



Recent oil market volatility

5th Joint IEA-IEF-OPEC Workshop
on the interactions between physical and financial energy markets

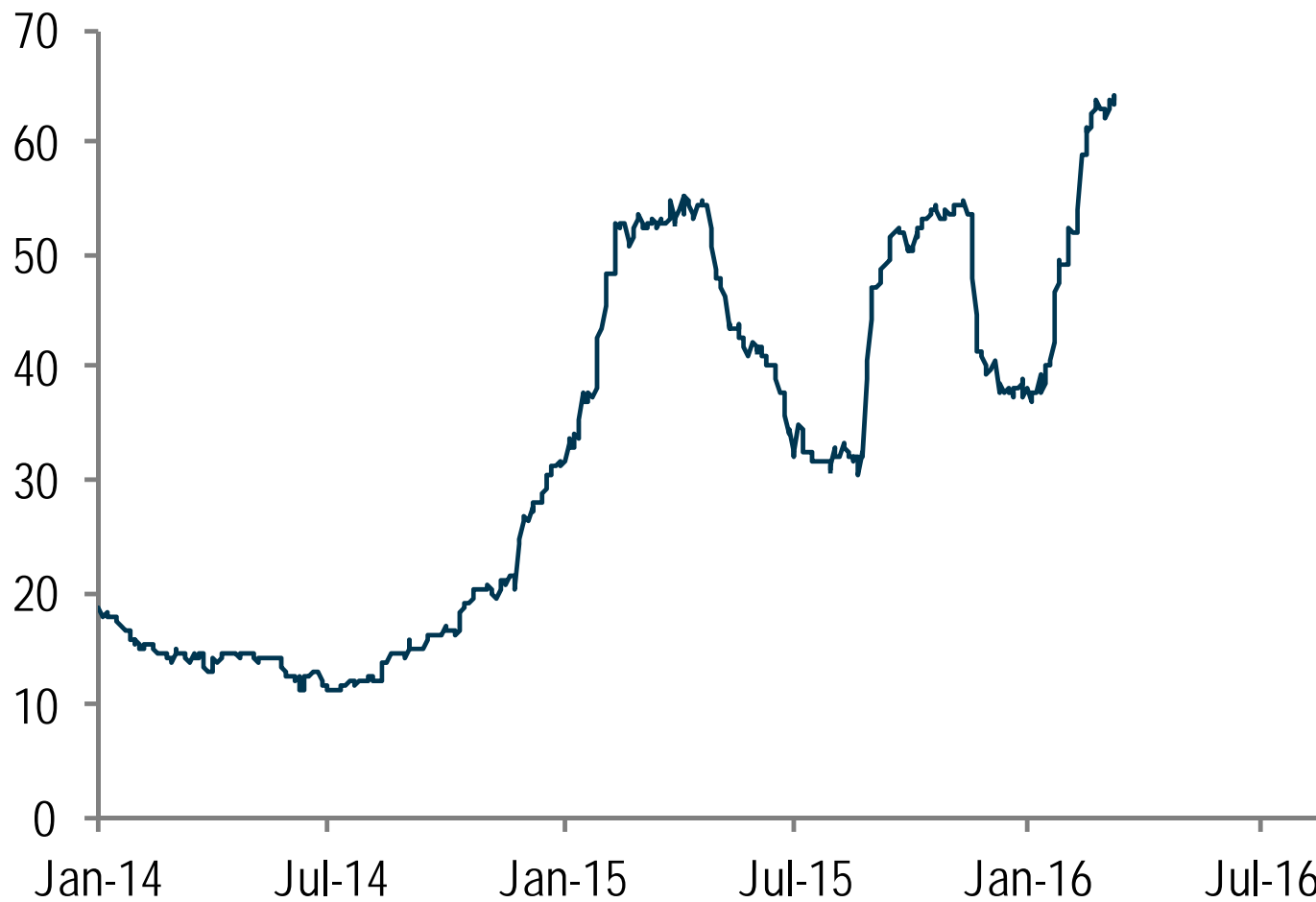
Paul Horsnell, Standard Chartered

15 March 2016

Volatile volatility

