"Crude Oil Outlook"

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Seventh IEA_IEF_OPEC Symposium on Energy Outlooks
IEF Headquarters
Riyadh, Saudi Arabia, February 2017

Discussion Points

- Price Forecast
- Demand Dynamics: Long term forecast and facts
- Supply Dynamics: Integrated, Unconventional and OPEC

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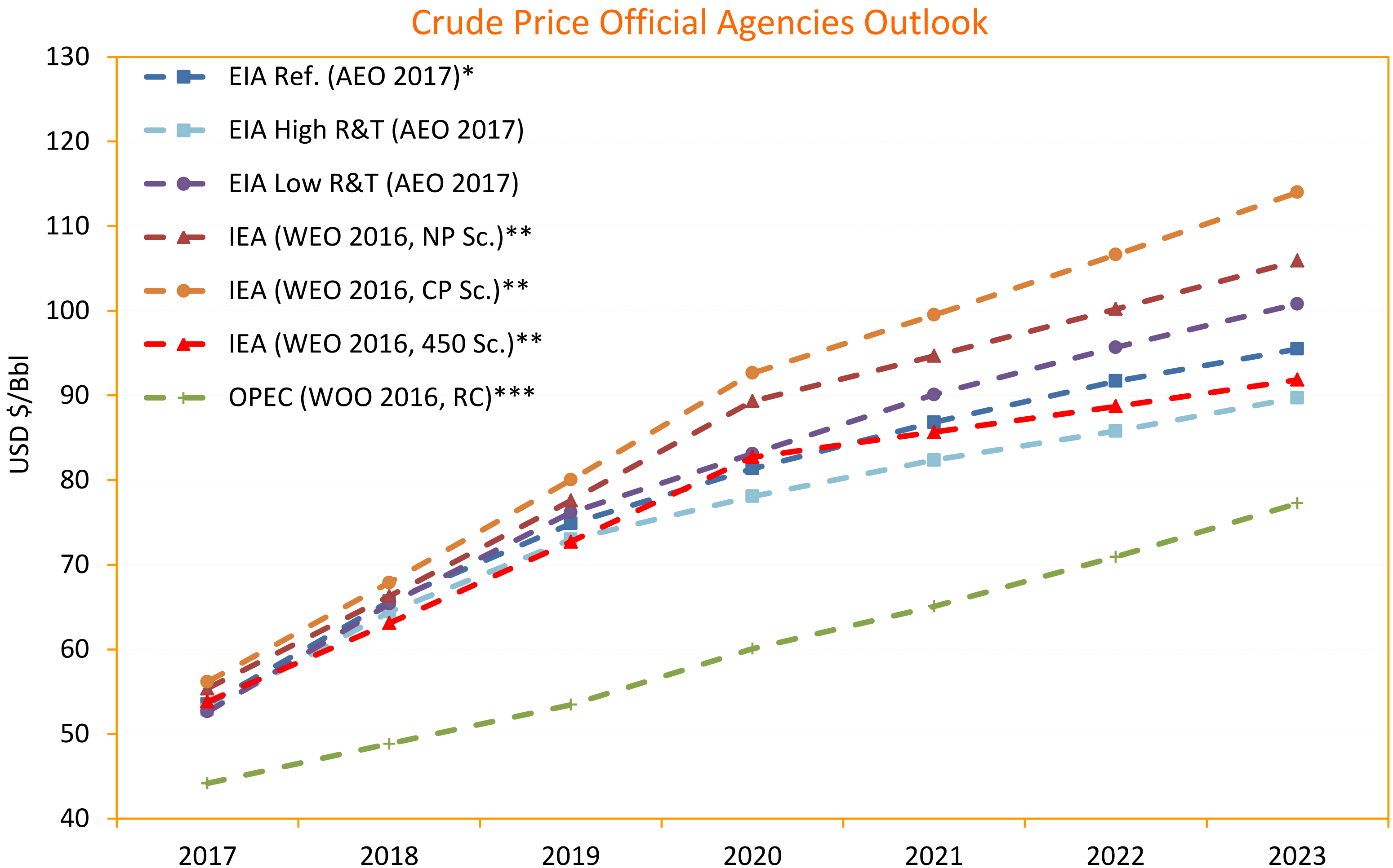
Price Forecast

Oil Price Scenarios



* Short term prices from the EIA's Short Term Energy Outlook

** Prices are calculated through lineal interpolation from IEA perspectives in the WEO2016. Nominal prices assume inflation of 2% per year from 2015. IEA forecasts OECD Crude oil import costs, which was 2.1 US$/Bbl below Brent in average in the 2006-2015 period. In this regard, 2.1 US$/Bbl is added to IEA estimation in nominal terms to obtain Brent perspectives.

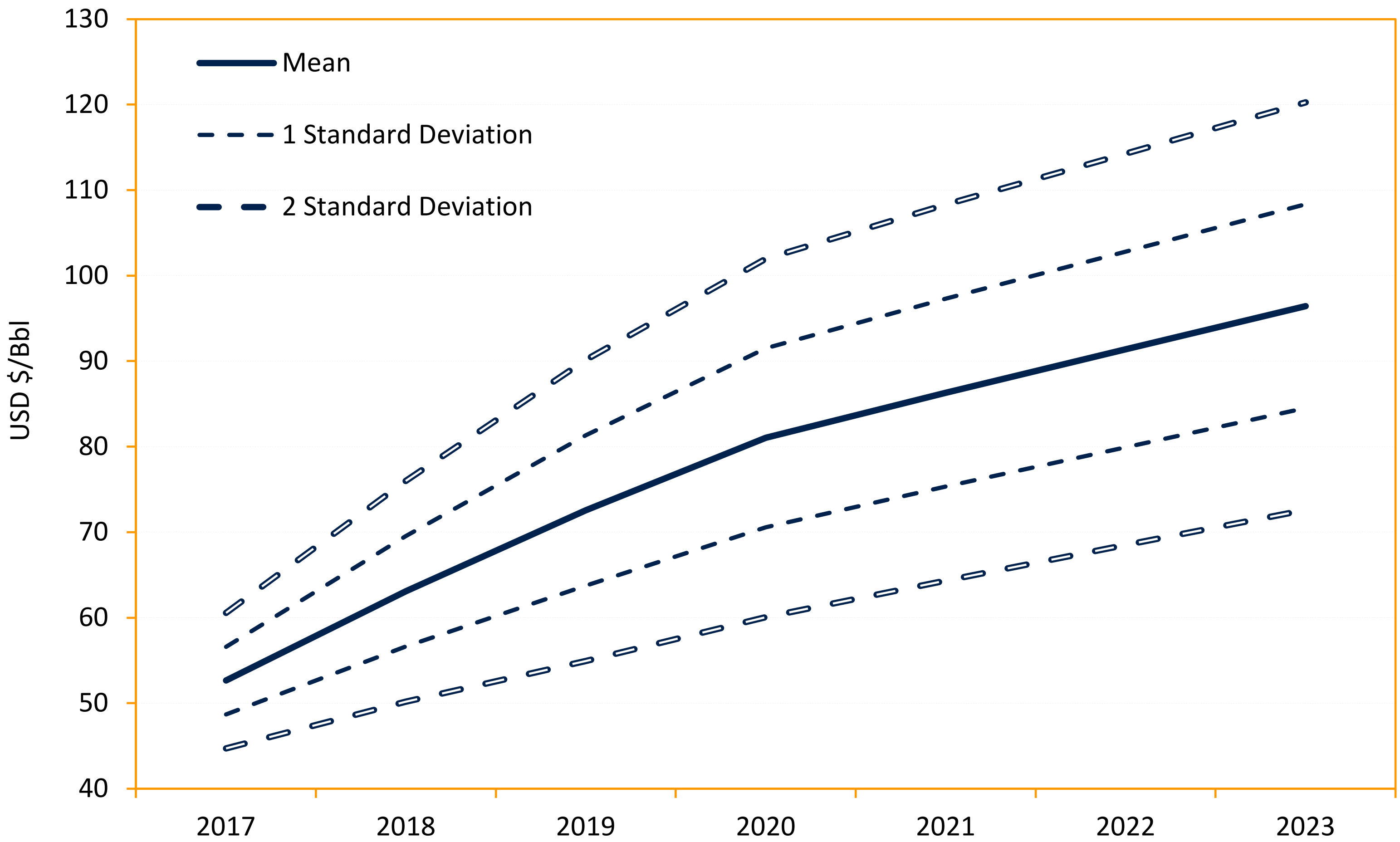
*** OPEC Reference Basket price

Source: International Energy Agency (IEA), U.S. Energy Information Administration, OPEC and Repsol Economic Research Department

Price Forecast

Oil Price Scenarios

Crude Price Official Agencies Outlook



Price Forecast

Oil Price Scenarios

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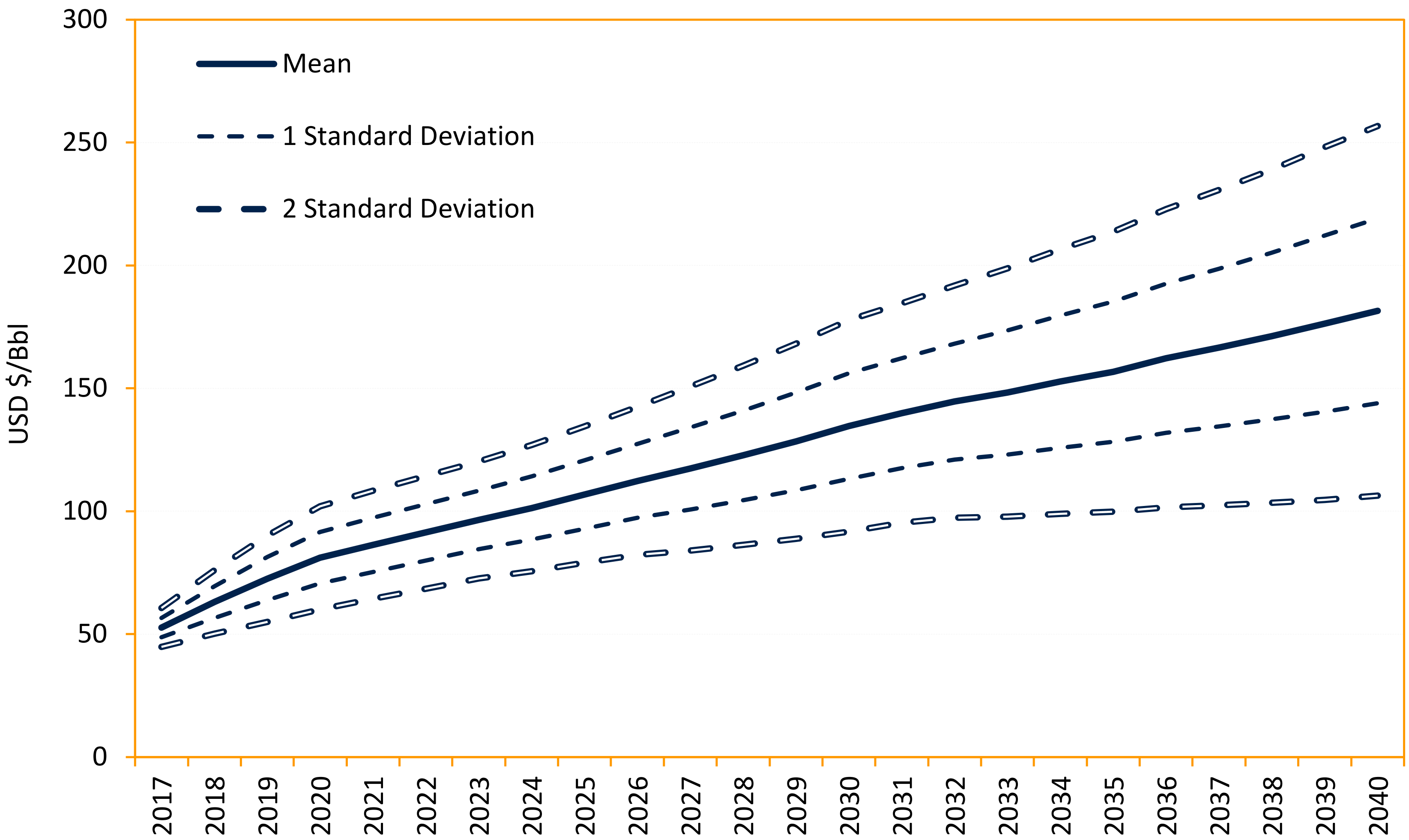

Source: International Energy Agency (IEA), U.S. Energy Information Administration, OPEC and Repsol Economic Research Department

