

*Capital project and
infrastructure
spending outlook*

Agile strategies for changing markets
September 2016

Capital project and infrastructure spending outlook

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About Oxford Economics

- Oxford Economics was founded in 1981
- Commercial venture with Oxford University's business college
- One of the world's foremost independent global advisory firms
- Providing reports, forecasts and analytical tools on 200 countries, 100 industrial sectors and over 3,000 cities
- Oxford Economics produces global economic and industry models and analytical tools
- Provides the ability to forecast external market trends and assess their economic, social and business impact

About the report

- This PwC report ***Capital project and infrastructure spending outlook: Agile strategies for changing markets*** was created in collaboration with Oxford Economics, which provided research support and model analysis
- The report looks at two macroeconomic scenarios: a potential China hard landing and a global economic upturn—and how they would affect the mid-term outlook for capital projects and infrastructure spending to 2020
- The data set for this study cover 88% of global GDP and 87% of total world fixed investment spending

The report covers six key infrastructure sectors



1. Extraction

- Oil and gas
- Other extraction (Coal, metals, minerals)



2. Utilities

- Power generation
- Electricity transmission and distribution
- Gas distribution
- Water



3. Manufacturing

- Petroleum refining
- Chemical
- Heavy metals



4. Transport

- Rail
- Roads
- Airports
- Ports



5. Telecommunications

- Physical infrastructure and hardware

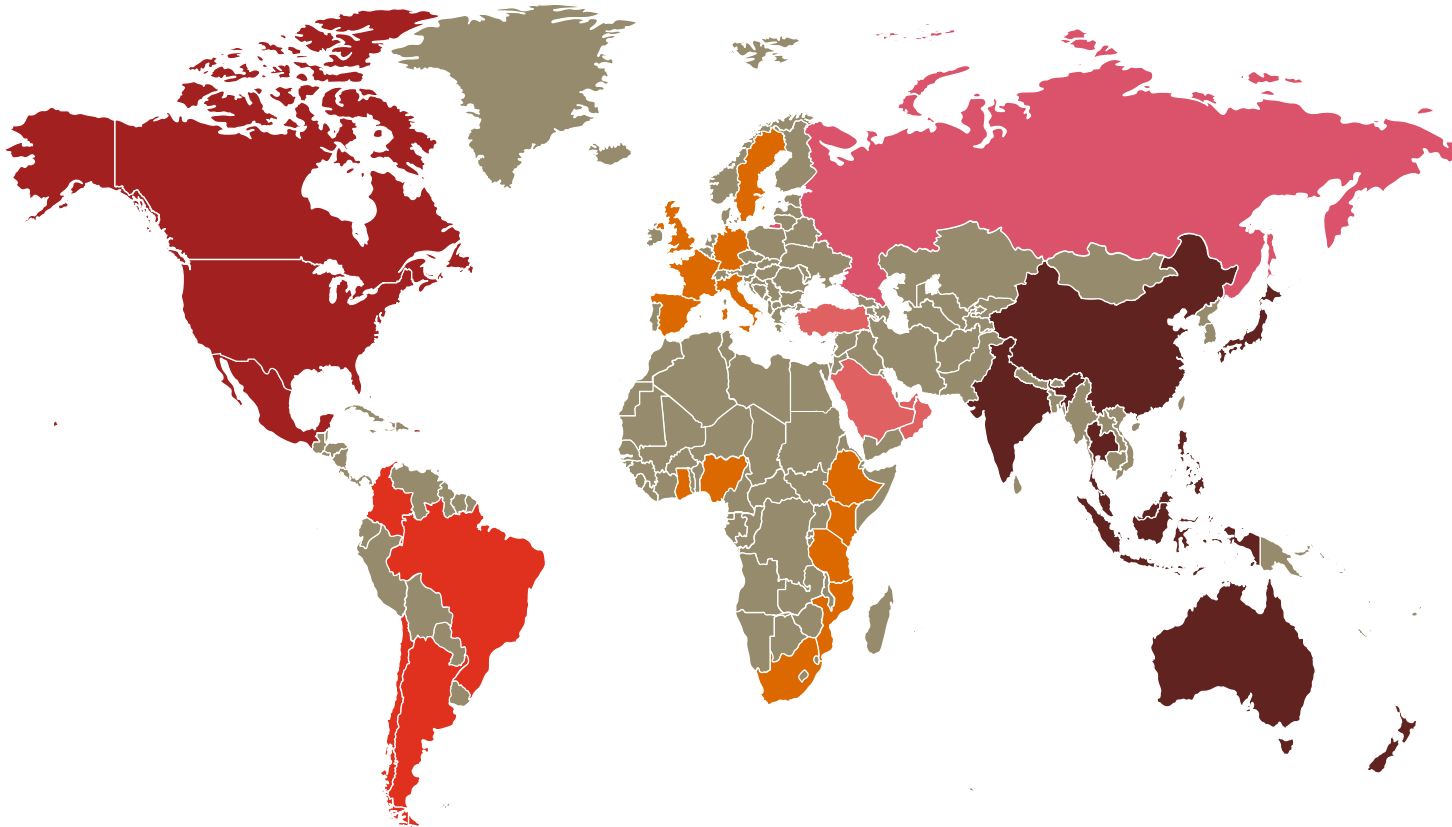


6. Social

- Education
- Health

... and assesses the prospects for CP&I spending across seven regional groupings

Western Europe, North America, Latin America, Asia Pacific, Middle East, Africa, Former Soviet Union/Central and Eastern Europe



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Oxford Economics' work with PwC is unique in forecasting actual infrastructure spending

- Infrastructure defined as gross public and private spending on infrastructure-related assets which enhance the supply-side capacity of economies, underpinning long-term economic growth
- Focus is on total spending per year, not deal size
- Other studies have looked at the need or demand for future investment in infrastructure
- OE's work with PwC is unique at a global level by estimating and forecasting the actual annual spending that is likely to take place around the world through 2025
- This year's update builds on original work undertaken in 2013 and 2014

Methodology for Outlook (2016 edition)

- In developing this year's analysis, Oxford Economics used data sets to provide consistent, reliable, and repeatable measures of projected capital project and infrastructure spending globally
- Historical spending data is drawn from government and multinational organization statistical sources
- Projections are based on proprietary economic models developed by Oxford Economics at the region and sector levels
- The analysis was originally completed over the first half of 2015 incorporating all infrastructure spending and macroeconomic data available at that time, then partially updated in Q1 2016 to reflect the latest macroeconomic data and outlooks of the seven regions covered in the research (but no new actual infrastructure spending data was collected and incorporated)*

Methodology for Outlook (2016 edition) (continued)

- The analysis also provides upside and downside scenarios for the infrastructure spending outlook based on Oxford Economics' Q1 2016 Global Scenario Service