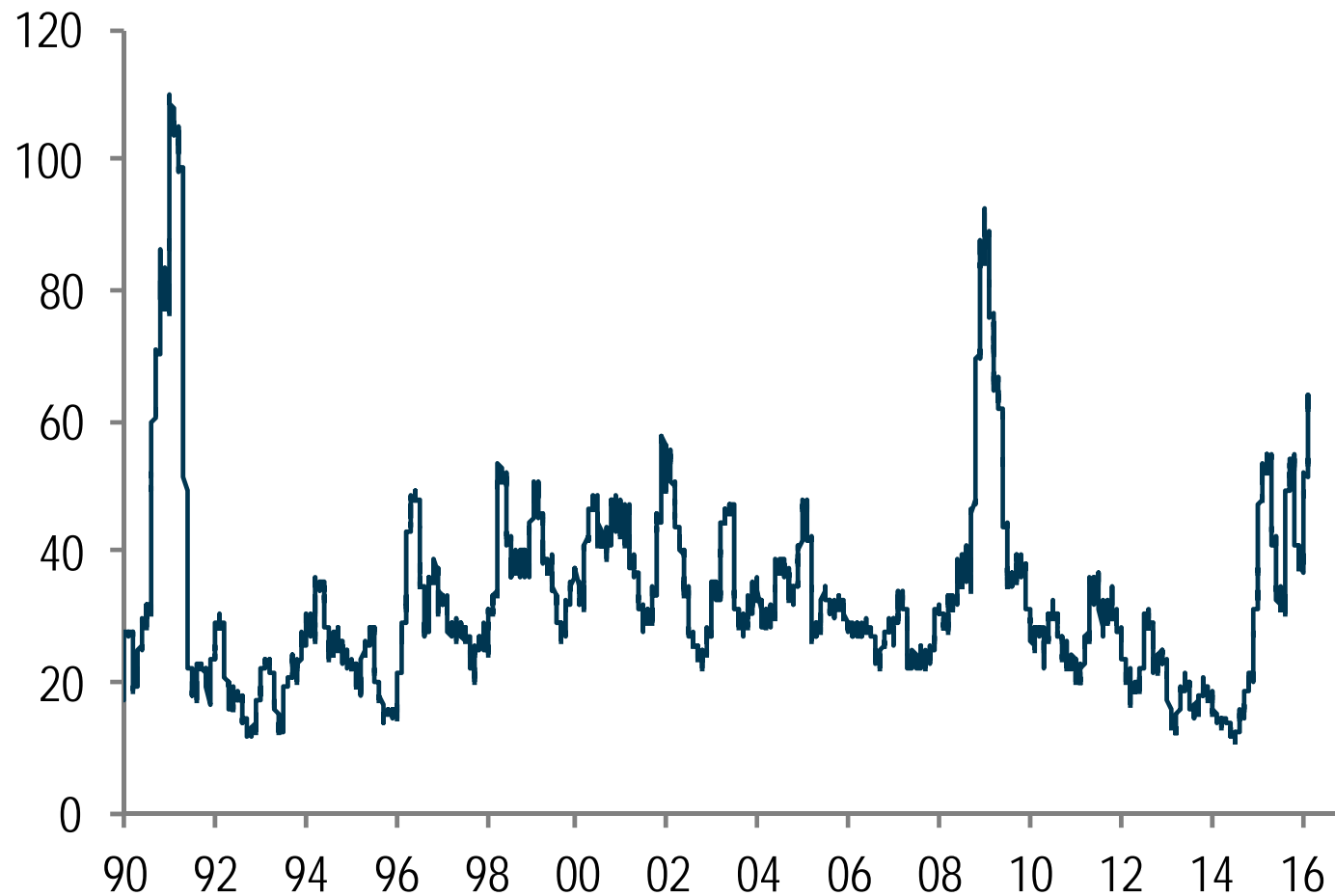


Annualised realised % Brent volatility, rolling 60 day measure



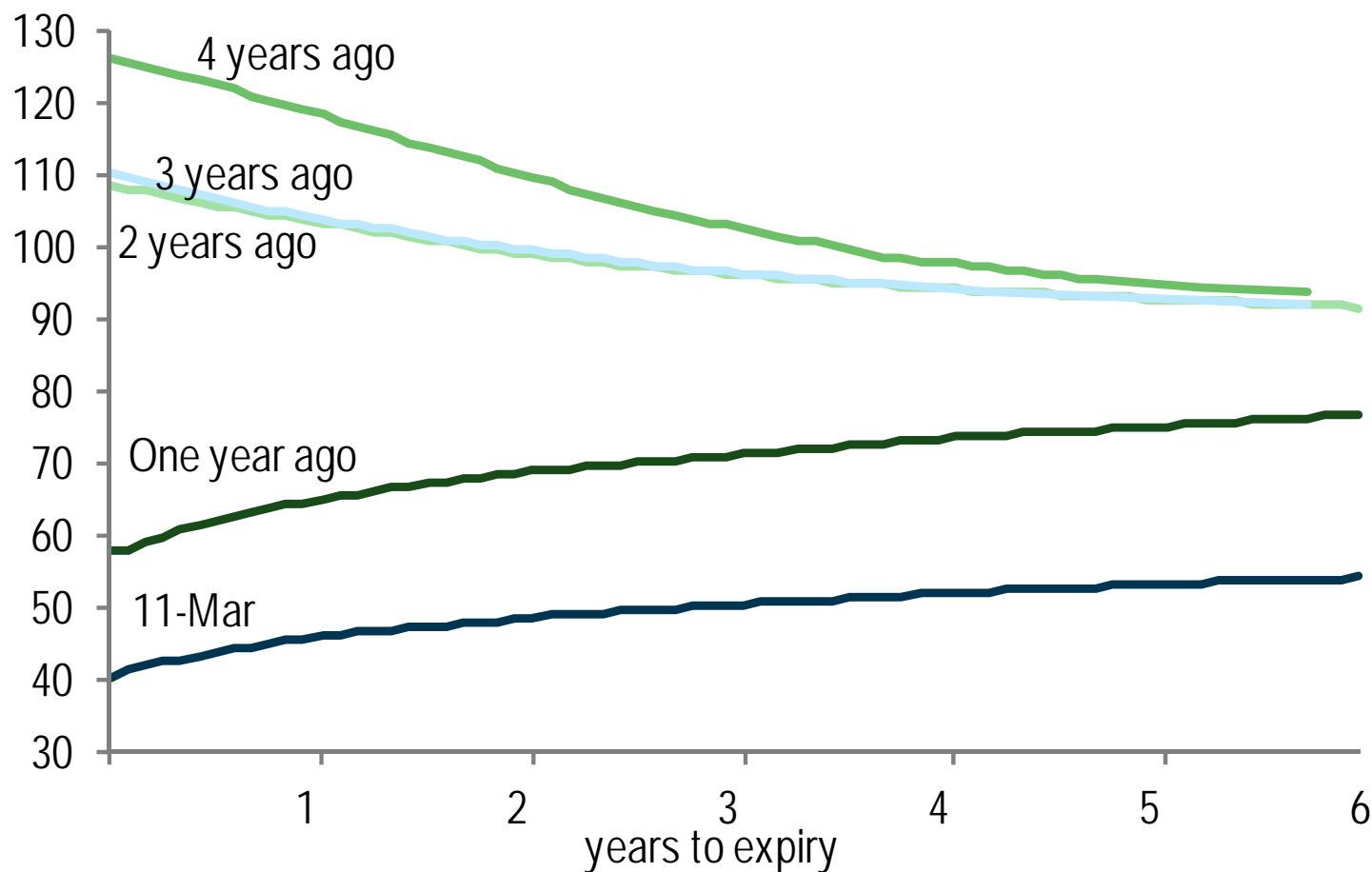
A 25-year view of Brent volatility

Annualised realised % Brent volatility, rolling 60 day measure