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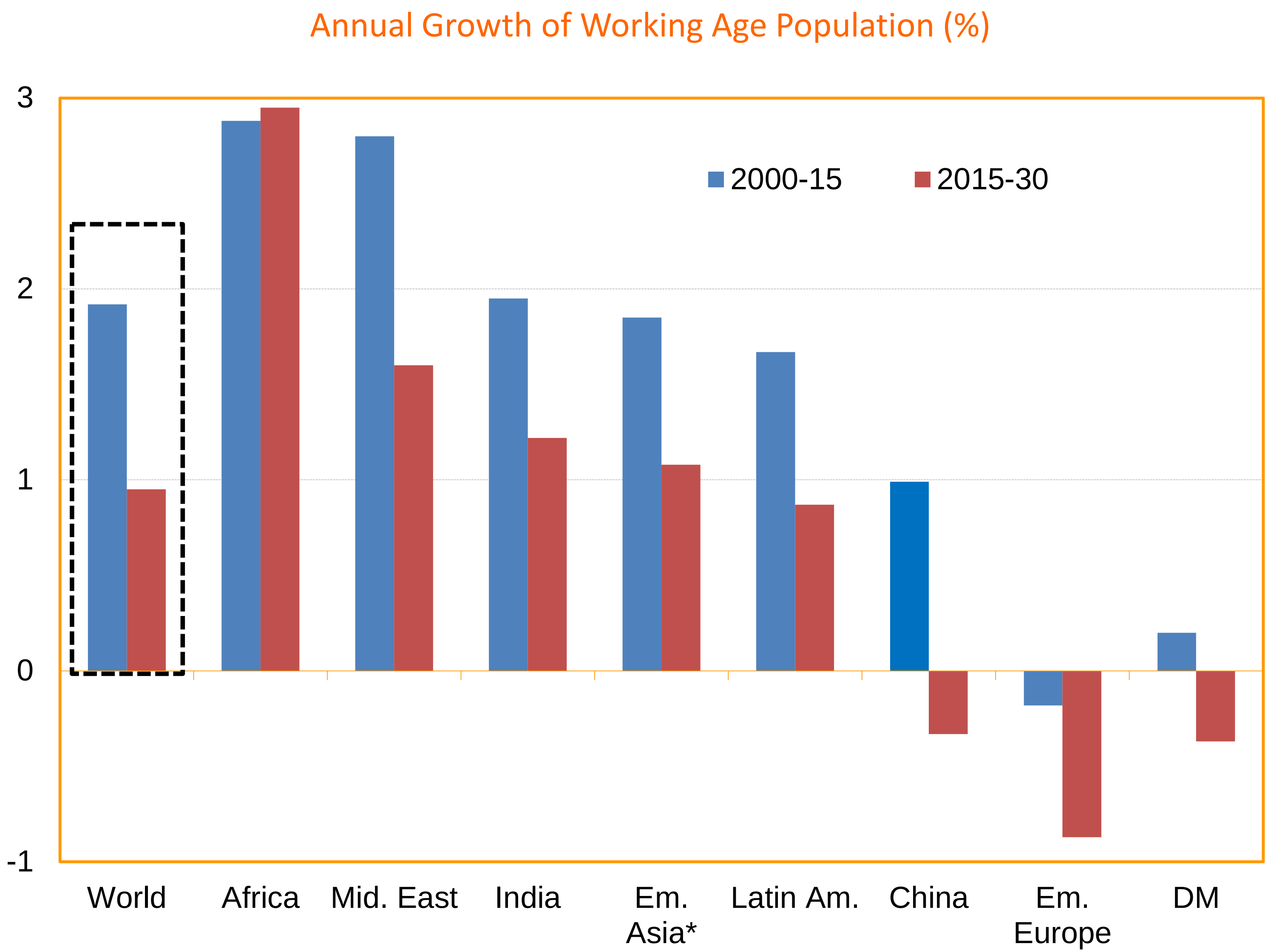
Demand Dynamics

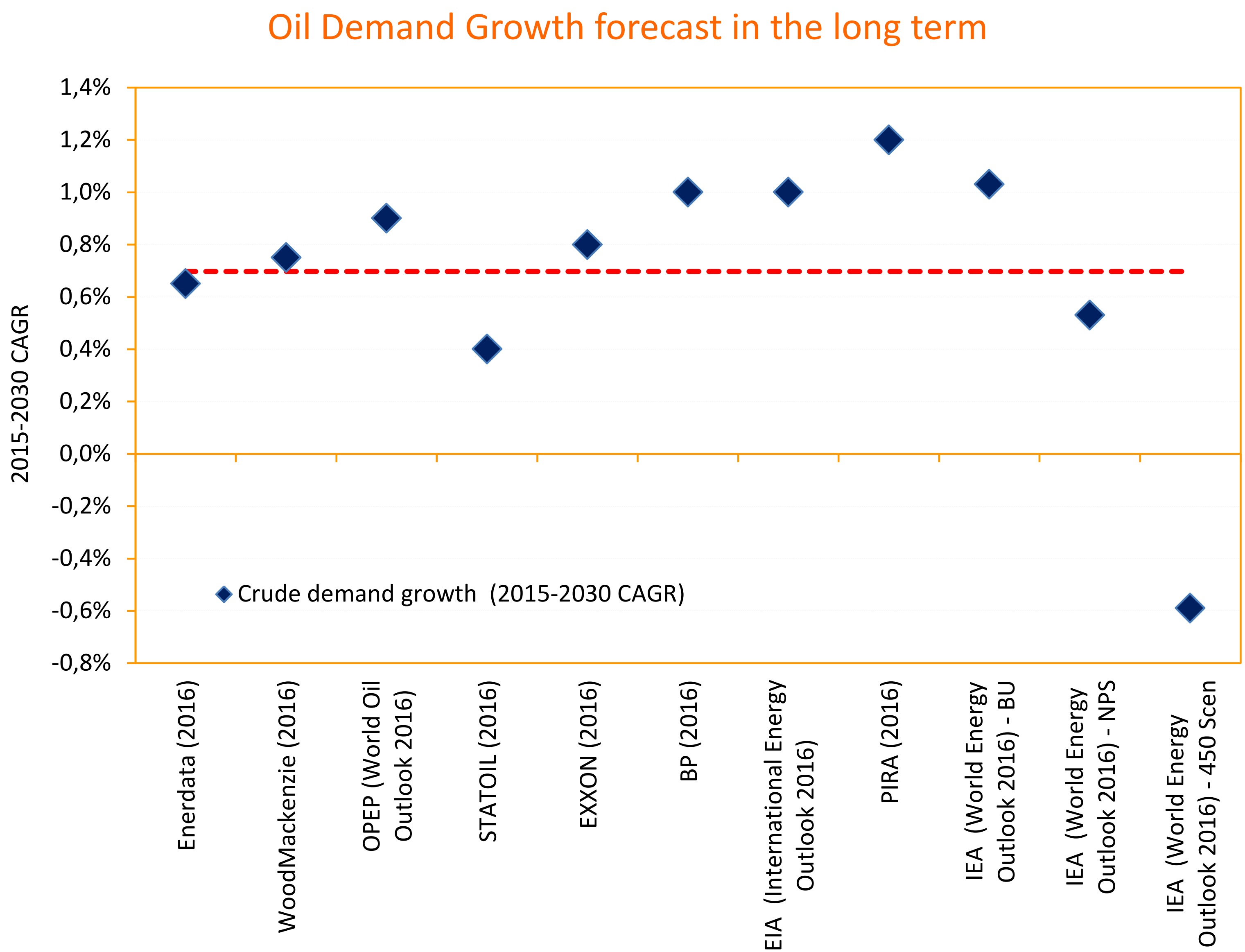
long-term population growth projection:



Source: UN and Repsol Research Department

Demand Dynamics

In the long term, oil demand growth forecasts hoover around 0,7% -1%

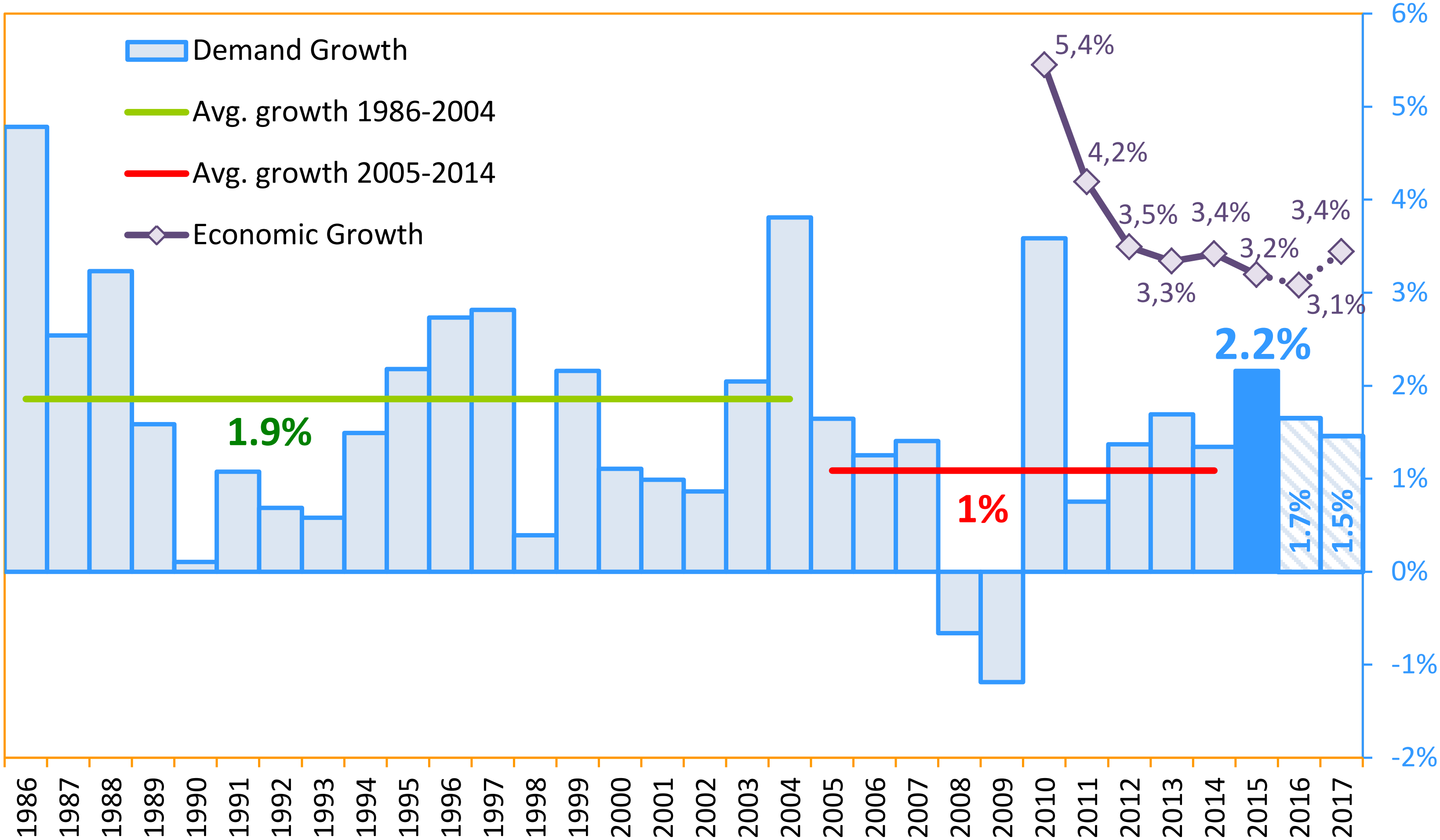


Source: Different sources and Repsol Economic Research Department

Demand Dynamics

Demand growth is outstripping last years behavior at rates comparable to the 1986-2004 avg. growth.
Lower prices → higher demand, moreover part of the increase in disposable income was used to reduce debt