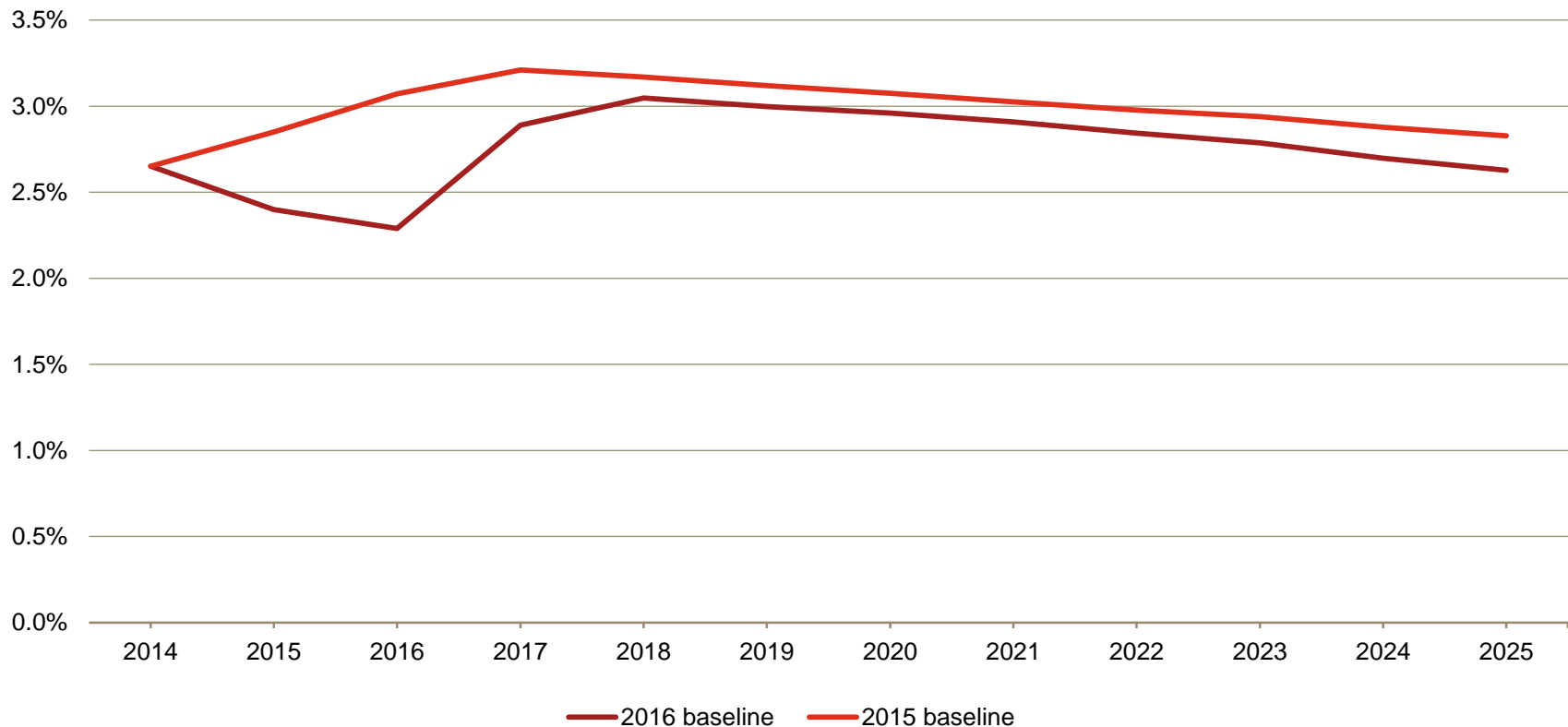
*As such, this Outlook is sufficient to draw high-level conclusions at the level of broad sectors and regions; however, it is not suitable for detailed analysis of individual countries and detailed sectors.

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Despite the downturn in the last 12 months, the global economy is expected to pick up in 2017...