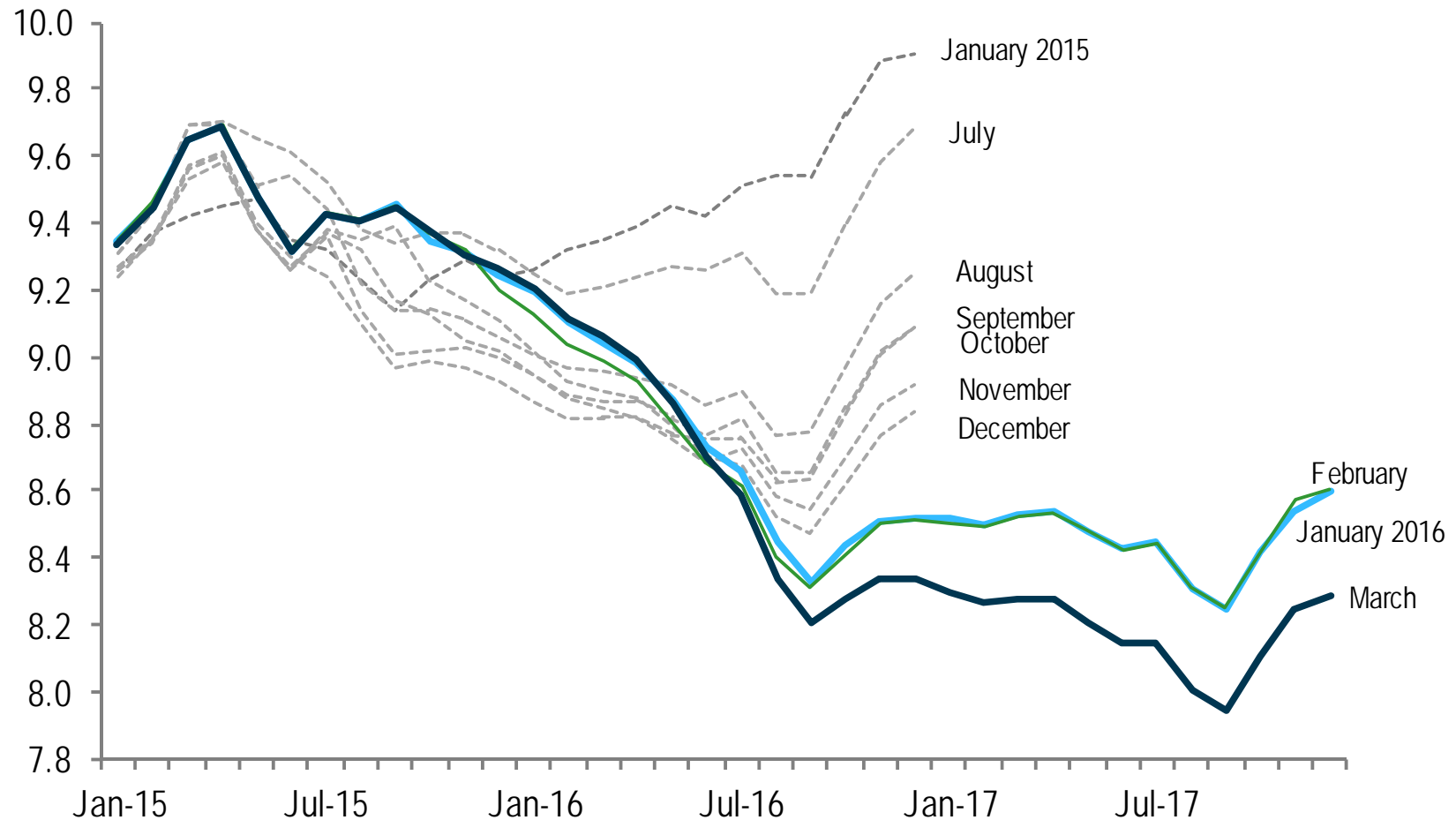
A sharp fall in the Brent crude oil curve

Brent forward curve, 11 March 2016 and equivalent day in past years



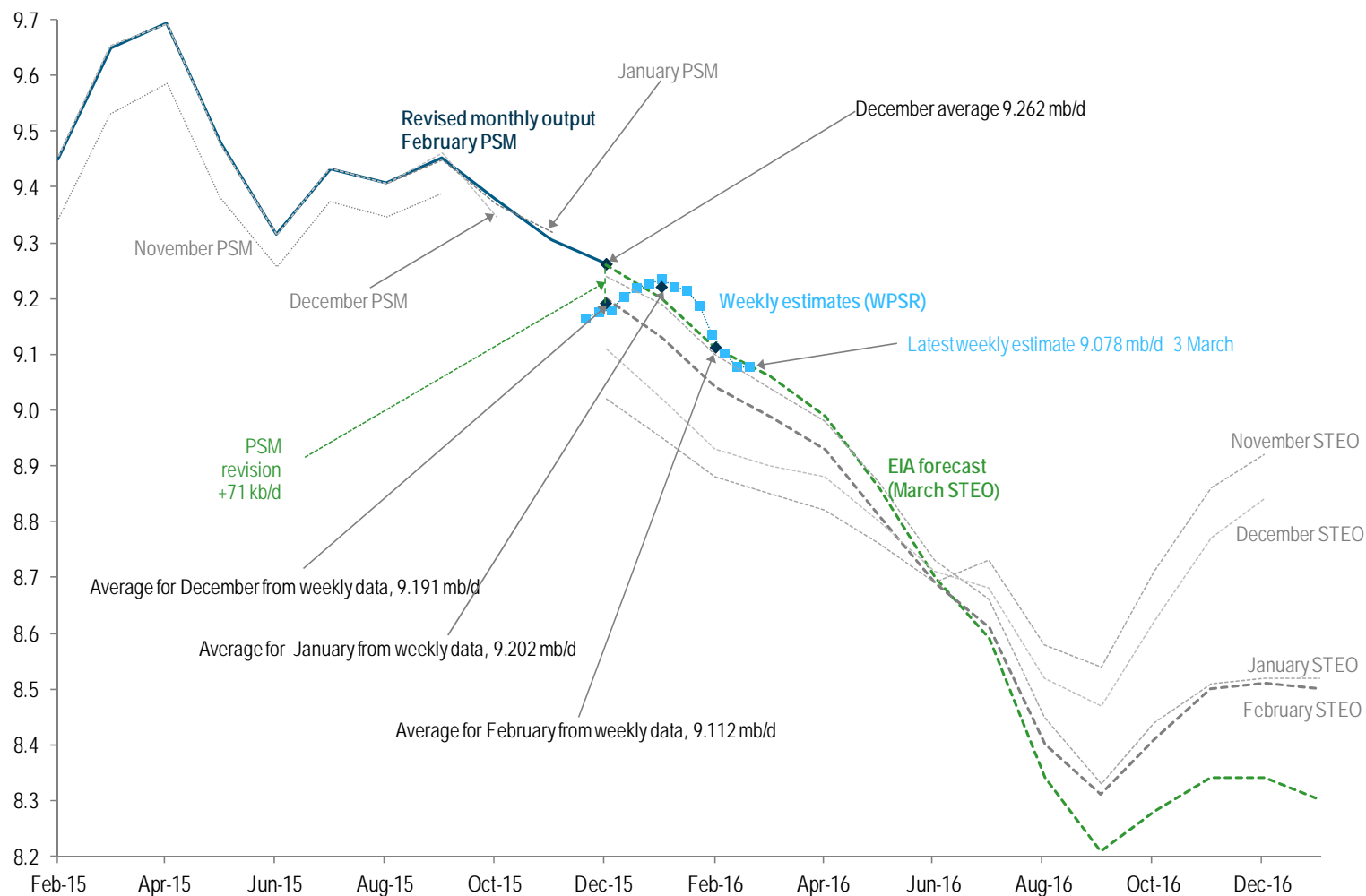
Modelling US output dynamics a new science