Global Demand and Economic Growth → Recent Development & Perspectives



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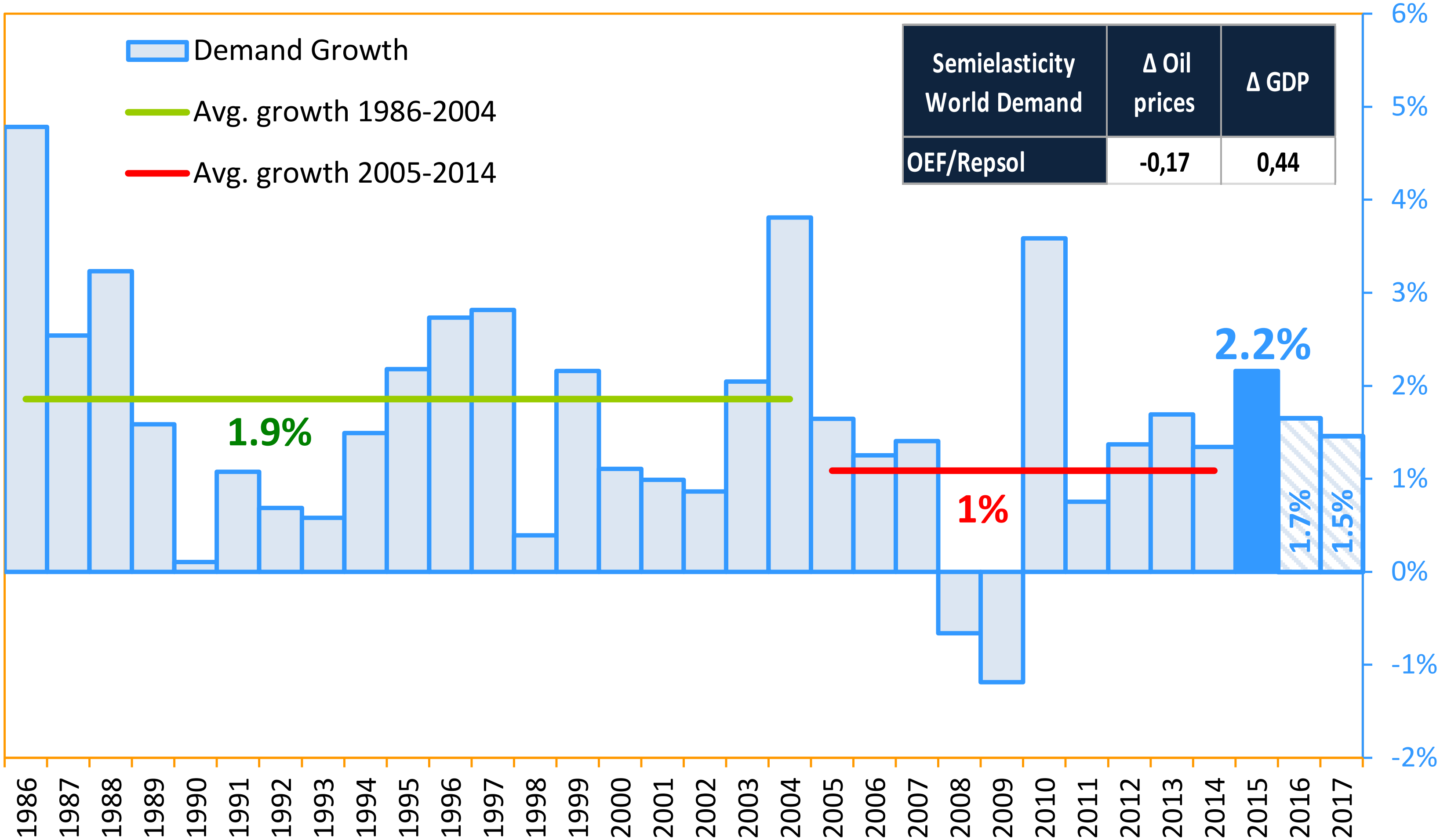
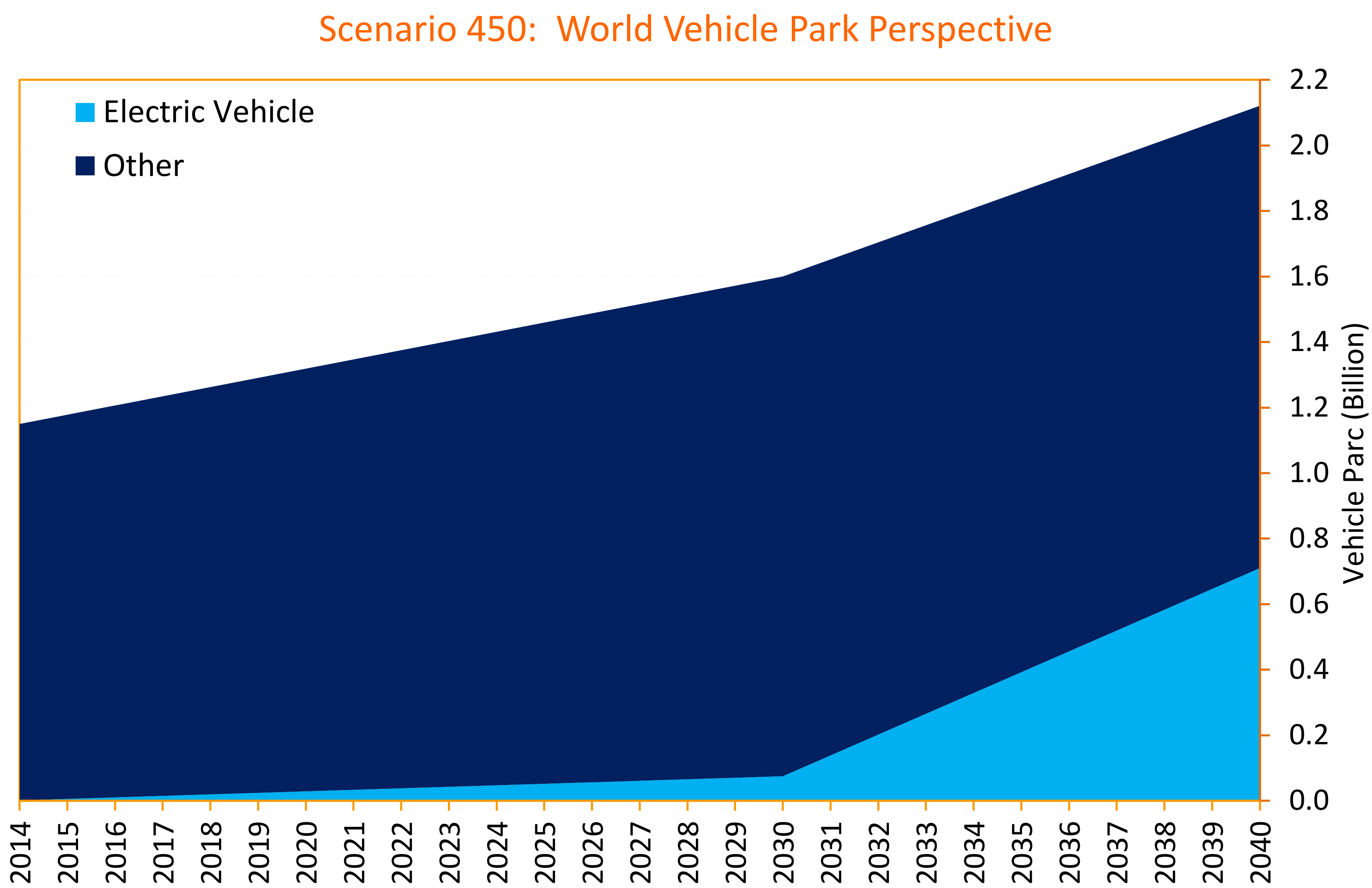


Semielasticity World Demand	Δ Oil prices	Δ GDP
OEF/Repsol	-0,17	0,44

Demand Dynamics: disruptive changes ahead?

The total World Vehicle Park will virtually double from 1200 million vehicles in 2015 to 2100 million vehicles in 2040. Electric vehicles with 0,3% share in 2015 will increase to 30% in 2040 (around 710 million vehicles)



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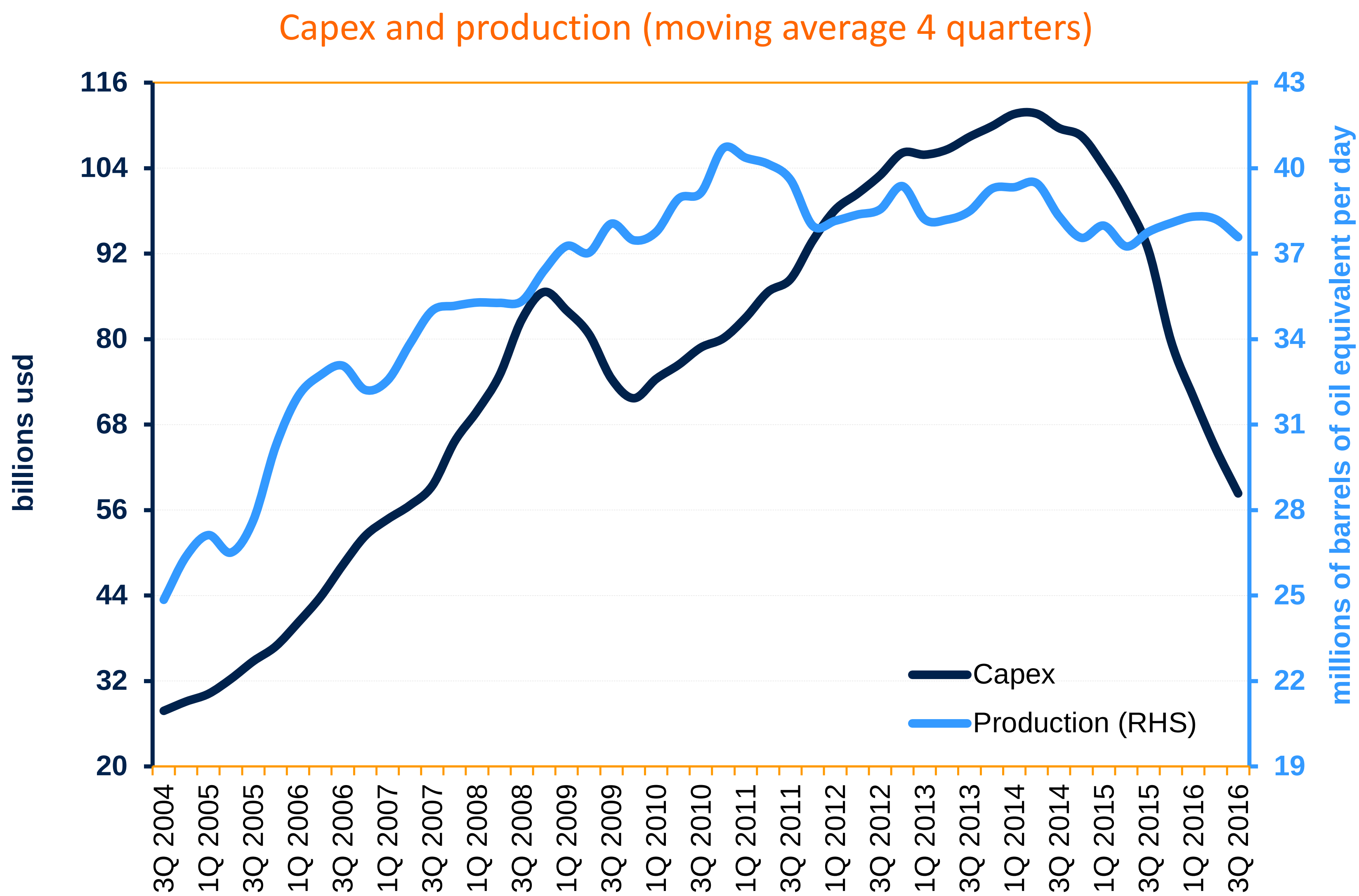
Supply Dynamics: integrated oil companies