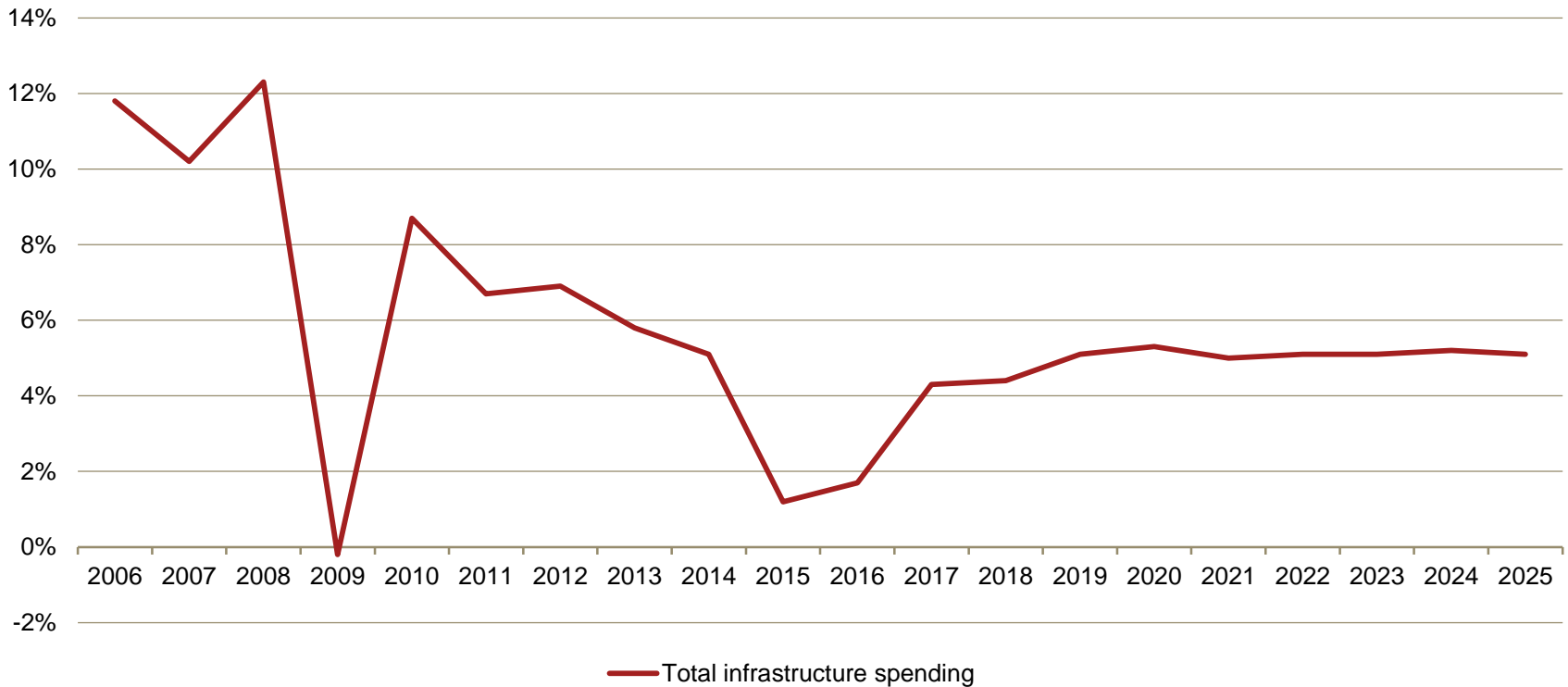
World real GDP growth



...and infrastructure growth is likely to follow

Global infrastructure spending growth

% annual growth

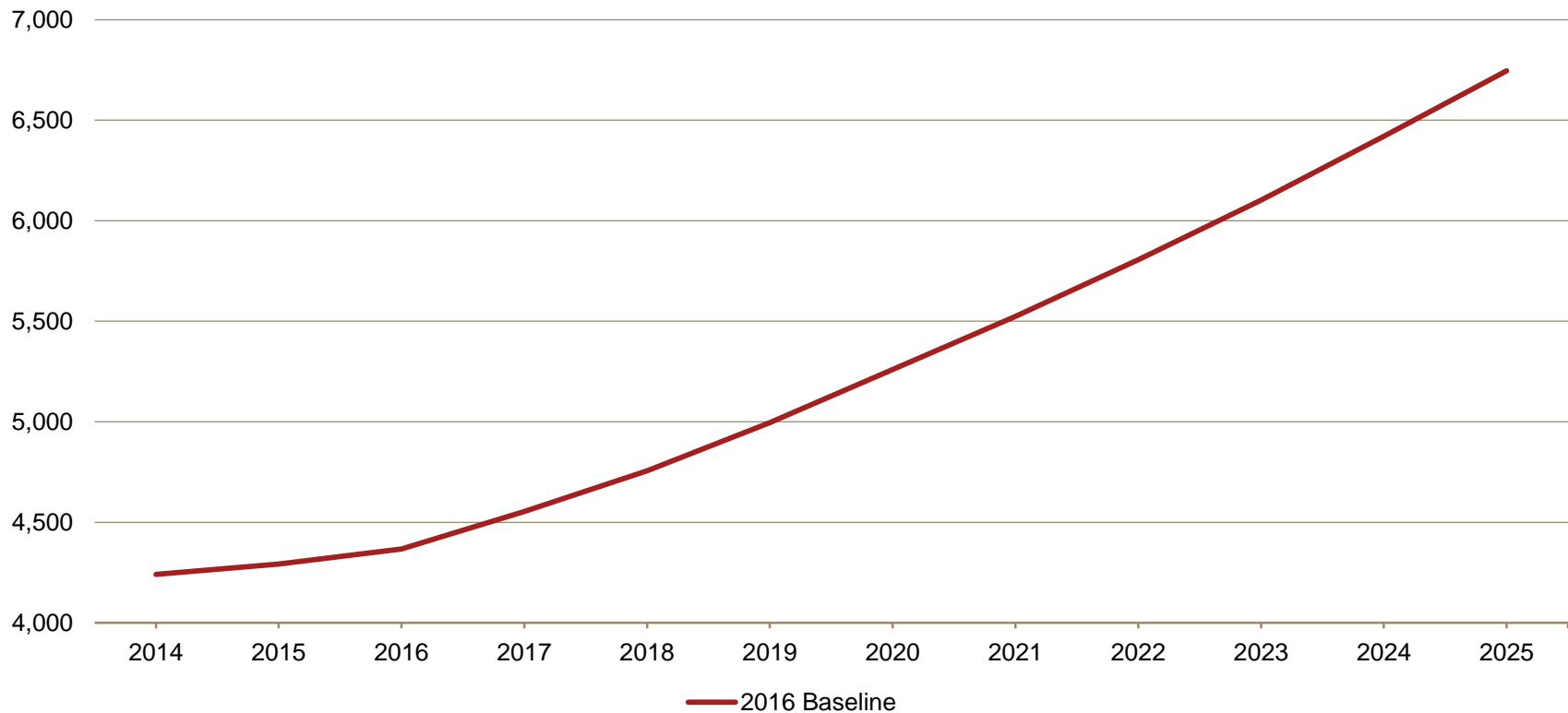


Source: Oxford Economics

Long-term infrastructure growth remains strong despite medium-term setbacks

