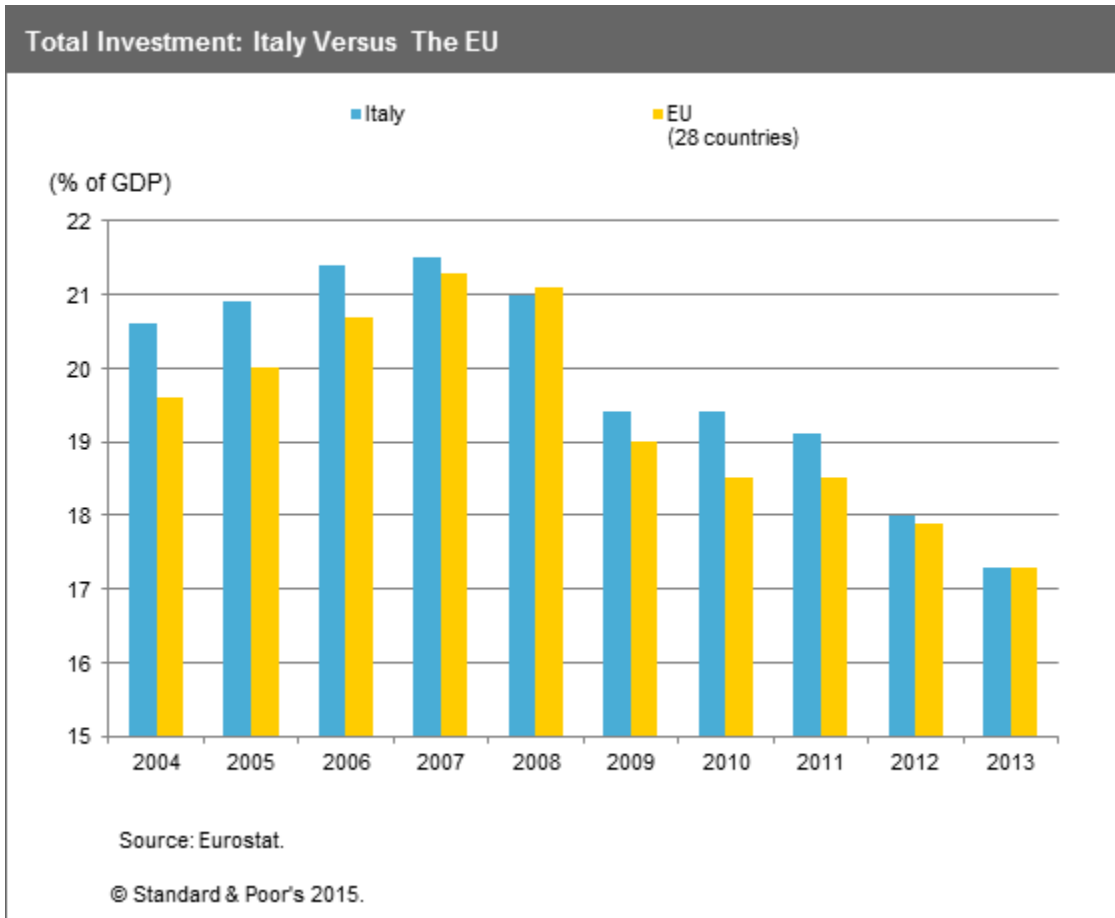


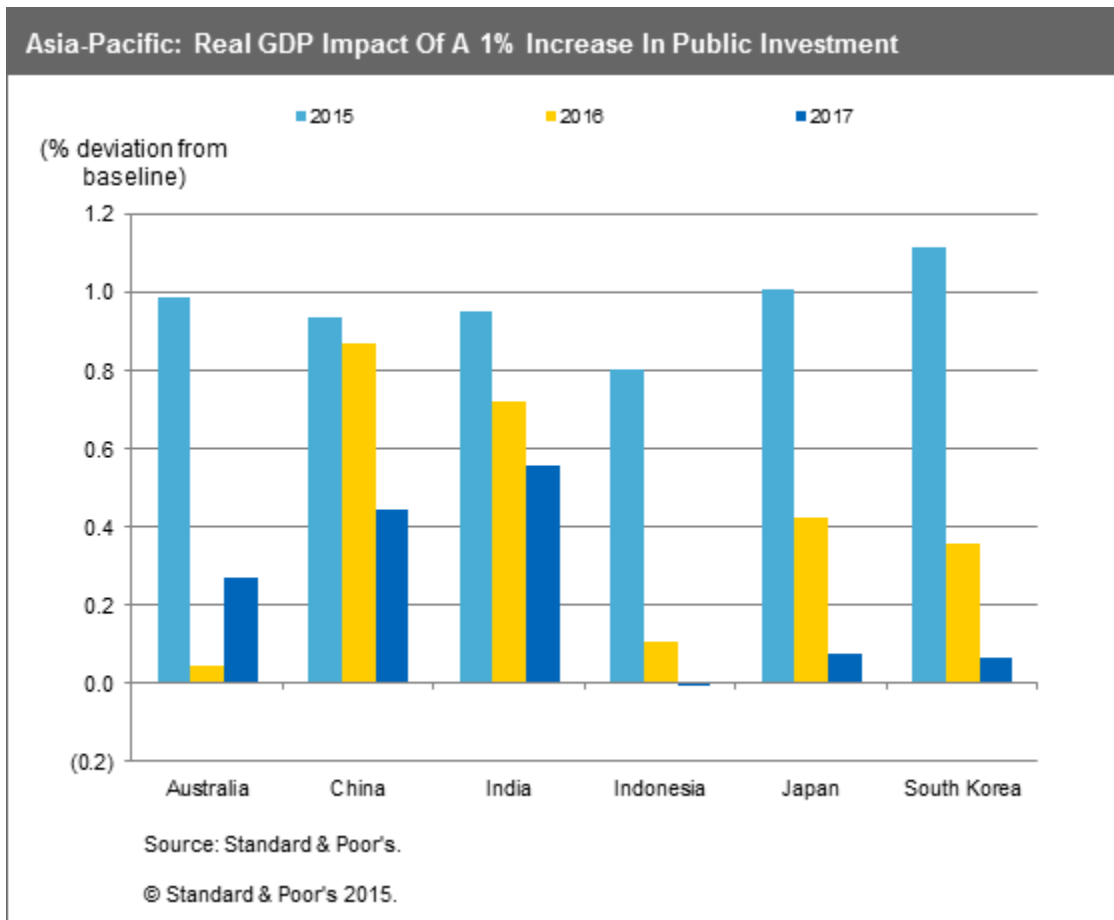
Chart 7



Asia-Pacific

The six G20 countries in the Asia-Pacific region offer a mixed bag in terms of the multiplier effect that we estimate would result from an increase in infrastructure spending of 1% of GDP. For those countries whose economies are running at close to potential GDP--i.e., Australia and Indonesia--the increased spending wouldn't generate additional output since it would crowd out other investment and spur inflation. On the other side of the coin, the fast-growing economies of China and India have a lot of upside in terms of investment opportunities (although China's capacity for credit financing is now more binding), which explains their multipliers of 2.2 and 2.0, respectively. Japan and South Korea--with respective multipliers of 1.5 and 1.3--fall somewhere in the middle (see chart 8).

Chart 8



In many ways, developing economies are at an advantage since crumbling legacy systems and structures aren't the burden they sometimes are in more developed areas, and these countries can capitalize on technological advancements to build from scratch. A prime example can be seen in India, where the estimated 1 billion mobile phones is approximately 30x the number of landlines in use--and growing fast, with service providers free of the need to run cable to rural areas, where just one-third of the population now has telephone service, according to mobile provider Telecom India. (Still, we note that India ranks 116th out of 144 countries with regard to per capita mobile-phone subscriptions; the U.S., for comparison, ranks 72nd.)

In this light, infrastructure investment is a hot topic in Asia-Pacific, given the immense funding needs and with investors showing a great deal of interest. As part of the recent G20 meeting in Brisbane, Australia, members expressed their commitment to achieving incremental global GDP growth of 2.1% over the next five years, and leaders said increased investment in infrastructure was one of the ways to deliver on that. Toward this end, G20 members agreed to create a global infrastructure hub in Sydney, recognizing the need for greater coordination and simplification. In other words, paramount to achieving this goal is making private investment in infrastructure more attractive. According to the group's estimate, an additional US\$2 trillion of private money could find its way into infrastructure in the next 15 years. With Asia becoming the global economic growth engine but suffering from a material deficit in