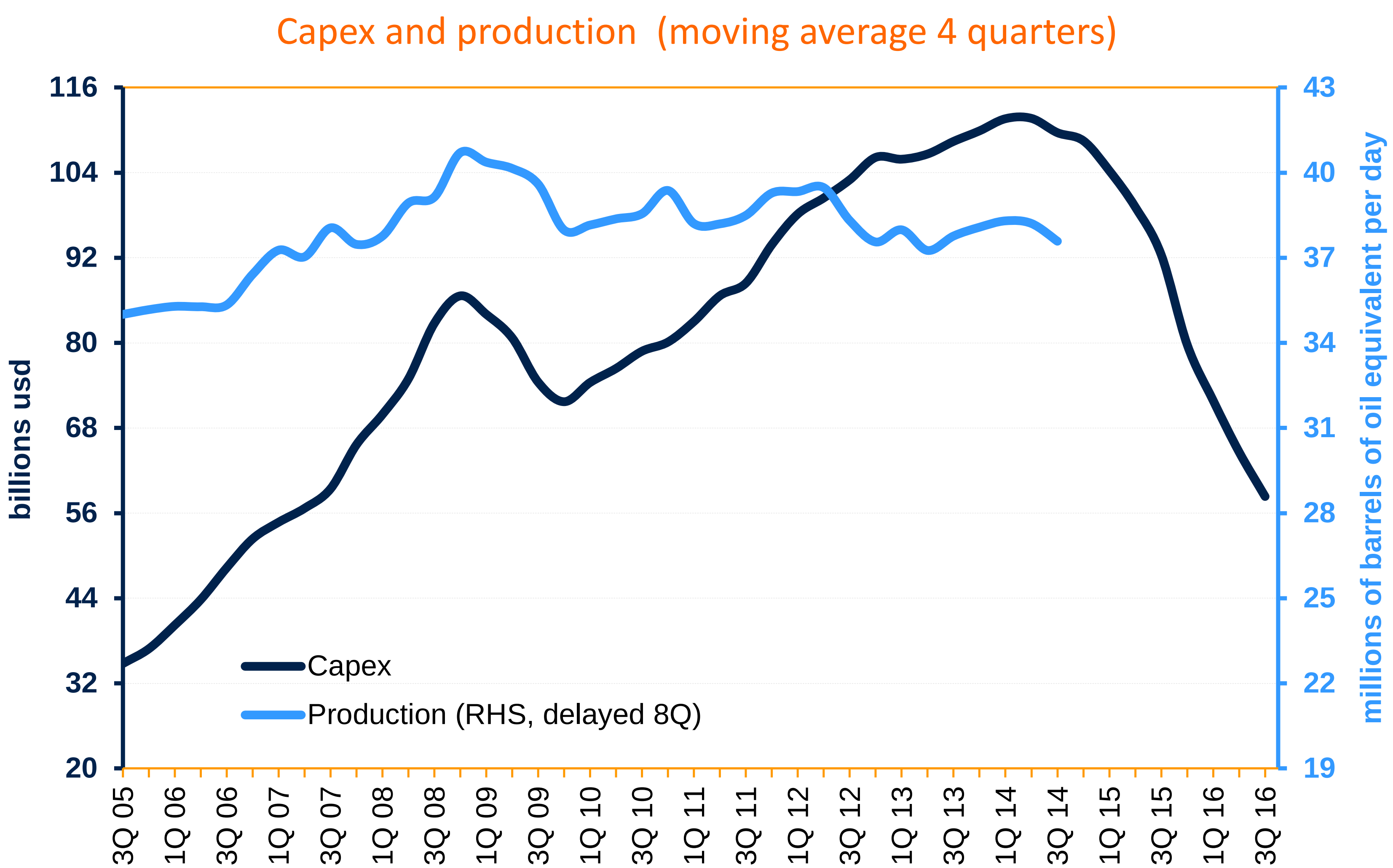
Companies “Top 42” Capex & Production quarterly data



Source: Bloomberg and Repsol Economic Research Department

Supply Dynamics: integrated oil companies

Companies "Top 42" Capex & Production quarterly data. (Lagging production 8 Q)



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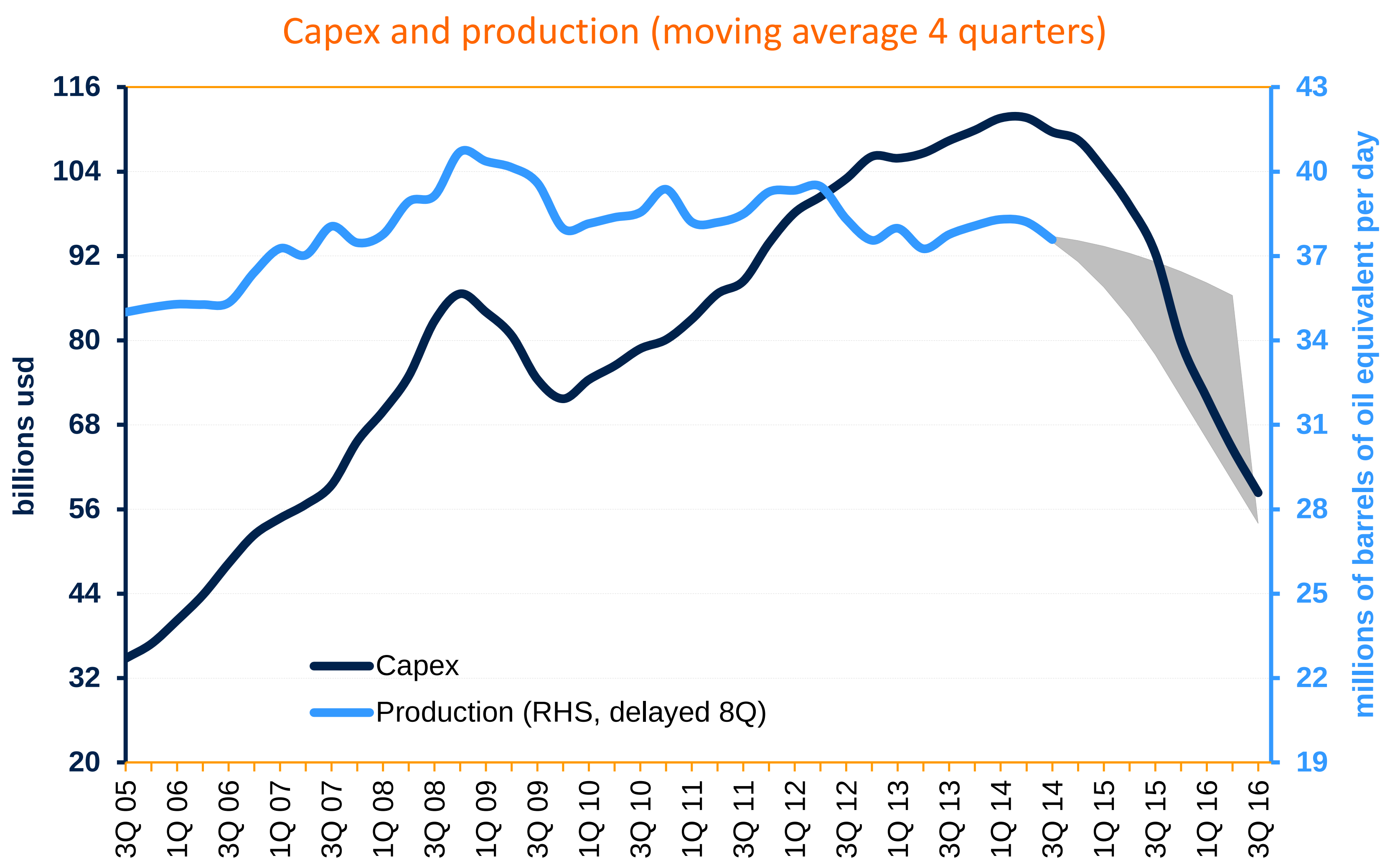

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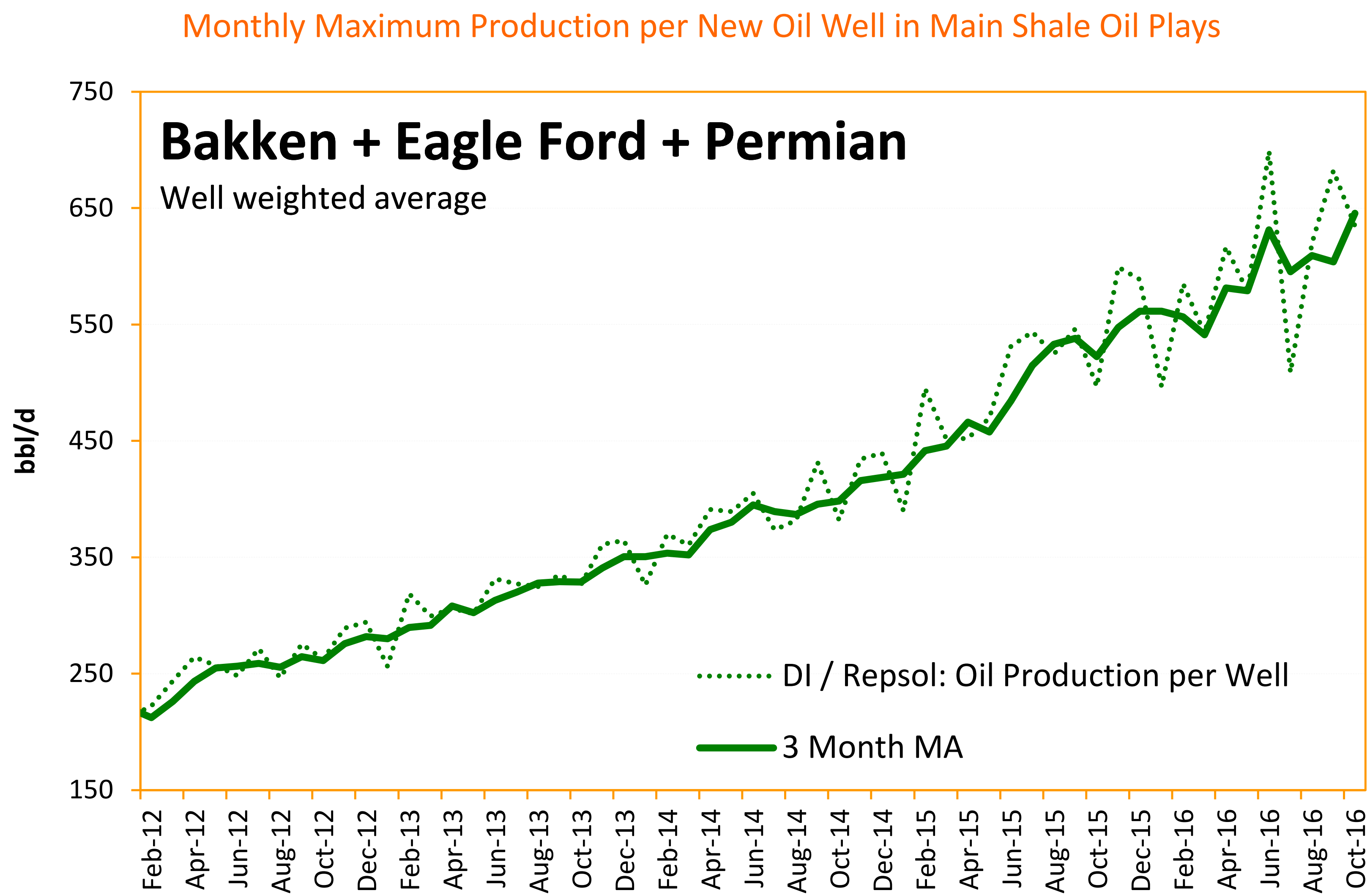
Supply Dynamics: Unconventional in the U.S.

Production per well has increased steadely ,considering the main oil U.S. plays aggregation



Supply Dynamics: Unconventional in the U.S.