Global infrastructure spending growth

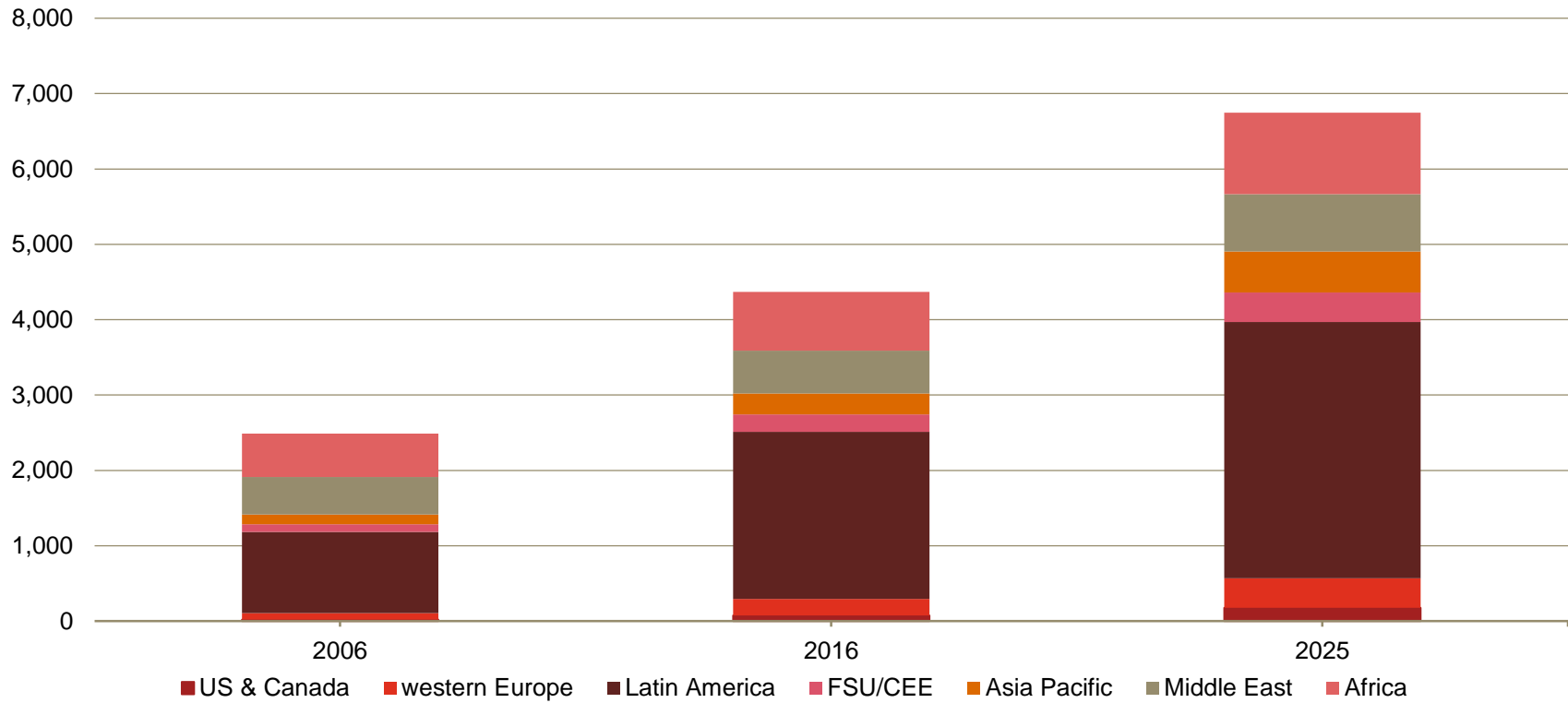
\$bn at 2014 exchange rates



Source: Oxford Economics

Infrastructure spending by region

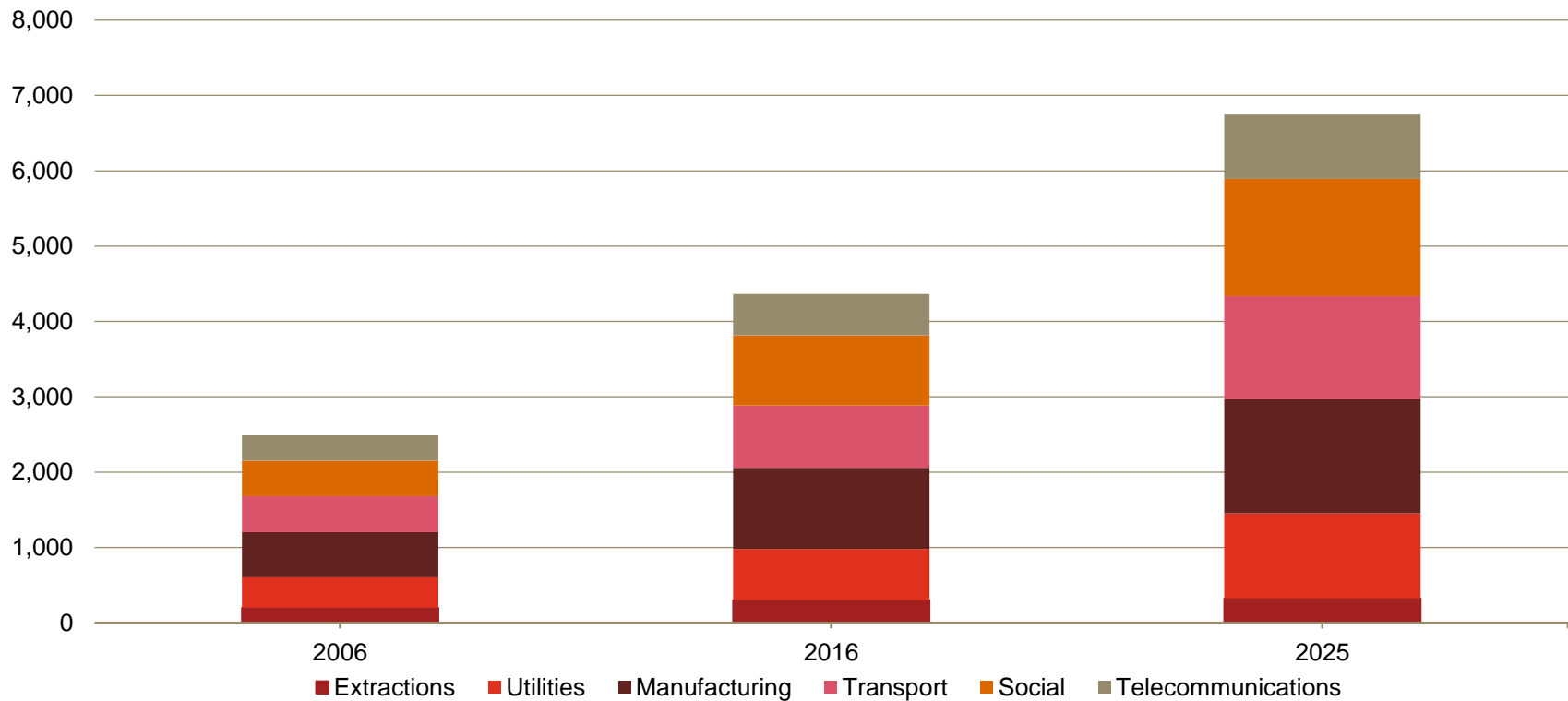
\$bn at 2014 exchange rates



Source: Oxford Economics

Infrastructure spending by broad sector