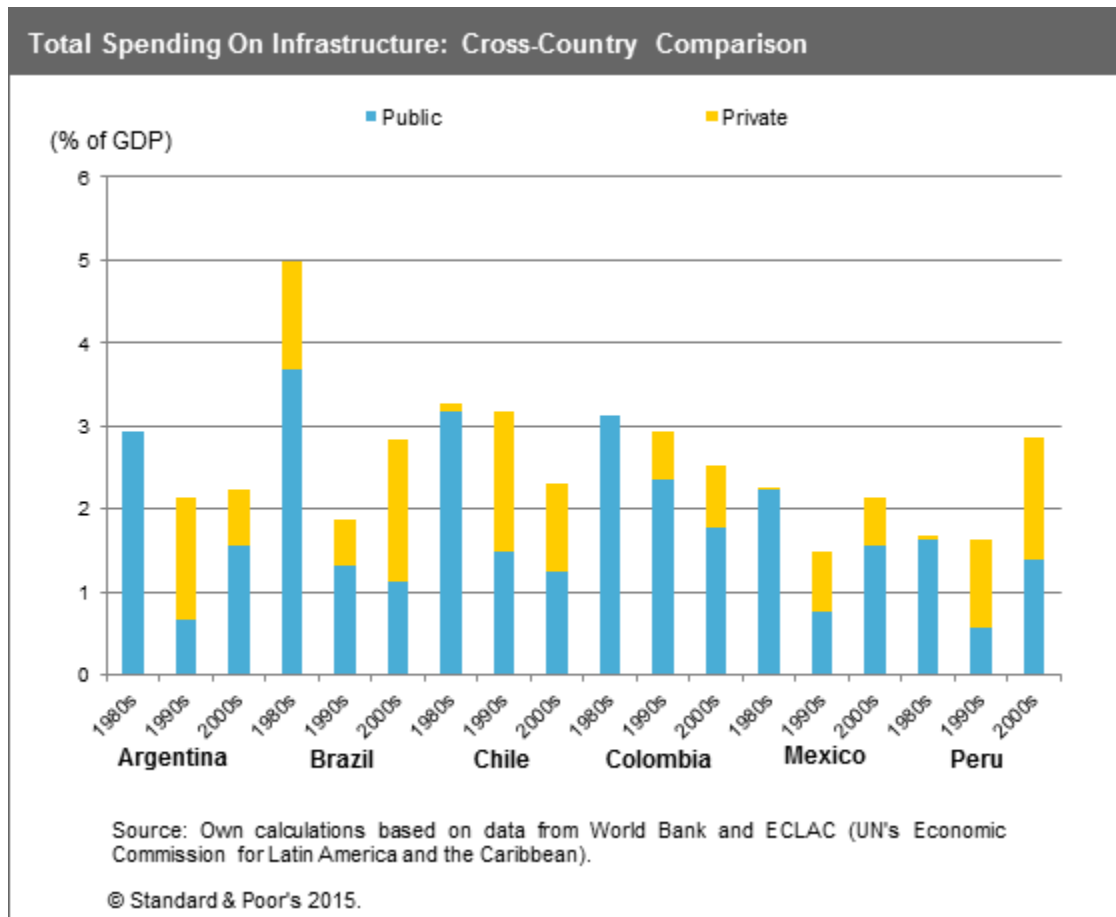
infrastructure, the region could capture a significant part of that additional investment, in our view.

Broadly speaking, the mandate of the hub is to help coordinate participating governments' infrastructure plans, to develop public knowledge and expertise, and to standardize project-procurement processes. By precisely quantifying the risks that private investors can expect, this would allow all countries to establish a common contractual framework for projects. We see this as key to drawing any significant amount of private money to infrastructure.

Latin America

As a share of GDP, infrastructure investment in Latin America is below the global average of 3.8% (see chart 9). From 2008-2012, the region as a whole allocated 3% of GDP for projects--or about \$150 billion per year, given that GDP averaged \$5 trillion during the five-year period. Broken out by country, spending was close to the average in Argentina, Brazil, Colombia, and Mexico, while lower in Chile (2% of GDP), and higher in Peru (4%). These intraregional differences are likely the result of the fact that Chile had already invested more aggressively than its neighbors before 2008, and its infrastructure needs were therefore lower, while the opposite situation existed in Peru. Another reason may be that Chile uses better criteria to evaluate projects and invests more efficiently than its peers.