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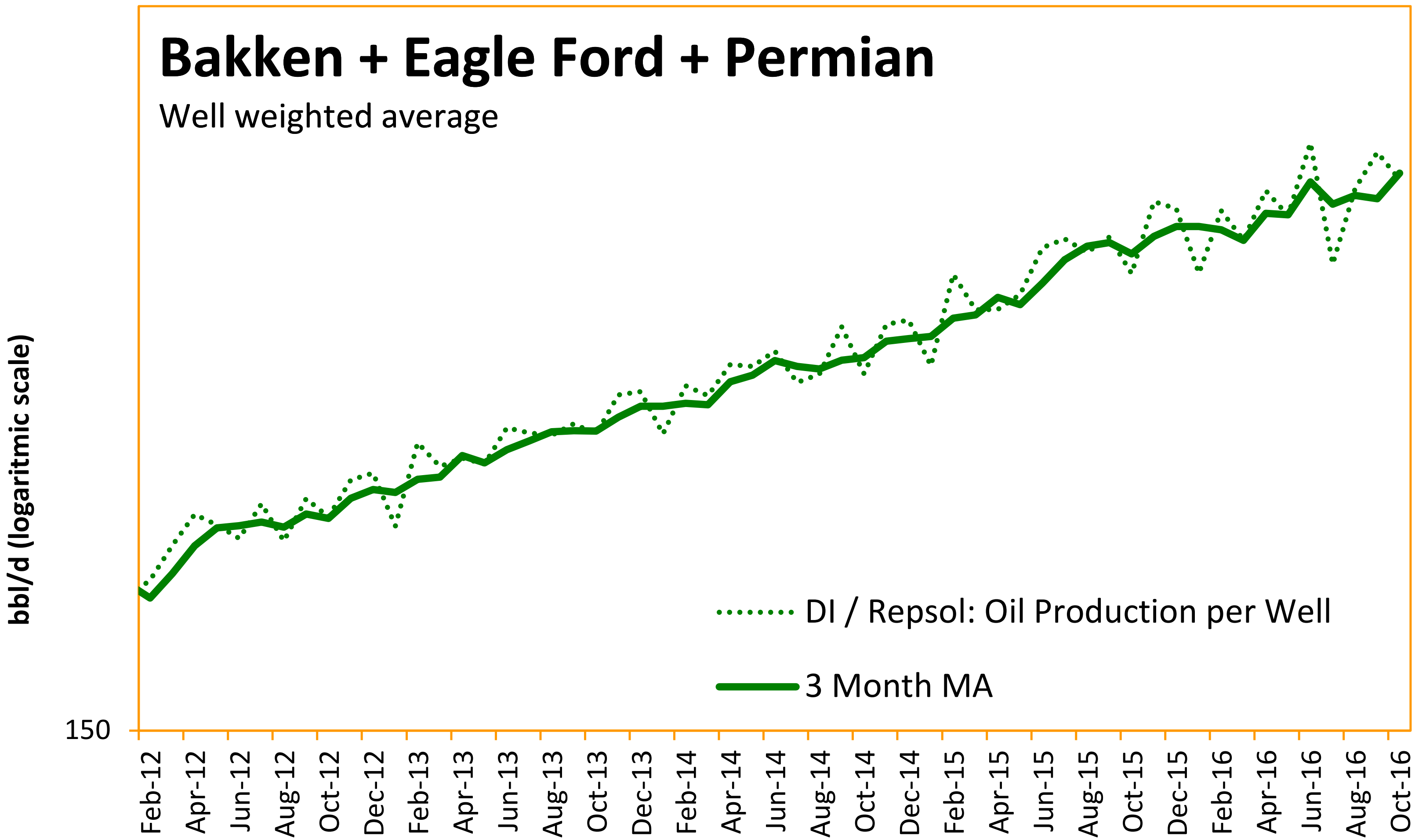
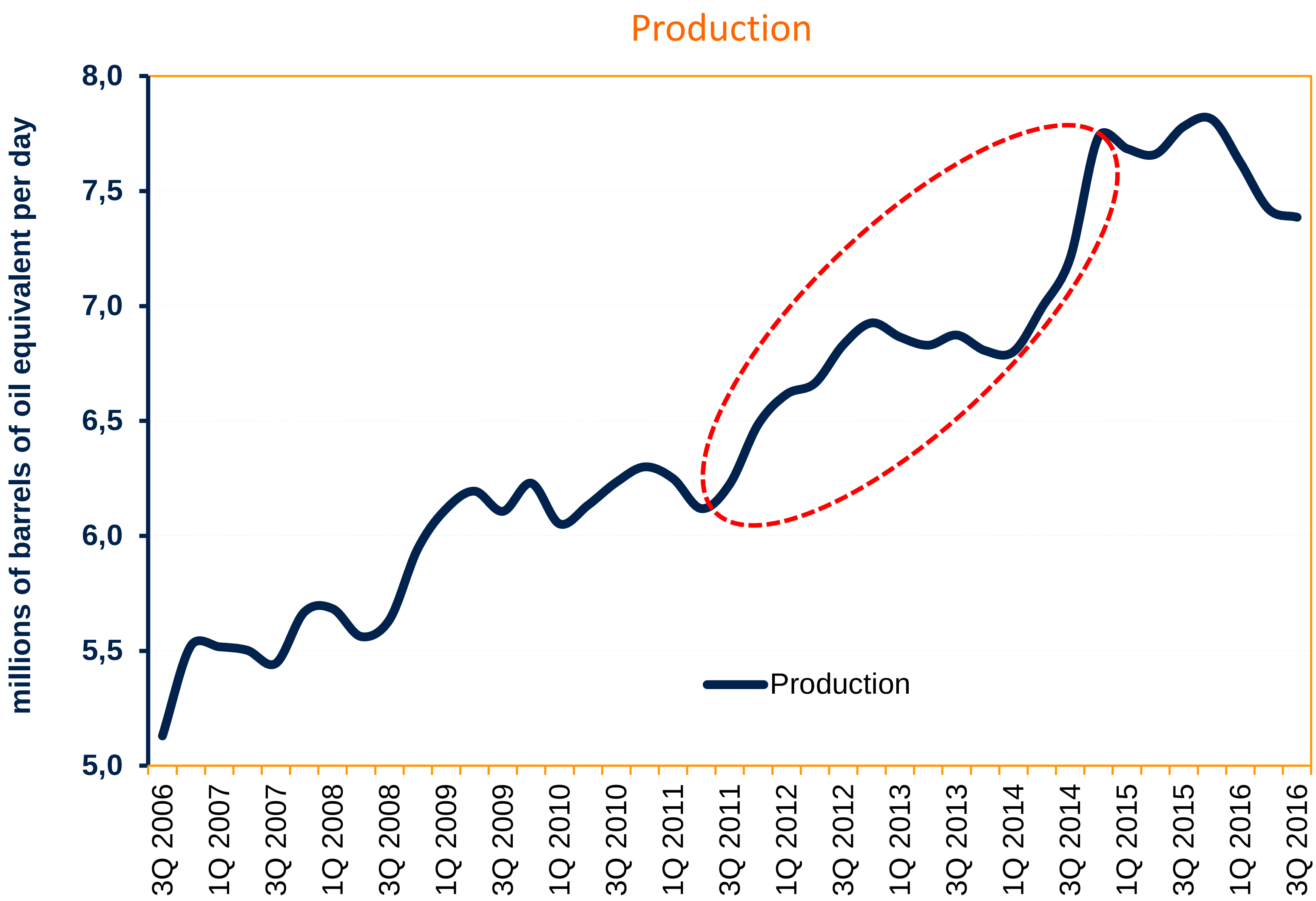
Monthly Maximum Production per New Oil Well in Main Shale Oil Plays



Supply Dynamics: Unconventional in the US. Independent Oil Companies

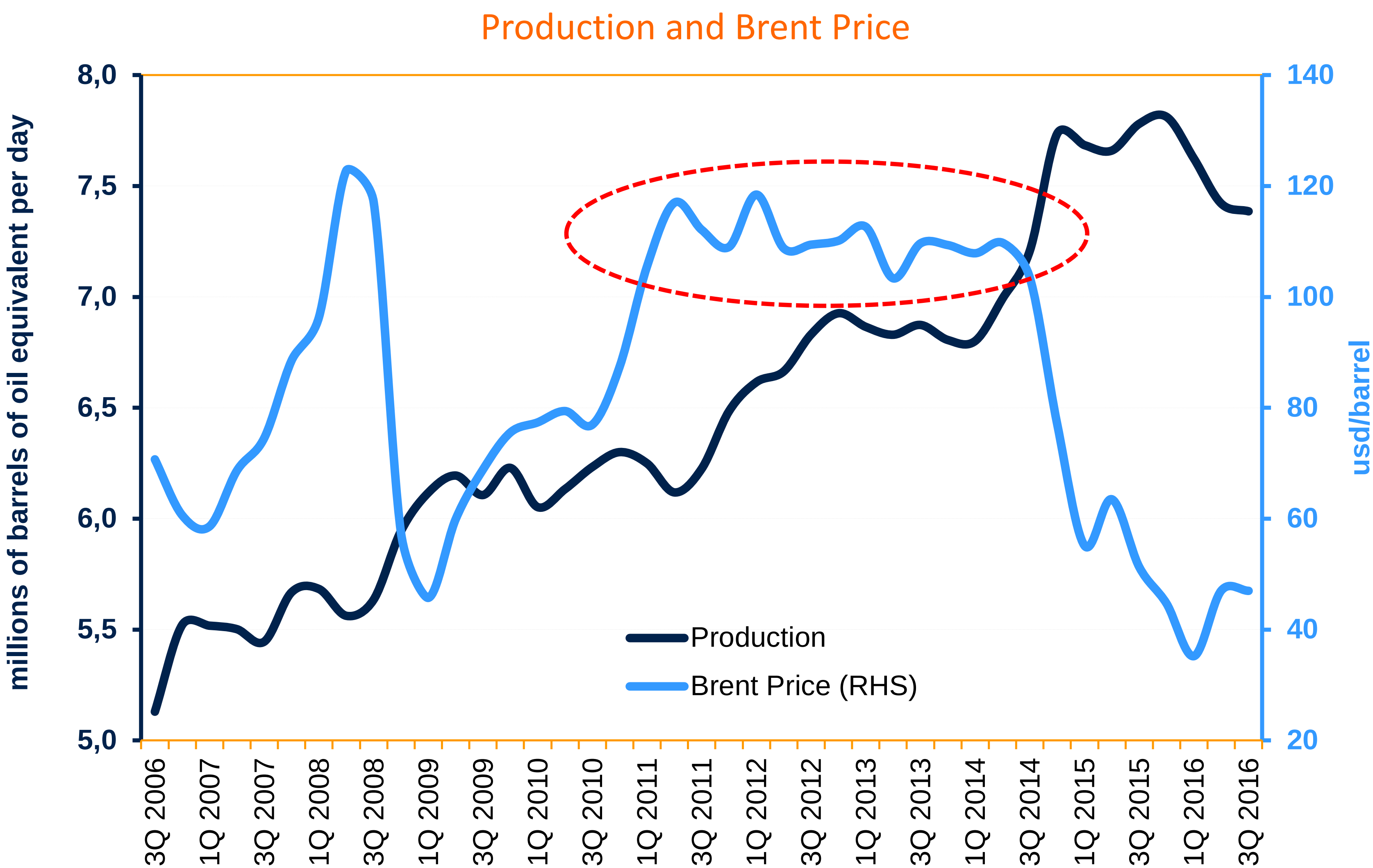
Production growth during the frack revolution