\$bn at 2014 exchange rates



Source: Oxford Economics

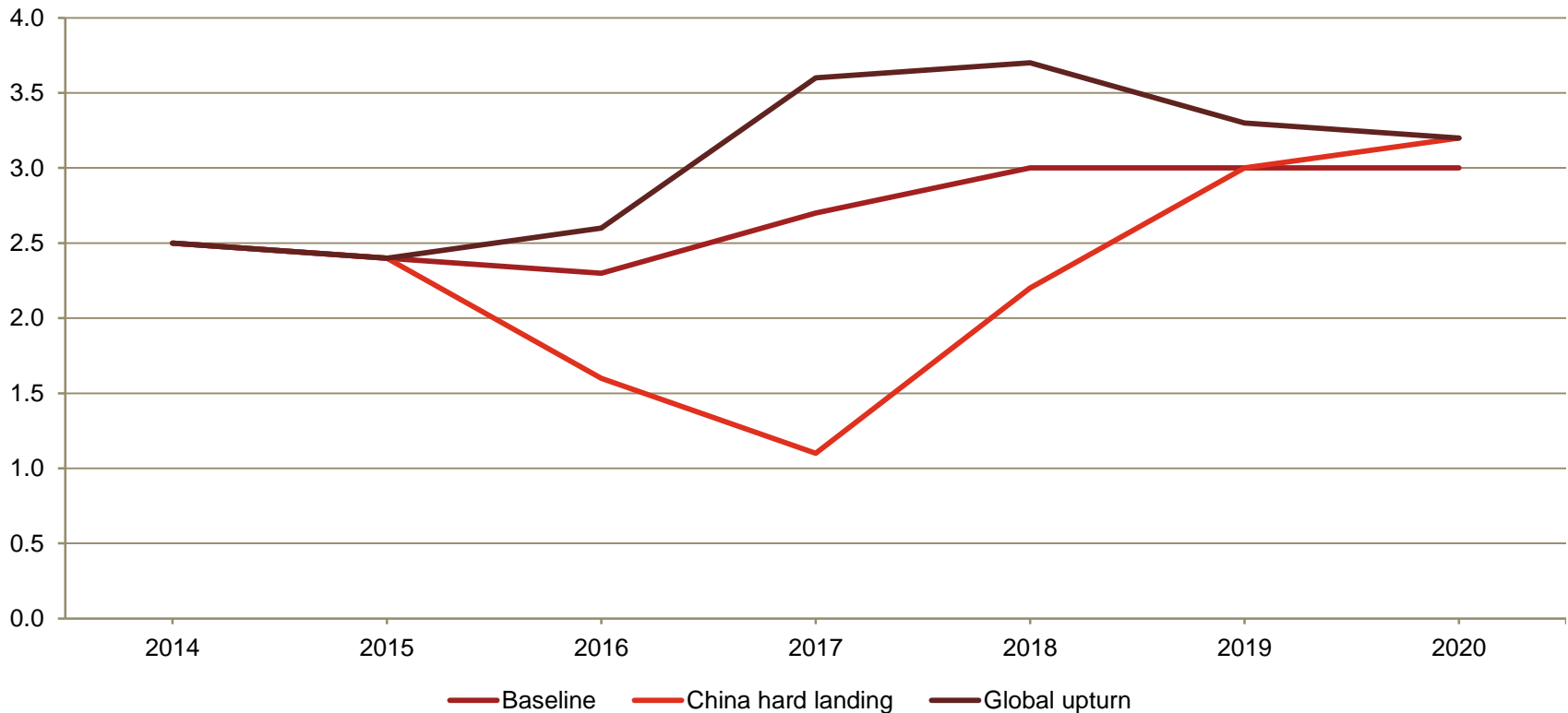
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In light of the uncertain global outlook over the medium term, we explore the potential impact of alternative economic scenarios on CP&I spending