Chart 9



To catch up to countries such as South Korea and China, Latin America would need to earmark 6% of GDP for infrastructure in the next 20 years, according to studies by the World Bank and the Economic Commission for Latin America and the Caribbean (ECLAC). But while more investment is needed, perhaps a better way to close the infrastructure gap is to improve efficiency. To be sure, public infrastructure is notoriously wasteful and inefficient not only in Latin America, but in other regions, including Asia-Pacific. As per the McKinsey study that suggested that projects currently underway could be built at two-thirds the cost if evaluated, planned, and executed more carefully, this means that Latin America could close the gap between actual and needed infrastructure at the same speed either by simply doubling investment to 6% of GDP or by hiking investment from 3% to 4% and adopting "best practices." Certainly, the second alternative is better, and more fiscally realistic, since it reduces undesirable income transfers and deadweight losses.

Using this criterion, we estimate the infrastructure gap for Latin America and six of its seven largest economies (excluding Venezuela due to data constraints) at 1% of GDP--or about \$336 billion over five years. In calculating the effect that a regional investment increase of this magnitude would have on countries' real GDP by 2017, we found multipliers ranging from 1.3 in Mexico to 2.5 in Brazil.

It's important to note that these results capture only the boost to GDP from an increase in effective demand, and not the supply-side effects that would accrue more slowly as the stock of infrastructure capital increases. That said, the effect on aggregate demand is critical to a region suffering not only a likely decline in potential growth due to external factors, but also a negative and expanding output gap, which has resulted in a virtual halt in job creation in some areas. To measure the effect that higher infrastructure spending would have on the labor markets, we combined our GDP multipliers with Okun's law (which attempts to quantify the relationship between employment and economic output) and found that an increase in infrastructure spending equivalent to 1% of GDP in the region would generate 900,000 jobs in Brazil and 250,000 in Mexico over the three-year period.

Meanwhile, the composition of infrastructure investment in Latin America, with regard to public and private spending, has been changing dramatically in the past three decades. In the 1980s, most, if not all, infrastructure was built, financed, and maintained using public funds. In the 1990s, private-sector participation grew significantly through privatization and concessions--and not just in telecommunications, but in sectors such as power generation, transmission, and distribution, especially in Chile and Argentina. Concessions (or P3s) occurred in water and transportation services, including roads, ports, and airports.

Contrary to a common view, private-sector involvement in infrastructure--both P3 and privatization--continued through the 2000s, except in Mexico and Argentina. In the former, problems related to the privatization of Telmex and road concessions, in which poor planning and execution on the part of the government resulted in the public having to pay more for mediocre services, contributed to its falling out of favor. But in Argentina, the quantity and quality of infrastructure services improved in all the sectors in which the private sector participated. This was true for power generation, transmission, and distribution; natural gas transportation and distribution; water and sanitation; and even road building and maintenance. In all of these sectors, service was adequate, tariffs affordable, and investment commitments honored. Yet during the financial crisis in 2002, the Argentinian government intervened in many of these markets, freezing tariffs and revising and/or revoking contracts. The result was the retrenchment of the private sector

from infrastructure investment.

Outside of Mexico and Argentina, private-sector participation is alive and well in Latin America. For example, in Brazil, the region's biggest economy, the share of private participation in total infrastructure investment doubled to about 60% since the 1990s. In other words, more than half of public infrastructure in Brazil is currently being run by private interests. The role of the private sector is growing in Colombia, too, where one of every three dollars spent on infrastructure comes from private direct investment. Meanwhile, in Chile and Peru, the share has stayed more or less constant at about 50%.

Keys To Success

Standard & Poor's believes it's vitally important for countries to improve the quality of their infrastructure investments in addition to simply increasing spending--regardless of where economies stand in their development. Among other things, this could entail better project appraisal and selection, perhaps through independent assessment, comprehensive cost-benefit analyses, and improved project execution.

This is especially important given that governments are spending a much smaller portion of their budgets on infrastructure--particularly in the West. In the U.S., government spending on projects as a percentage of GDP has tumbled to the lowest in more than 20 years, and in the eurozone, governments' austerity measures have significantly eaten into spending on infrastructure development and repair.

To be sure, while there's a demonstrable relationship between a project's size and the resultant boost to an economy, more spending doesn't always make for commensurate benefits. In this light, it's crucial that countries more carefully evaluate, plan, and execute their infrastructure projects. This would result in significant cost savings on the front end, and bigger boosts to the economy down the road.

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