Source: Bloomberg and Repsol Economic Research Department

Supply Dynamics: Independent Oil

Production growth during the frack revolution demanded high and stable prices



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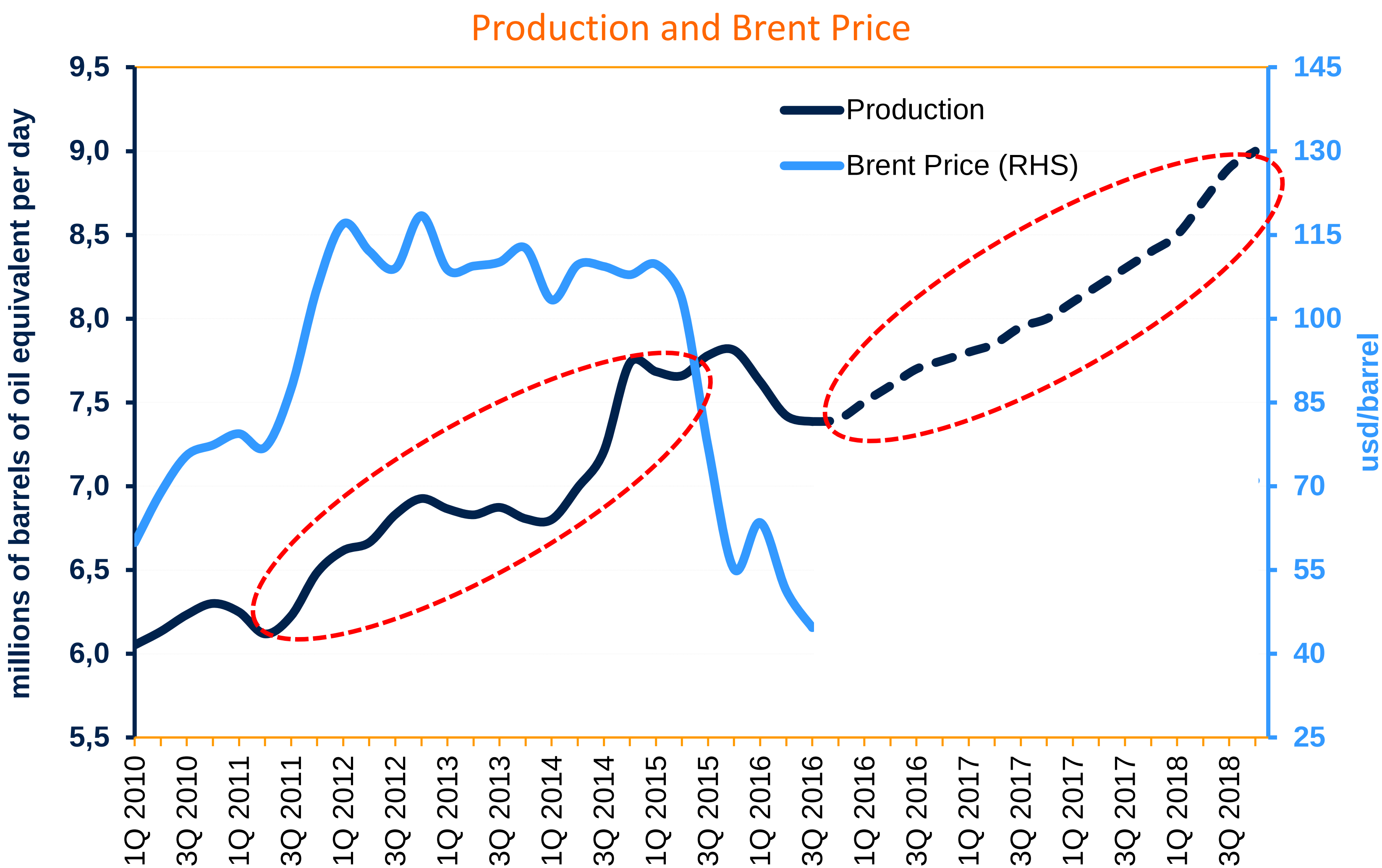
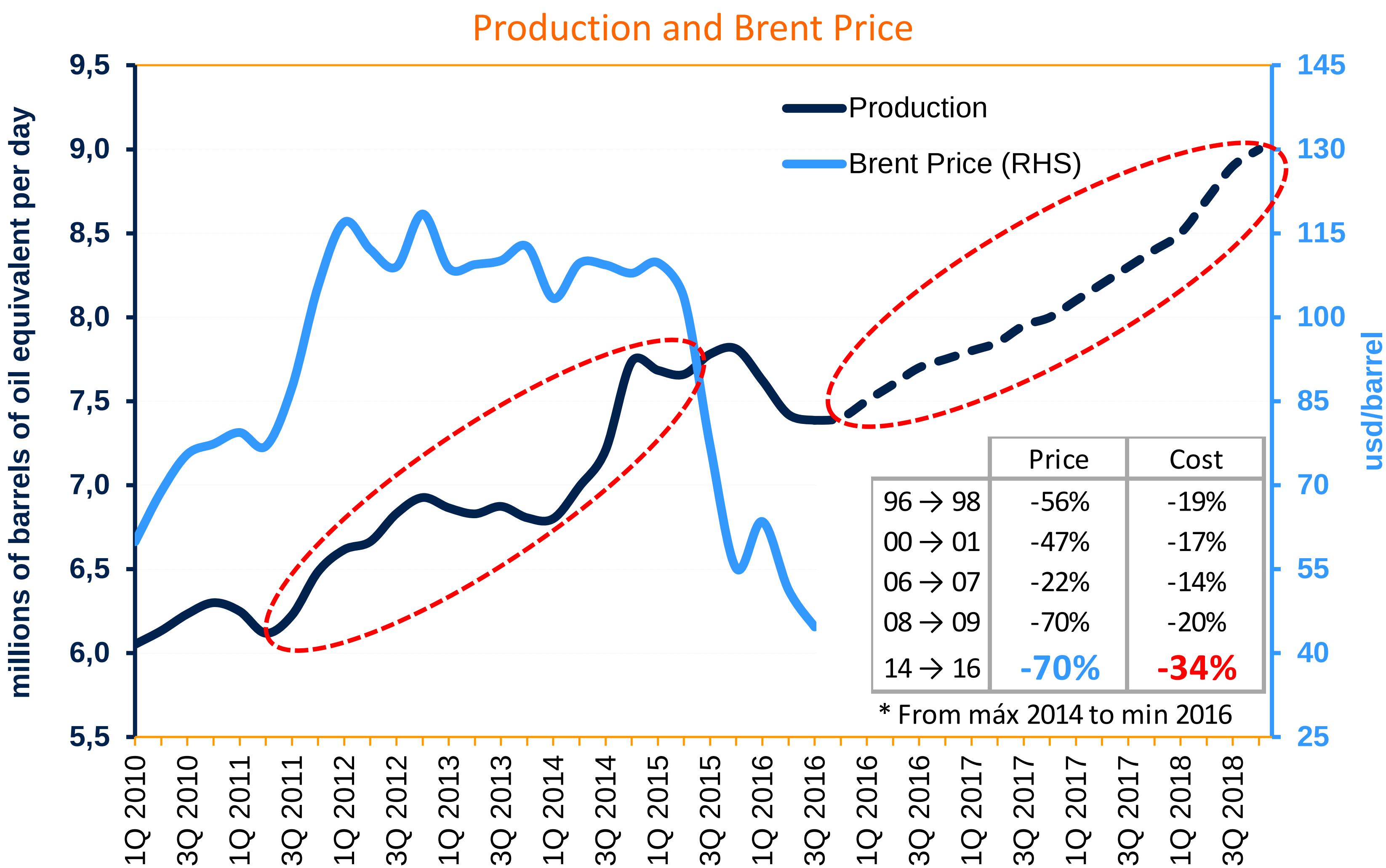
Supply Dynamics: Independent Oil

To come back to past production growth we will need high prices.. but…



Supply Dynamics: Independent Oil

To come back to past production growth we will need high prices.. But Due to cost reductions

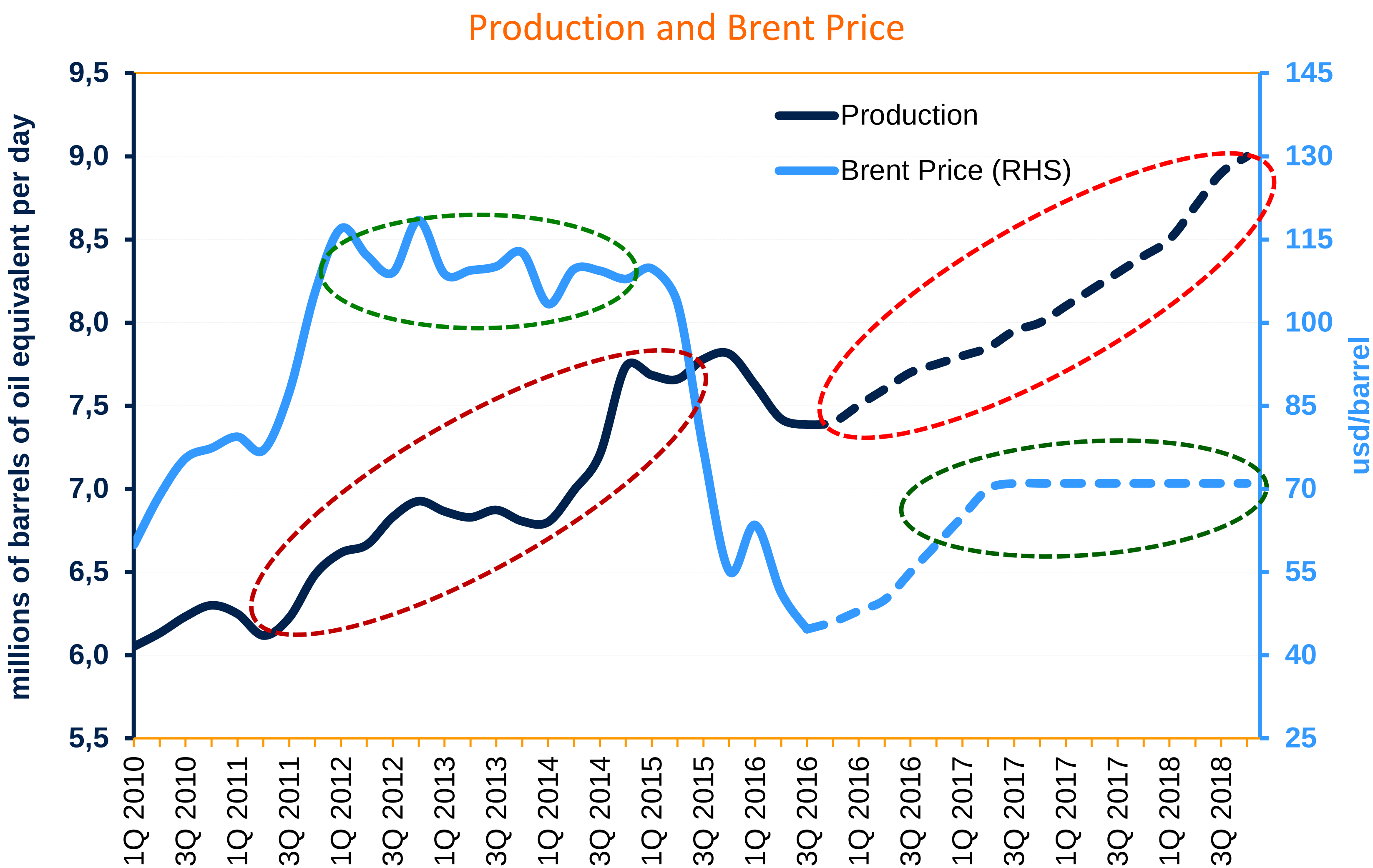


	Price	Cost
96 → 98	-56%	-19%
00 → 01	-47%	-17%
06 → 07	-22%	-14%
08 → 09	-70%	-20%
14 → 16	**-70%**	**-34%**

* From máx 2014 to min 2016

Supply Dynamics: Independent Oil

To come back to past production growth, due to cost reduction we will need other prices. The rate of growth in productivity per well remains stable….



Source: Bloomberg and Repsol Economic Research Department

Supply Dynamics: Independent Oil

However, E&P costs and oil prices co-move. And some of the reduction in costs should be considered cyclical no STRUCTURAL

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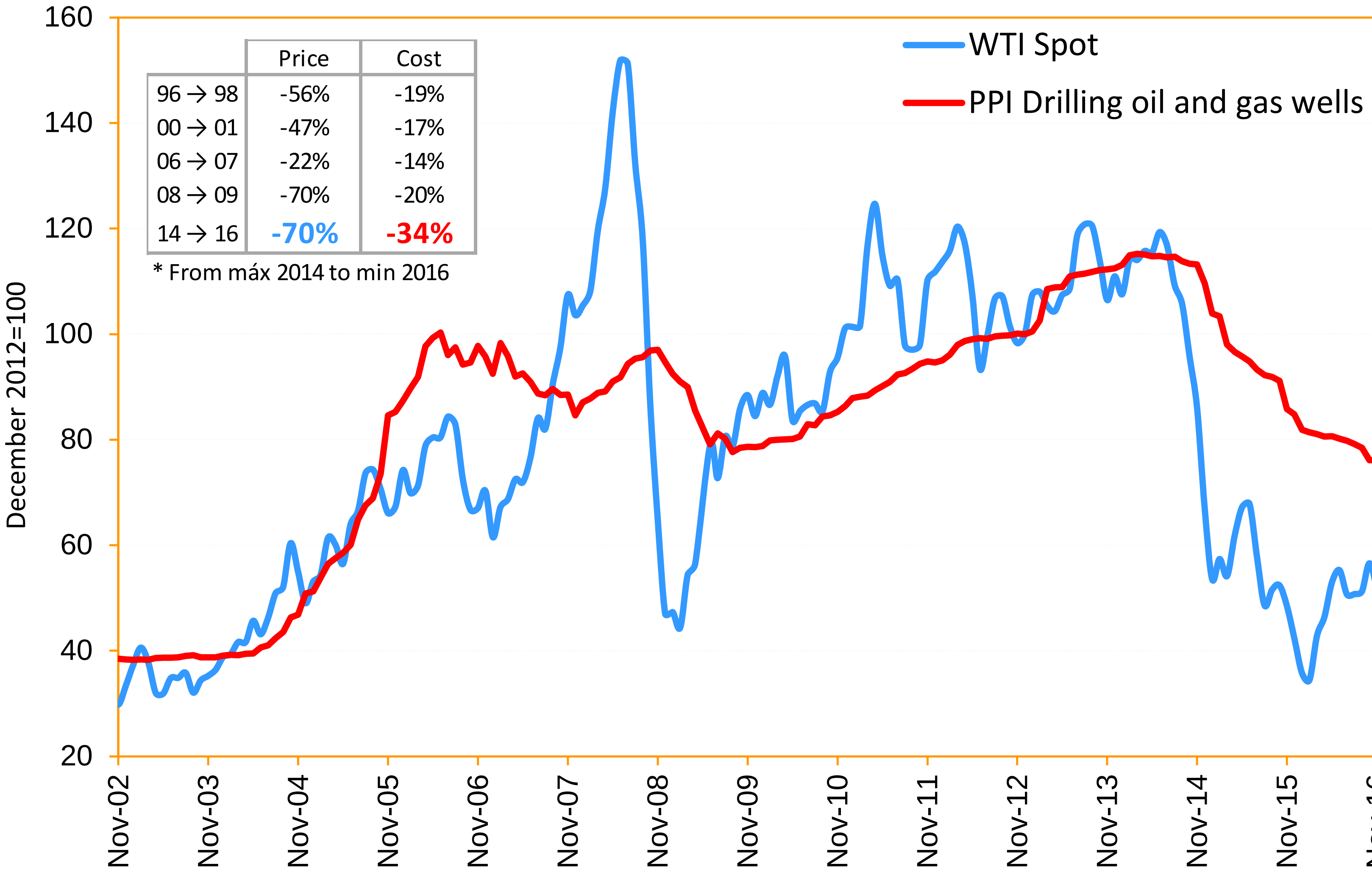
Monthly Crude Oil Price and PPI Drilling Oil and Gas Wells