Global GDP growth assumptions

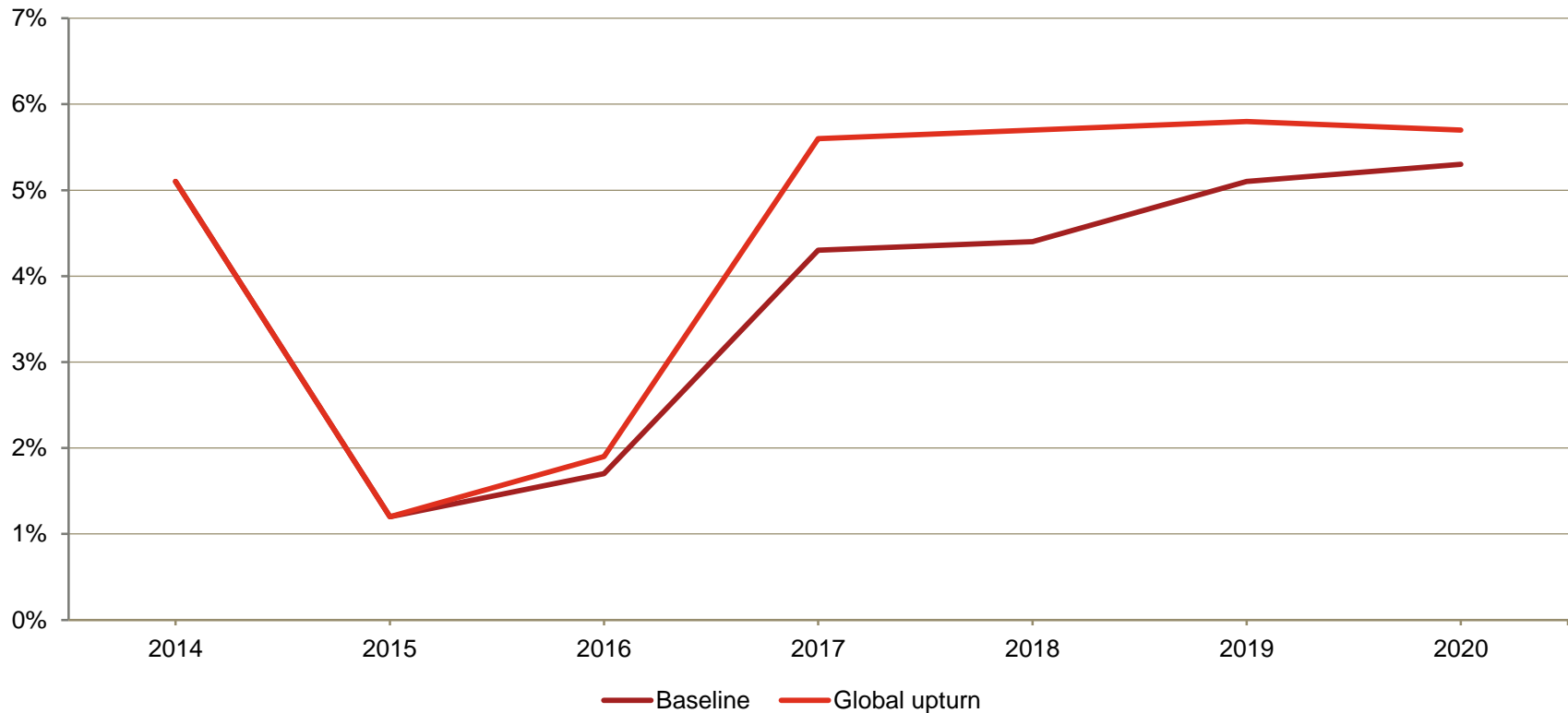
% change on previous year



Source: Oxford Economics

Upside scenario – Global upturn

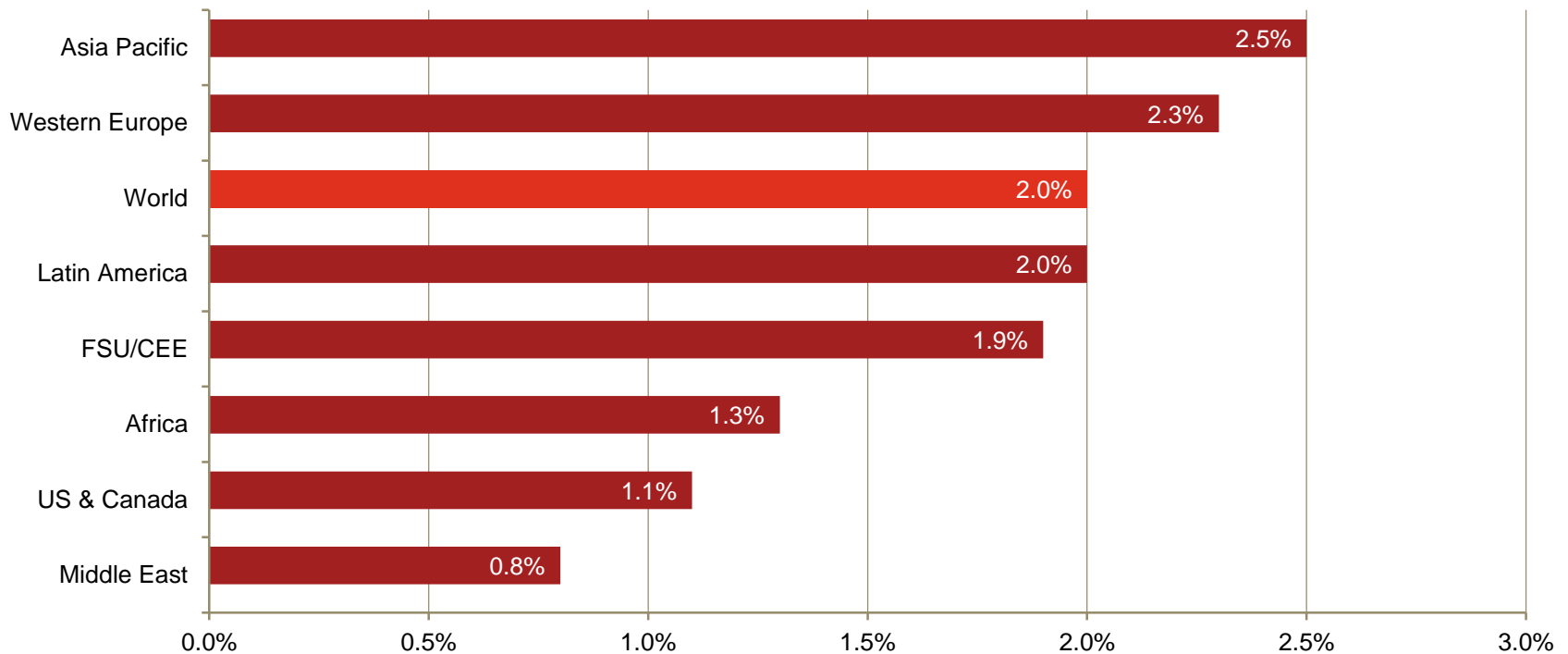
World CP&I spending growth, global upturn scenario



Source: Oxford Economics

Asia Pacific and Western Europe are the biggest winners under the global upturn scenario

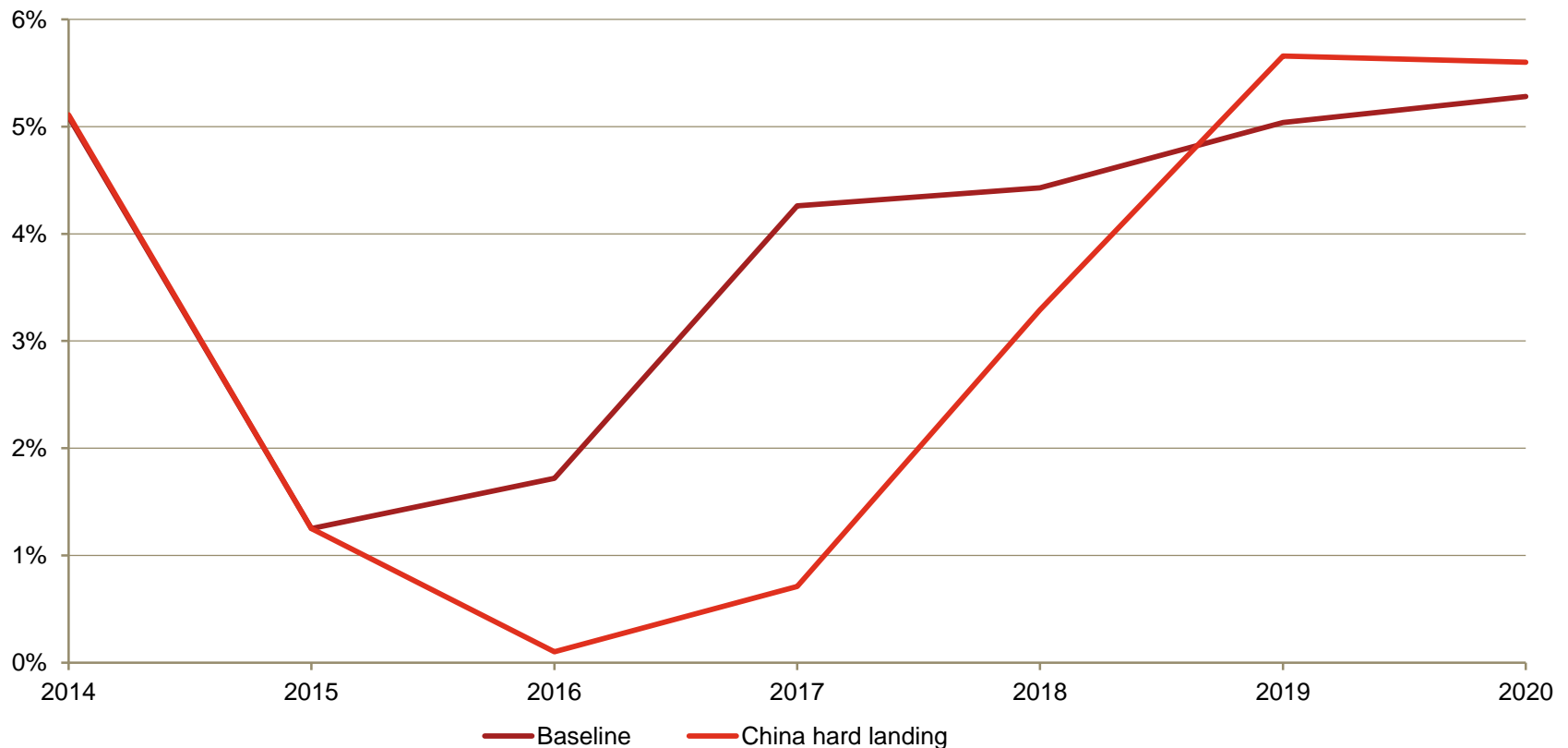
Cumulative CP&I spending 2015-2020 – Percentage difference between 2016 baseline and global upturn scenario, by region