US EIA Short Term Energy Outlook forecasts of US crude oil output, mb/d



Complicated mathematics, but US oil output to fall

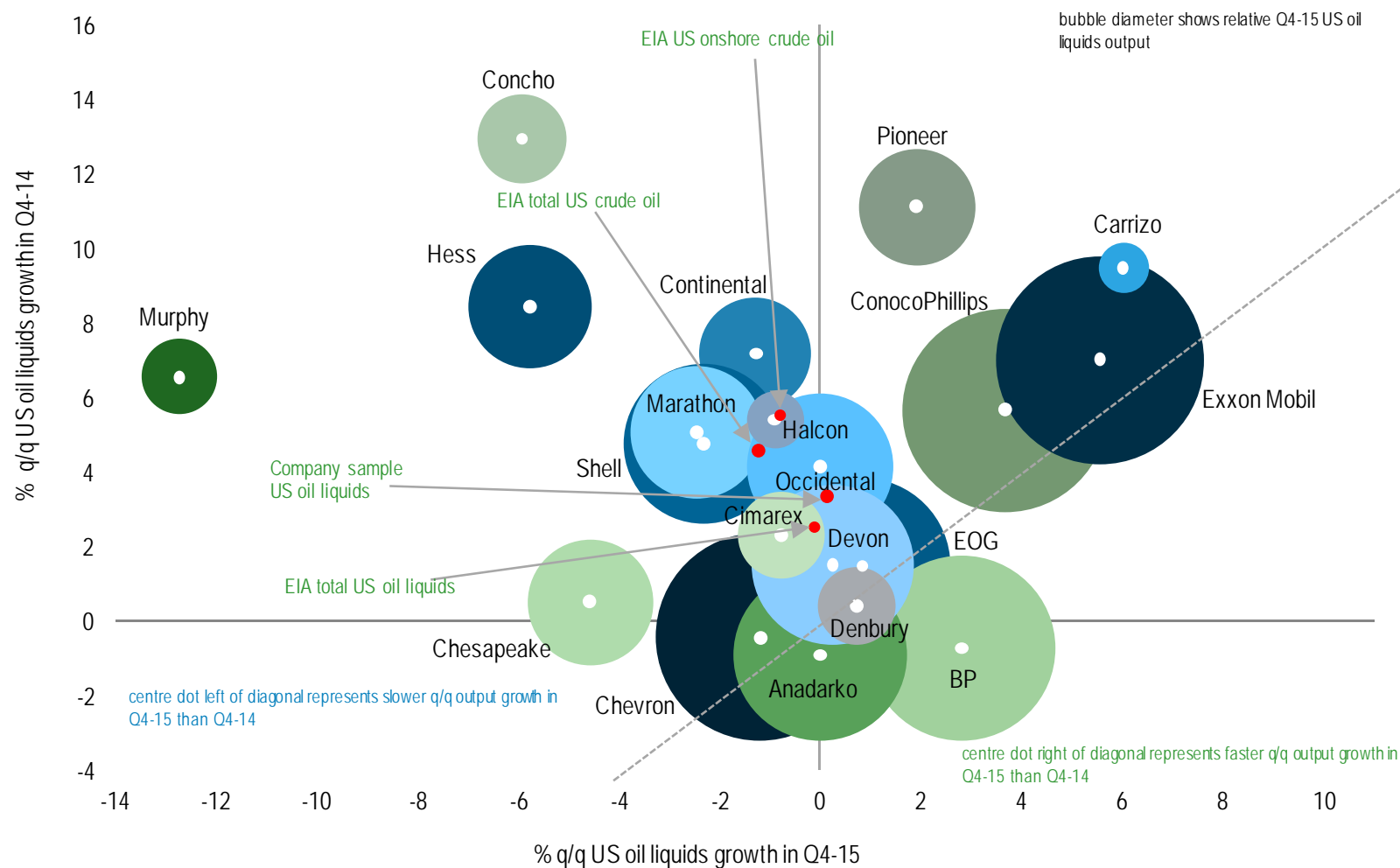
US EIA estimates and forecasts of US crude oil output, mb/d