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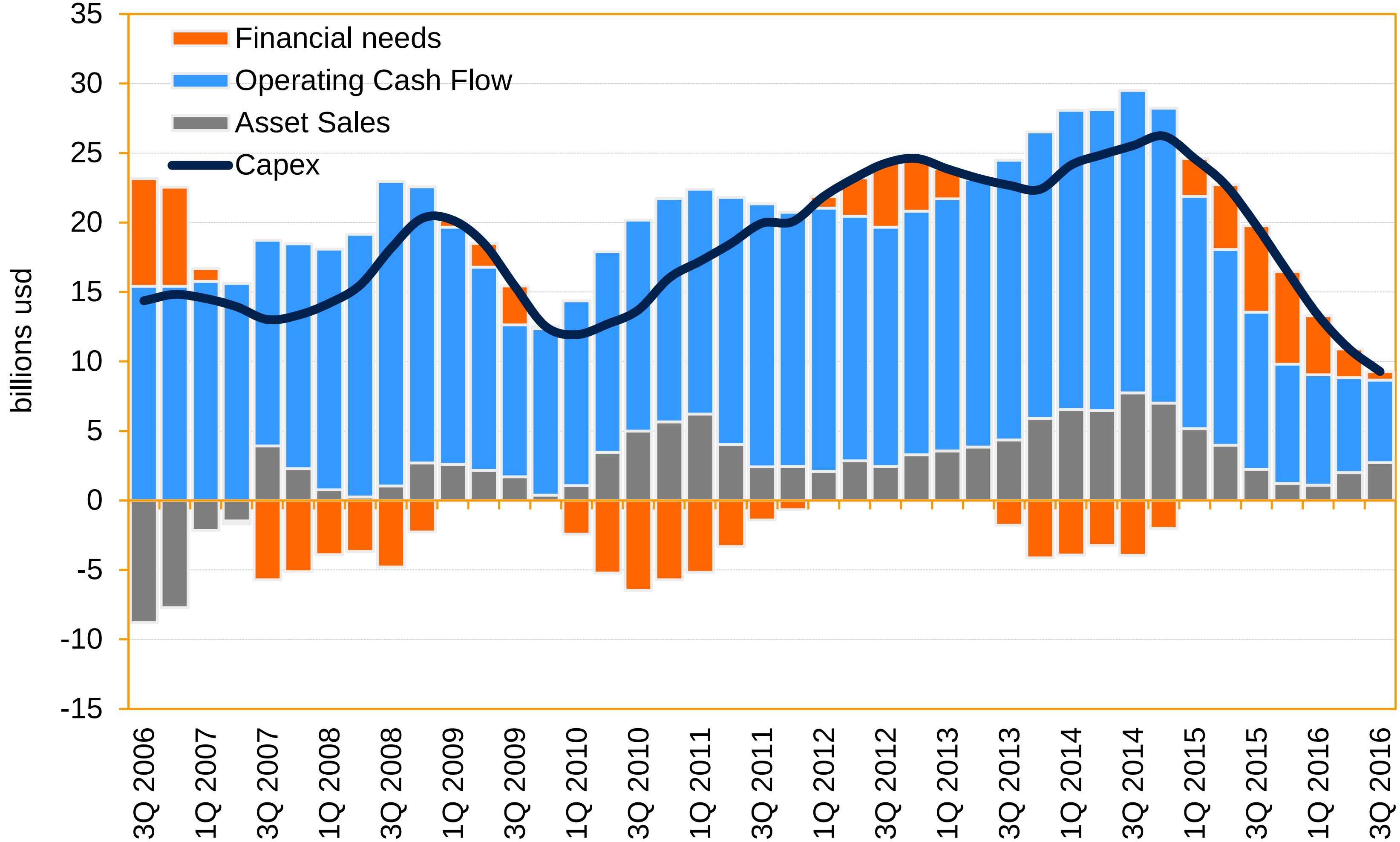
Source: Thomson Reuters and Repsol Economic Research Department

Supply Dynamics: Unconventional in the U.S.. Independent Comp.

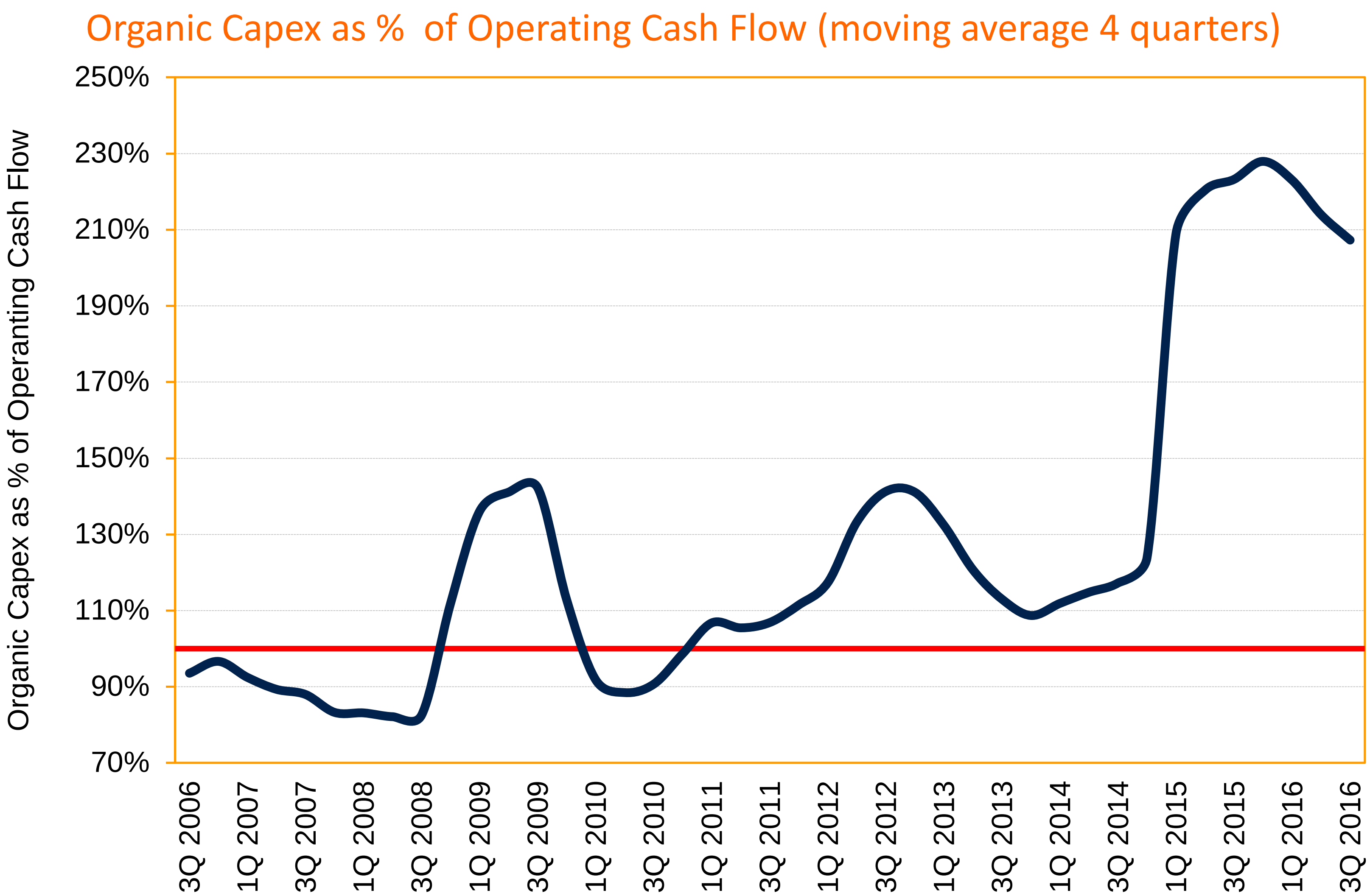
Financing needs: divestments and Operating cash flows of independent oil companies

Capex, Operation Cash Flow, Asset Sales and Financial needs
(moving average 4 quarters)



Supply Dynamics: Independent oil and unconventional in the U.S.

The long term sustainability: CAPEX and Operating CF

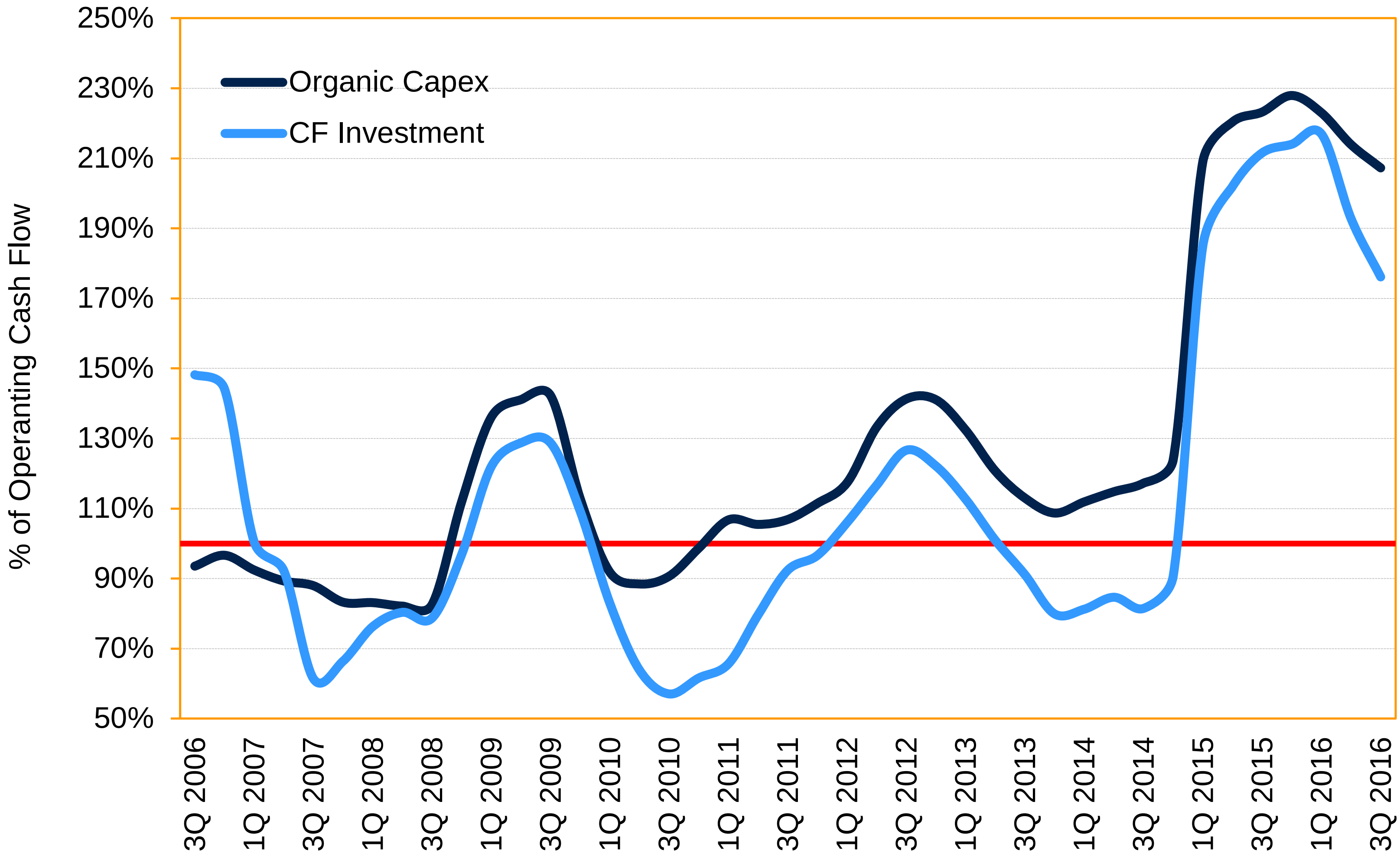


Source: Bloomberg and Repsol Economic Research Department

Company Analysis: Independent Oil

The real sustainability: Operating Cash Flow and CF from Investment

Organic Capex and CF from Investment as % of Operating Cash Flow (moving average 4 quarters)