Source: Oxford Economics

Downside scenario – A China hard landing

Global CP&I spending growth, Chinese hard landing scenario

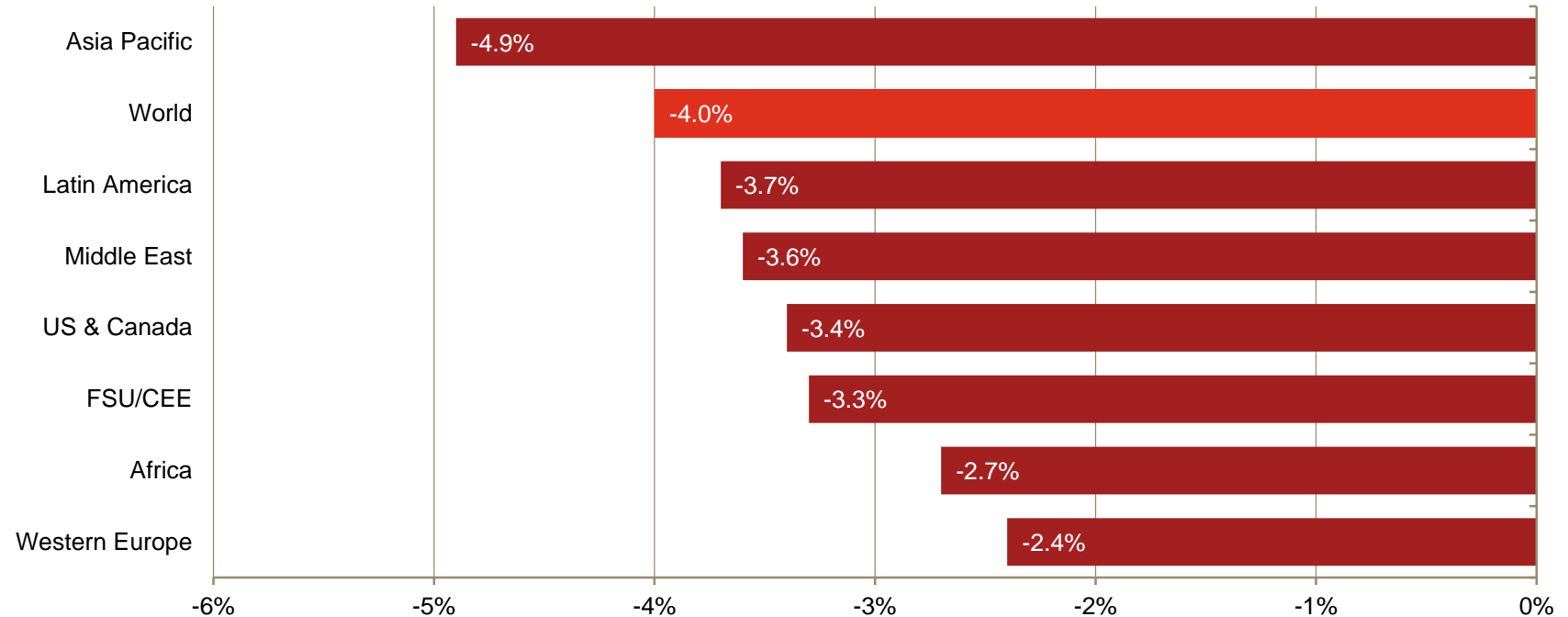


Source: Oxford Economics

60% of decline in infra spending would occur in Asia; 15 % in US and Canada; least impact on Western Europe

Cumulative CP&I spending 2015-2020 – Percentage difference between 2016 baseline and China hard landing scenario, by region

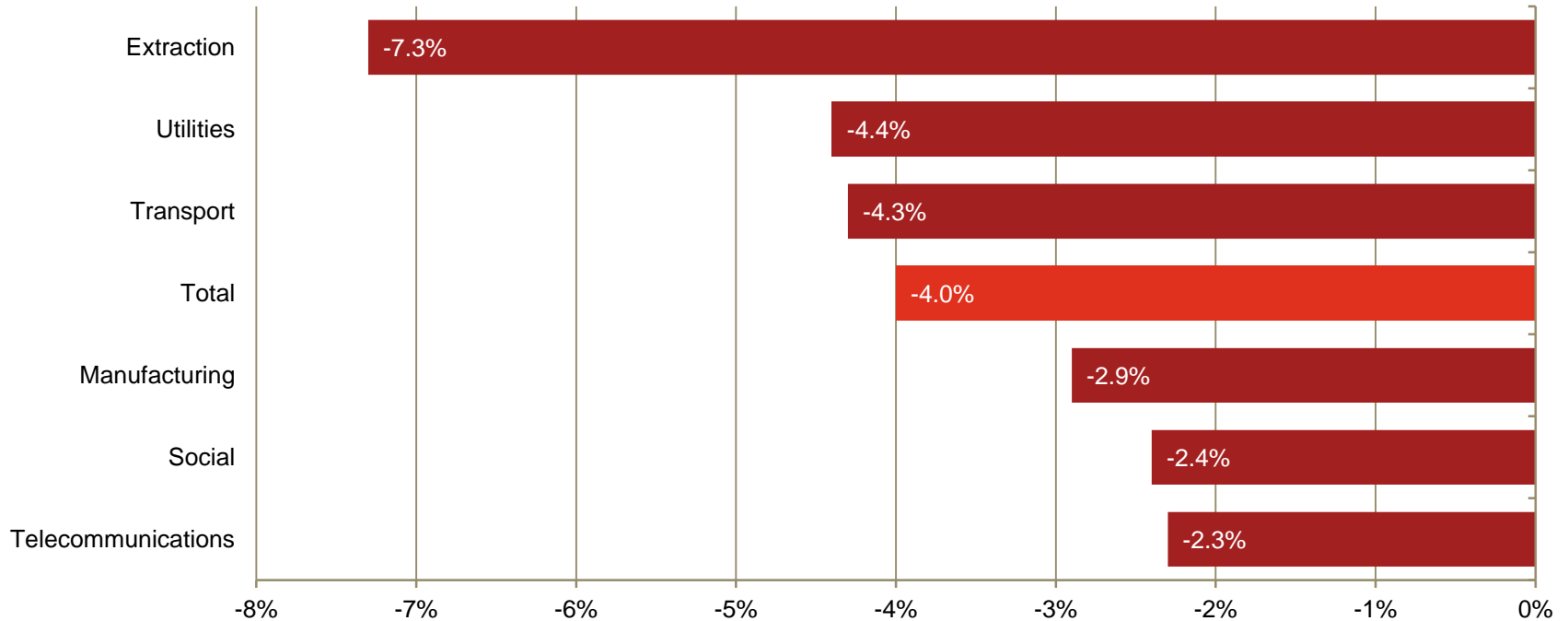
\$bn, 2014 exchange rates



Source: Oxford Economics

Aside from extraction, transport and utilities would see the greatest impact from a China hard landing

Cumulative global CP&I spending 2015-2020 – Percentage difference between 2016 baseline and China hard landing scenario, by sector