Standard Chartered Commodities Research

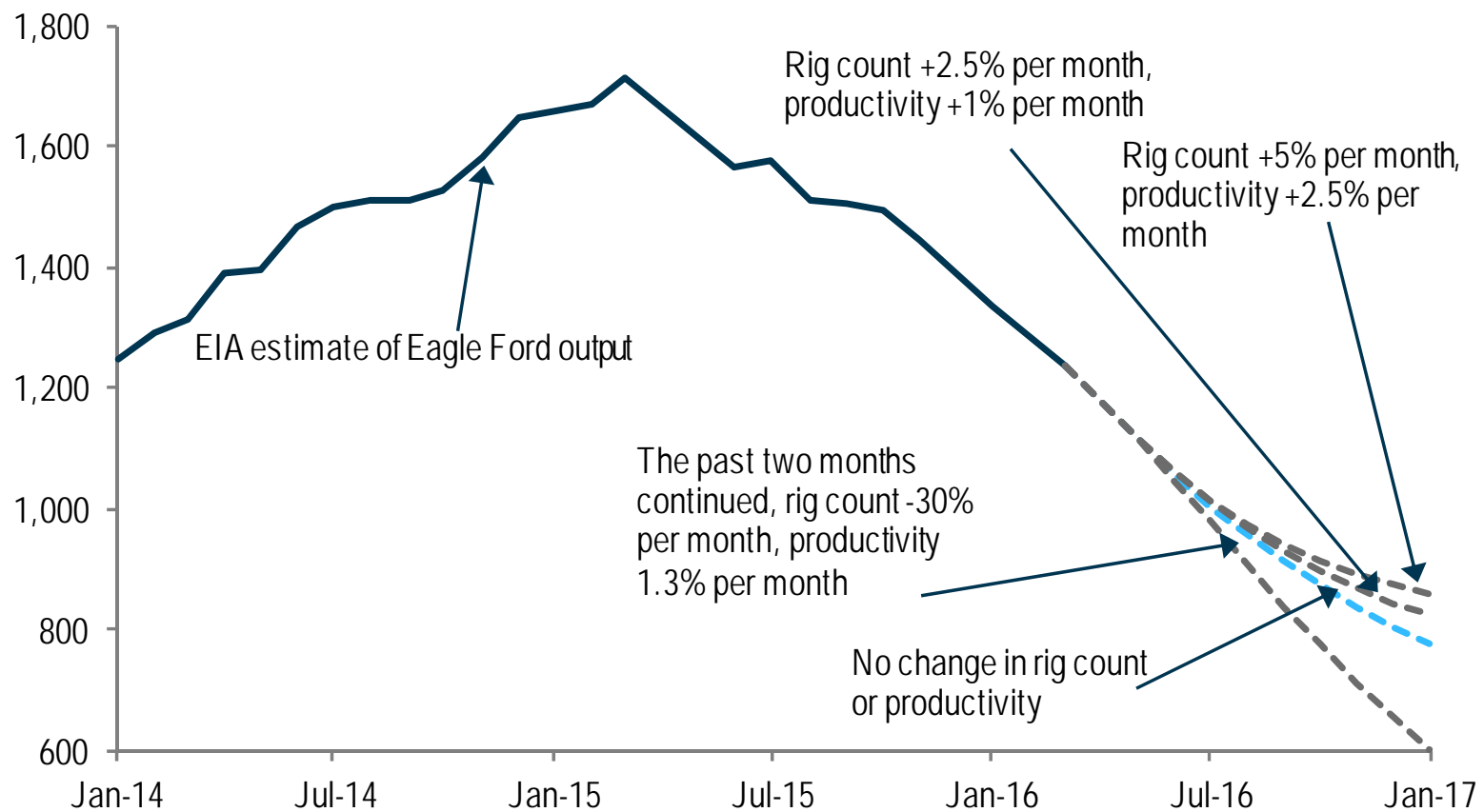
Company data in line with EIA estimates

US oil liquids output growth Q4/Q3, 2015 v 2014



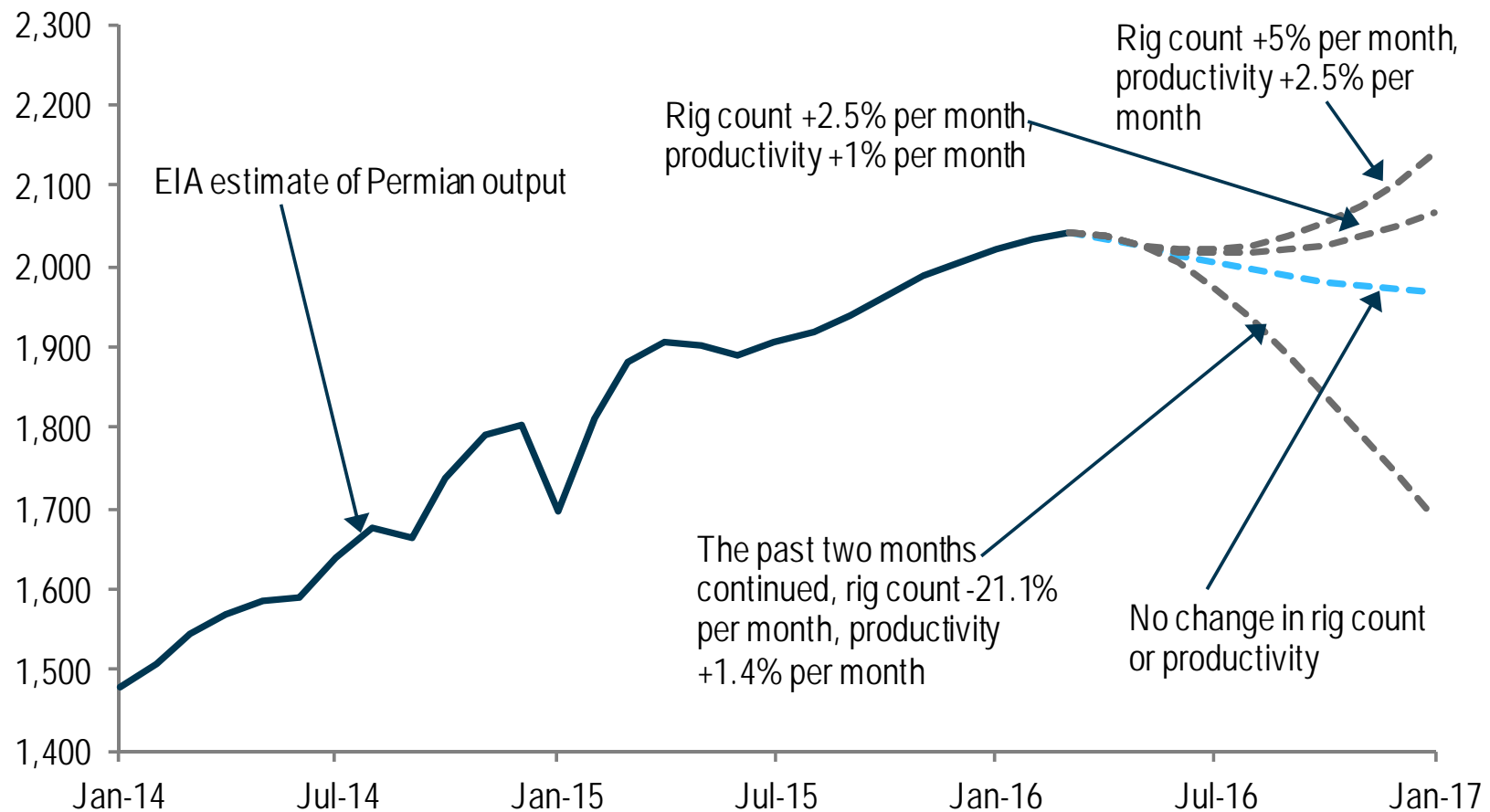
Eagle Ford: From boom to bust

Eagle Ford output scenarios, kb/d



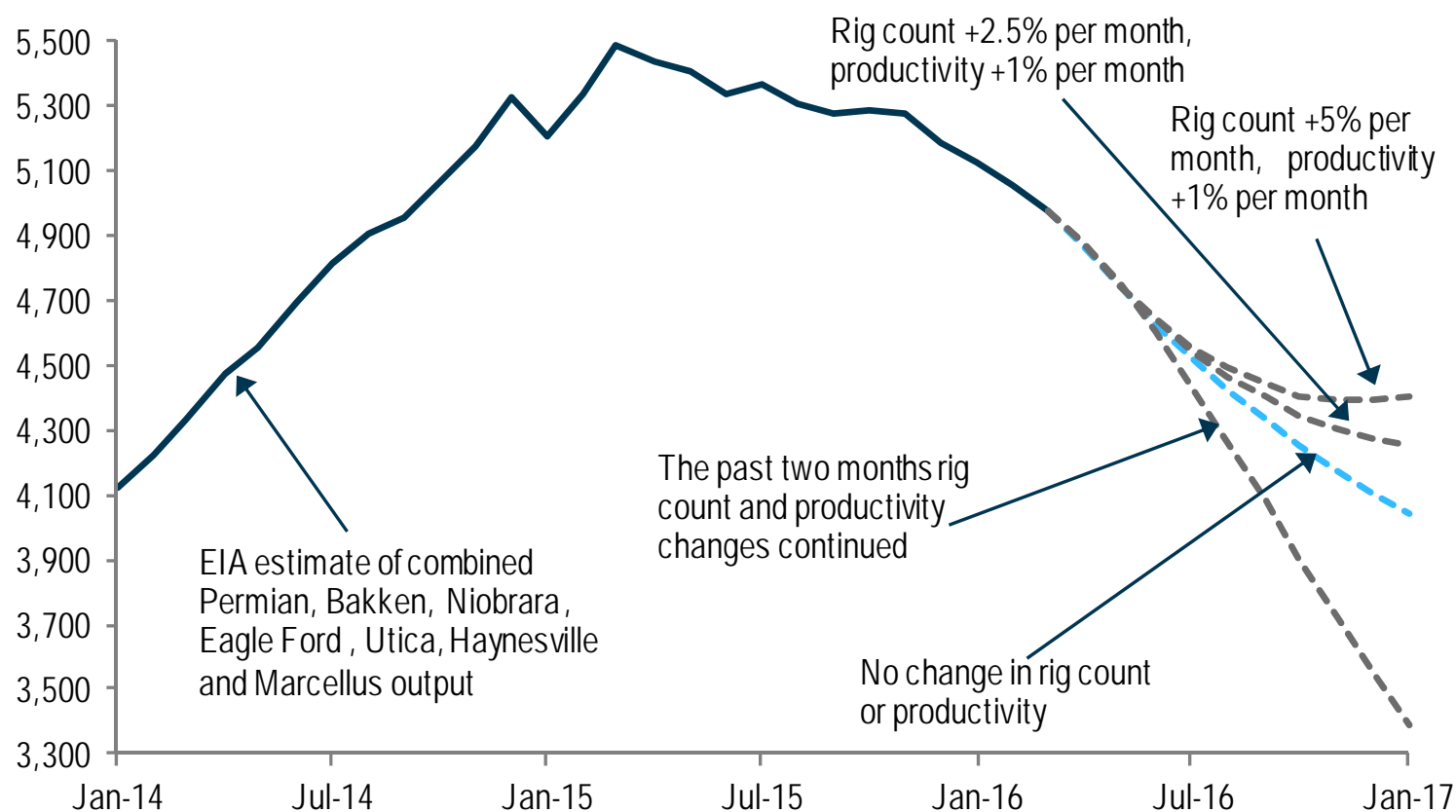
Permian main source of future growth

Permian output scenarios, kb/d



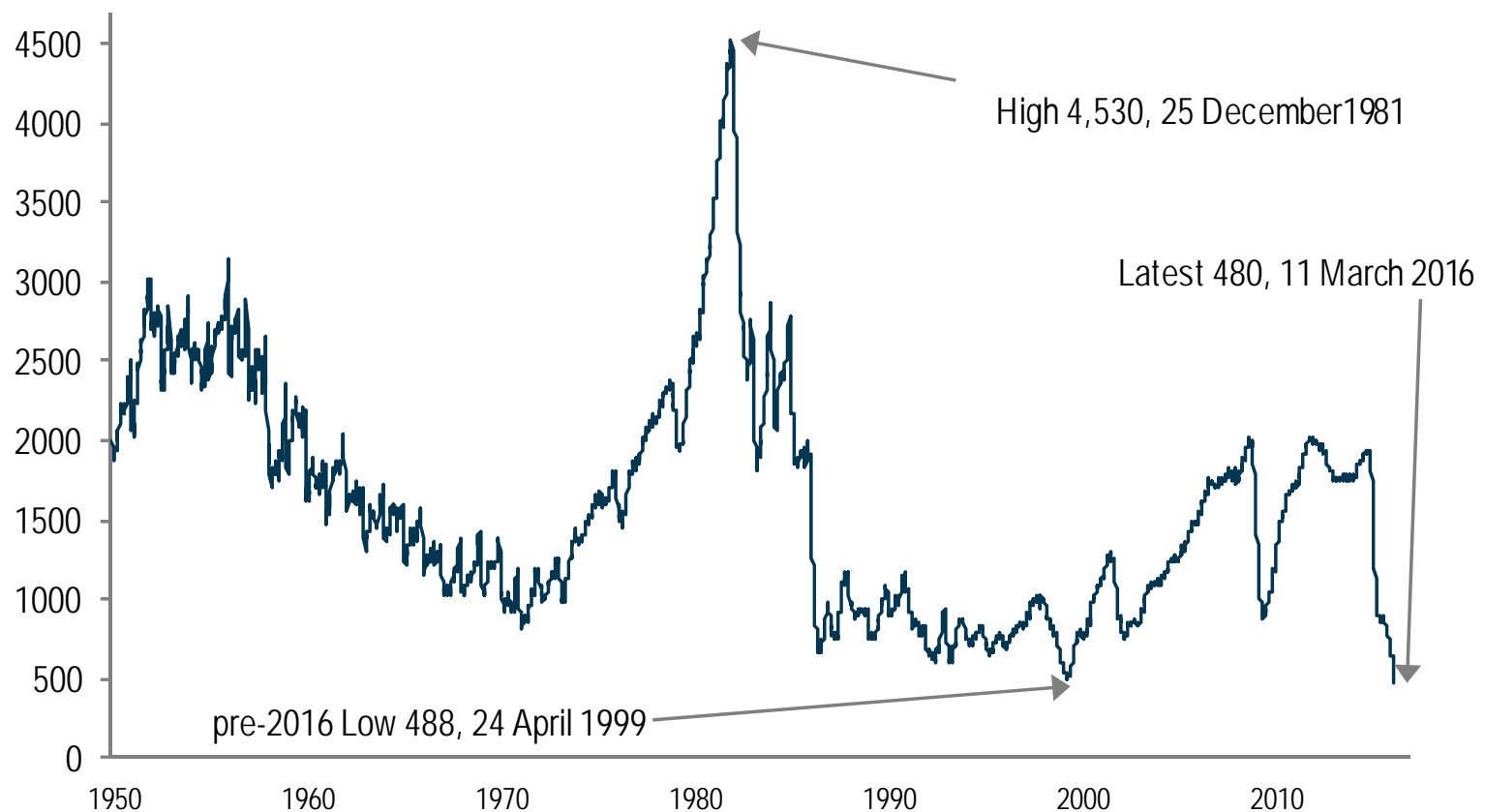
Sharp rig count rise needed to stabilise output