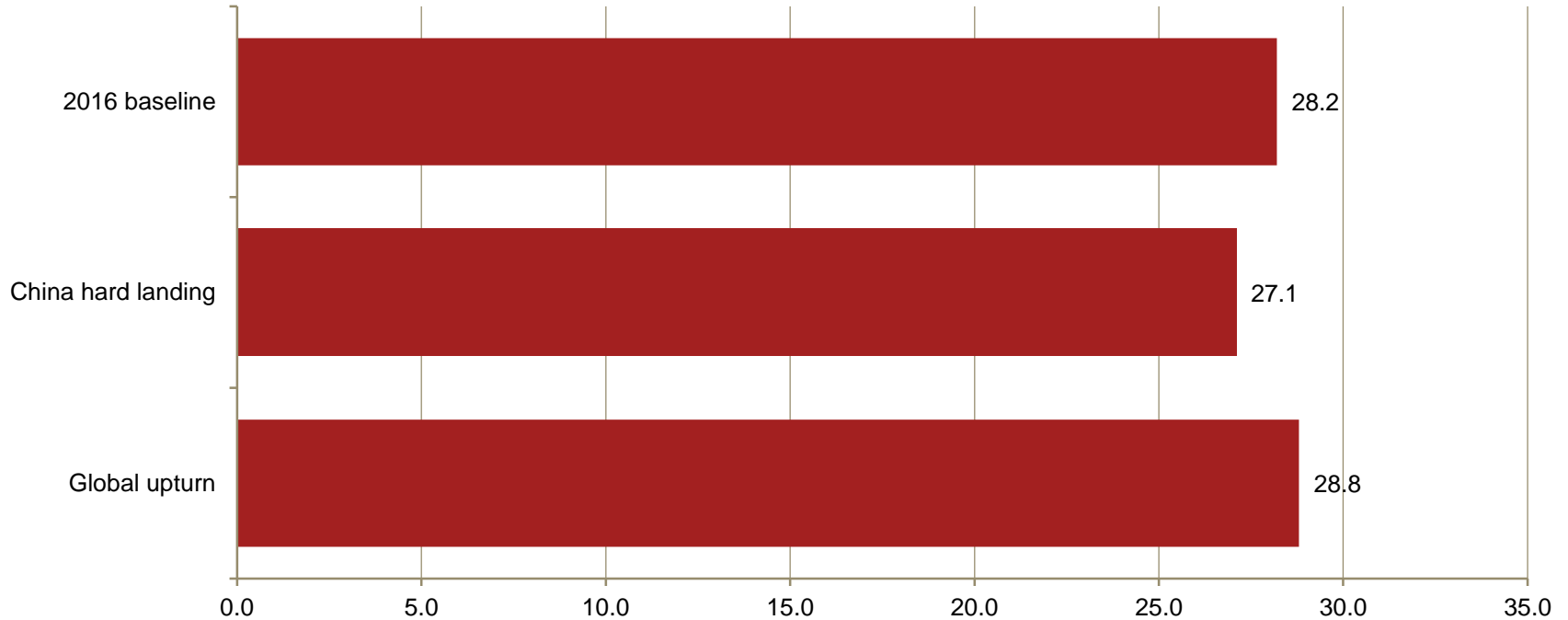


Source: Oxford Economics

Scenarios analysis – Summary

Cumulative world CP&I spending 2015-2020 by scenario

\$trn at 2014 exchange rates



Source: Oxford Economics

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

- In the short-term, building or upgrading transport or energy networks can boost aggregate demand through increased construction activity and employment

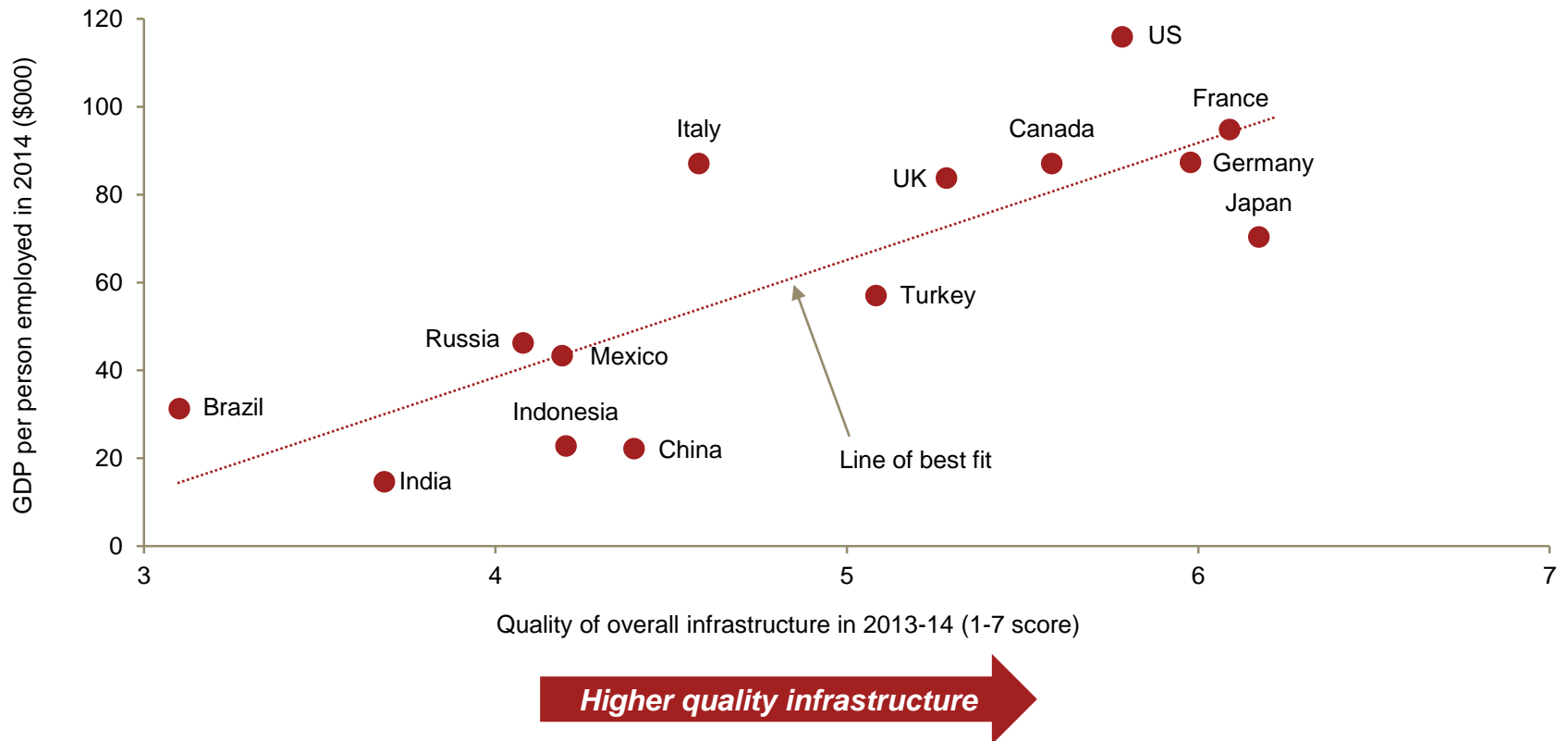
(A useful reference here is a recent IMF study, which found that a dollar well invested in infrastructure yields \$3 in GDP)

- In the long-term, infrastructure investment can jolt economic growth by increasing the potential supply capacity of an economy

For example, improving transport facilities could make workers more mobile, thus making labor markets more efficient and increasing productivity

There is a strong correlation between the quality of infrastructure and labor productivity in the G7 and E7

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



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

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Infrastructure as an alternative investment asset class

- Despite the economic uncertainties, interest in and accumulation of capital for investment in infrastructure projects continue to grow.
- With over US\$100 billion in dry powder, and more institutional investors flocking to high-quality projects in a persistent high-dollar environment, infrastructure is becoming a recognized investment asset class globally.

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