Total shale oil output scenarios, kb/d



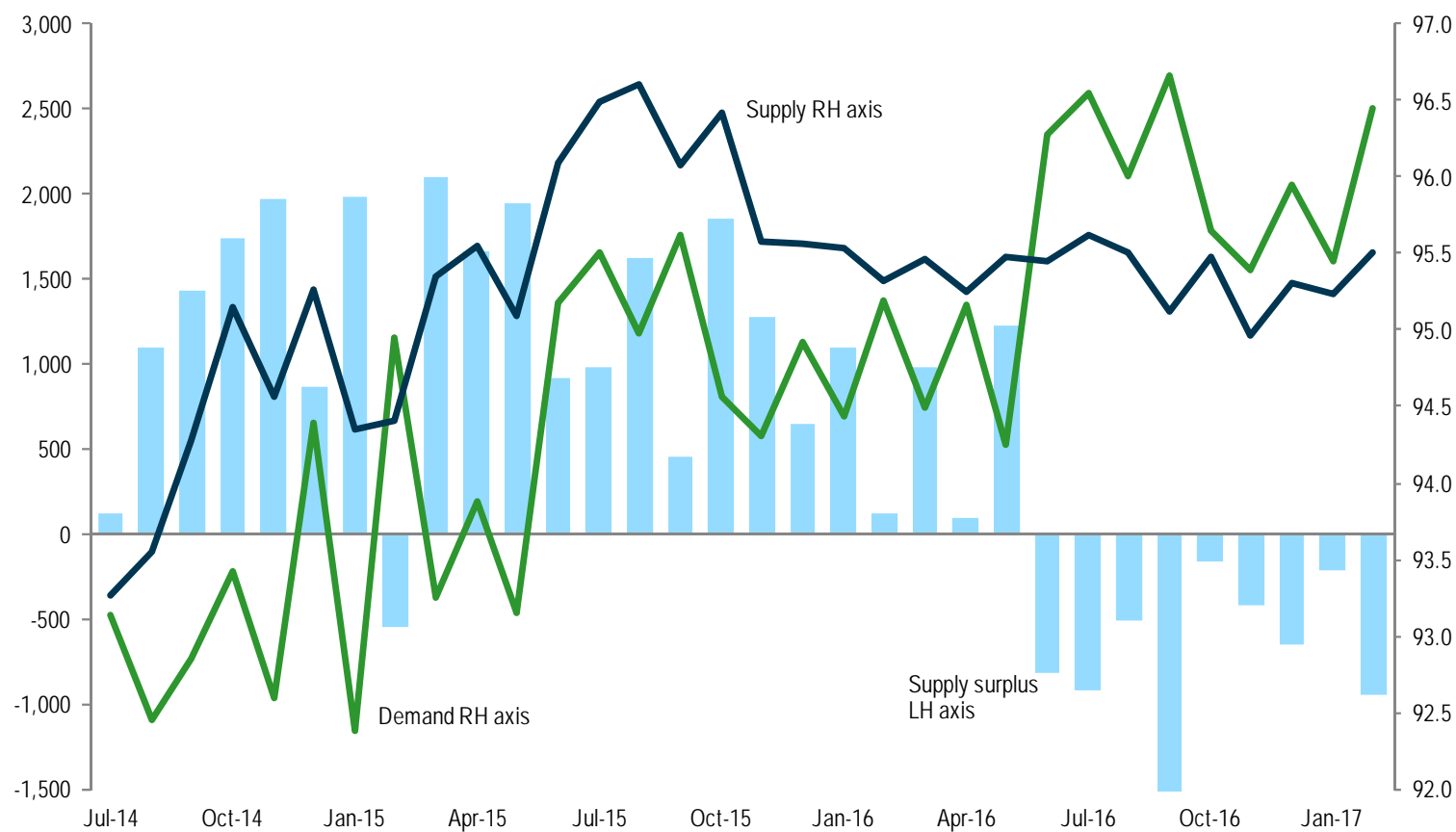
Lowest ever Baker-Hughes US rig count

Baker-Hughes US rig count, 1950-2016

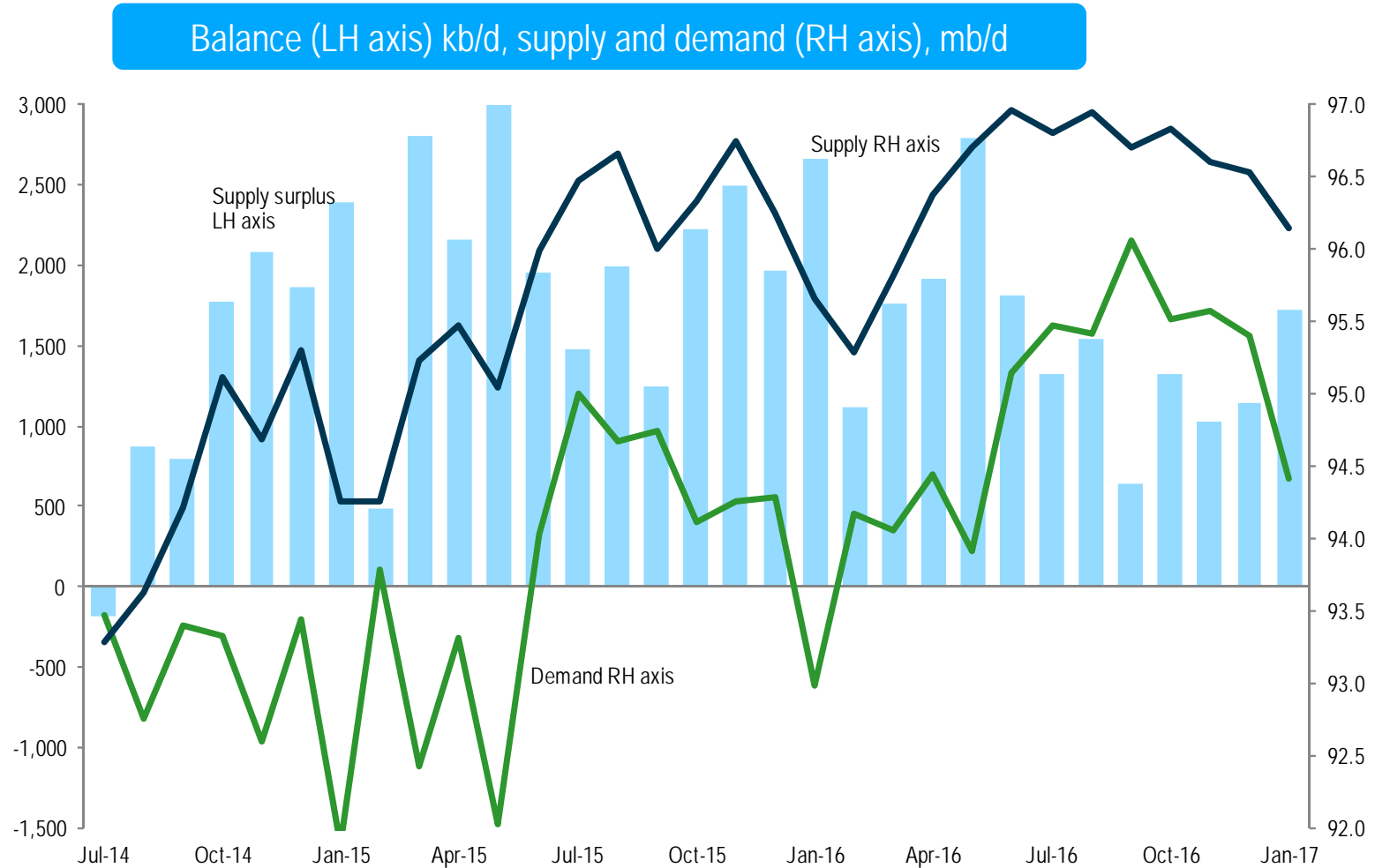


Monthly oil balances I : Standard Chartered

Balance (LH axis) kb/d, supply and demand (RH axis), mb/d

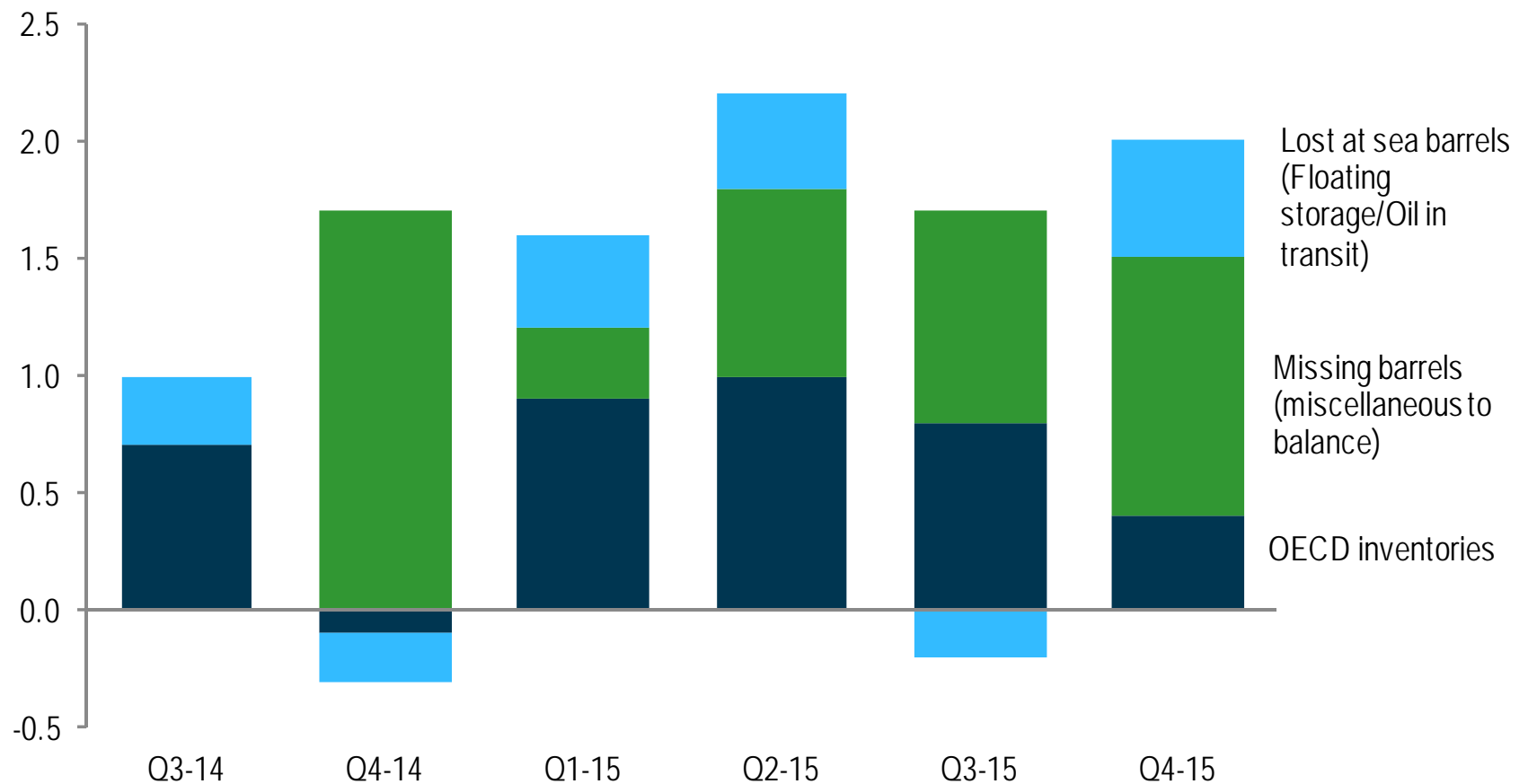


Monthly oil balances II : EIA



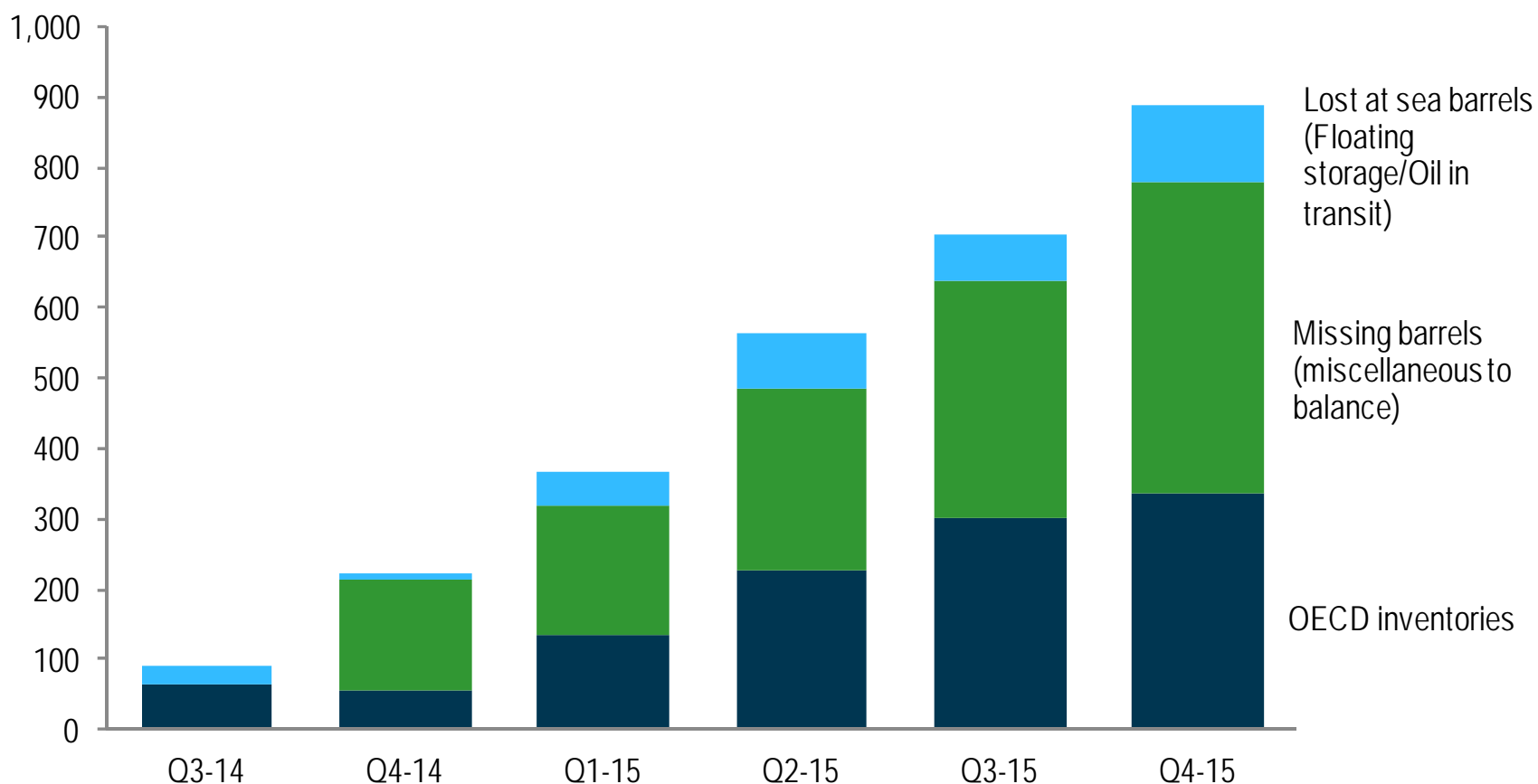
Missing barrels and lost at sea barrels

Quarterly changes in inventories in IEA balances, mb



Cumulative missing barrels and lost at sea barrels

Cumulative changes in inventories in IEA balances since mid-2014



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