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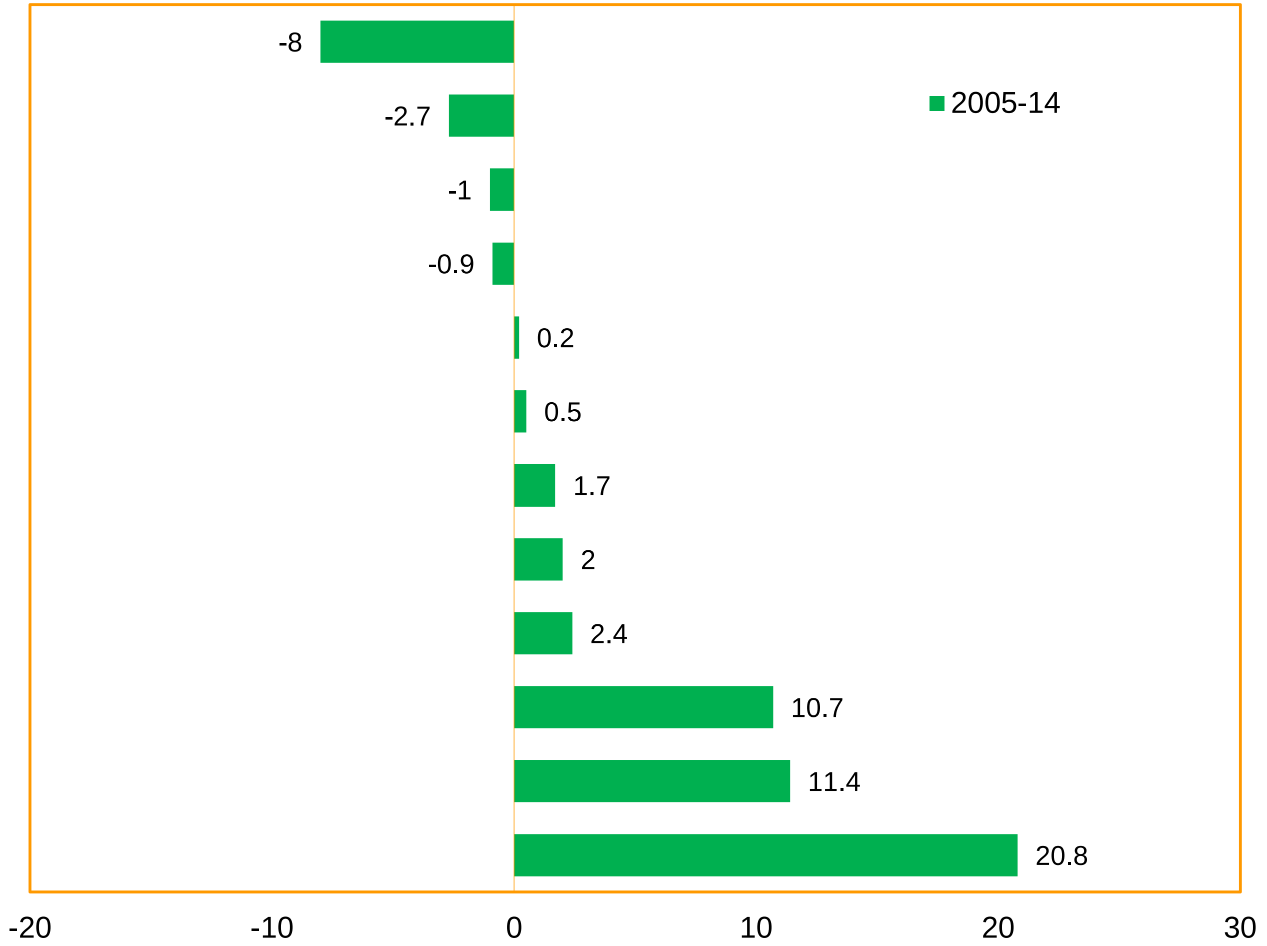
Supply Dynamics: OPEC and net oil exporters

The fiscal accounts are the drivers

Public Balance (%GDP), average 2005-14 and 2016



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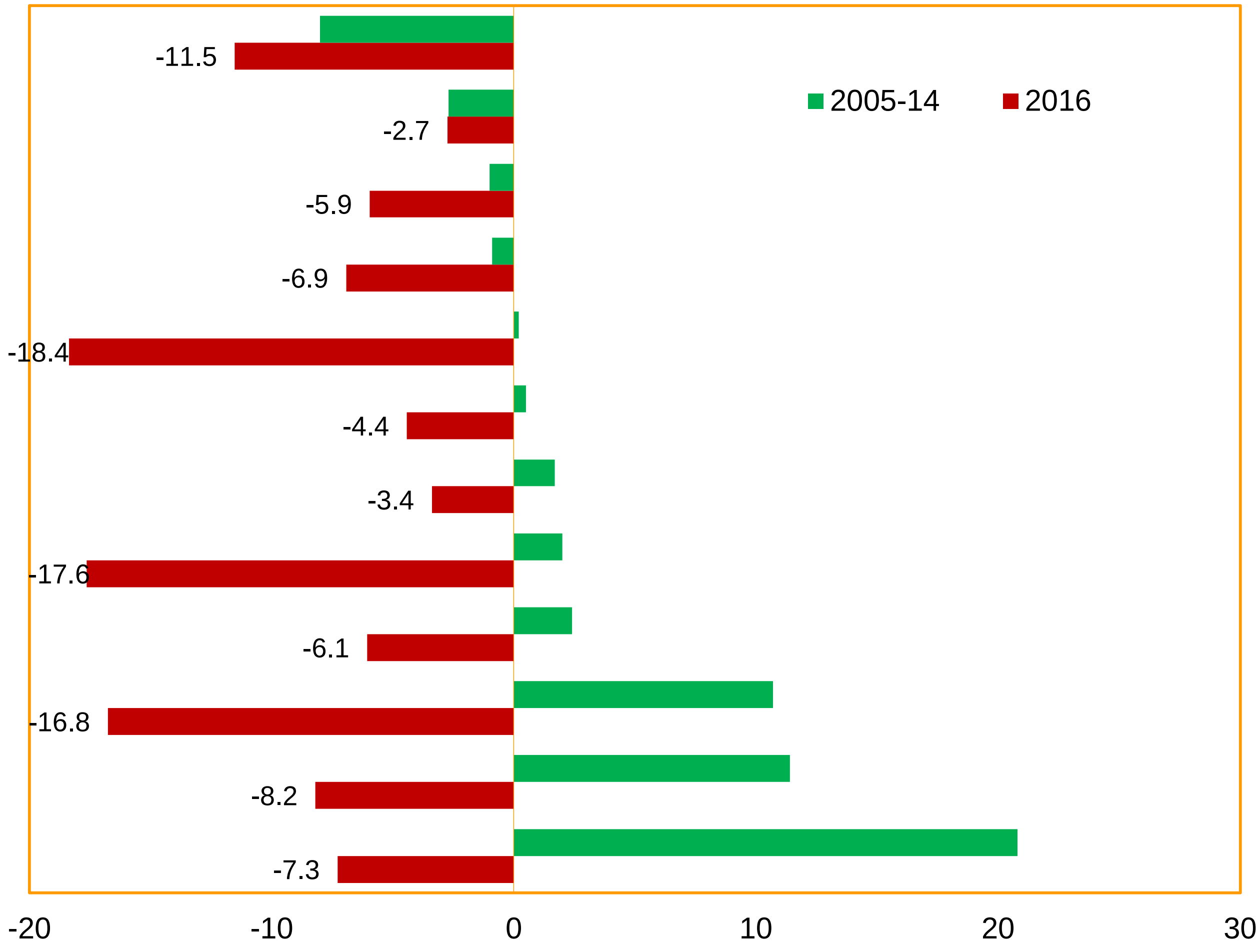

Source: Oxford Economics and Repsol Research Department

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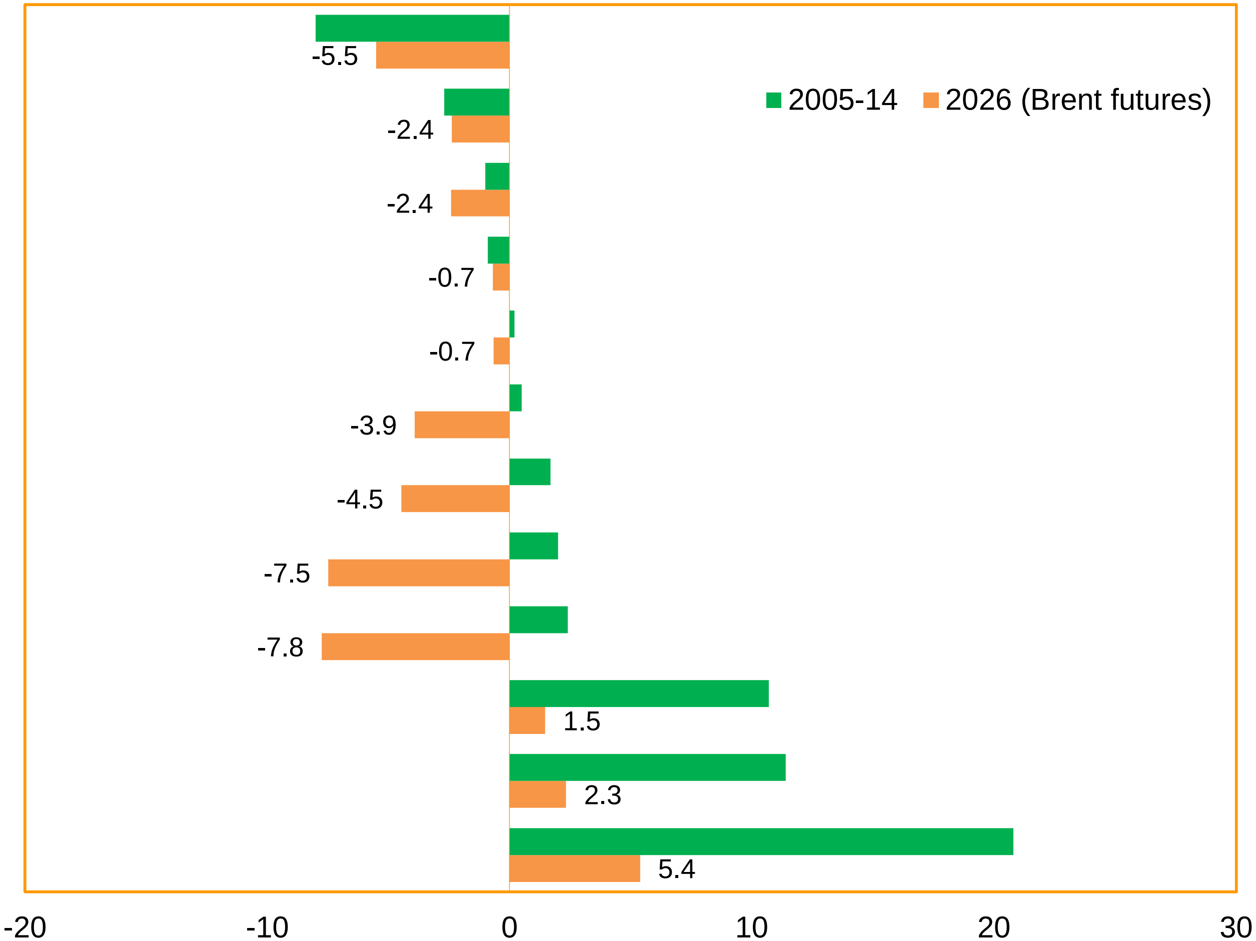
Public Balance (%GDP), average 2005-14 and 2026 (Brent Futures price)



	Brent Price Futures
2017	56.5
2018	56.5
2019	56.0
2020	56.0
2021	57.0
2022	57.5
2023	58.5
2024	59.5
2025	60.5
2026	61.5

Source: Oxford Economics and Repsol Research Department

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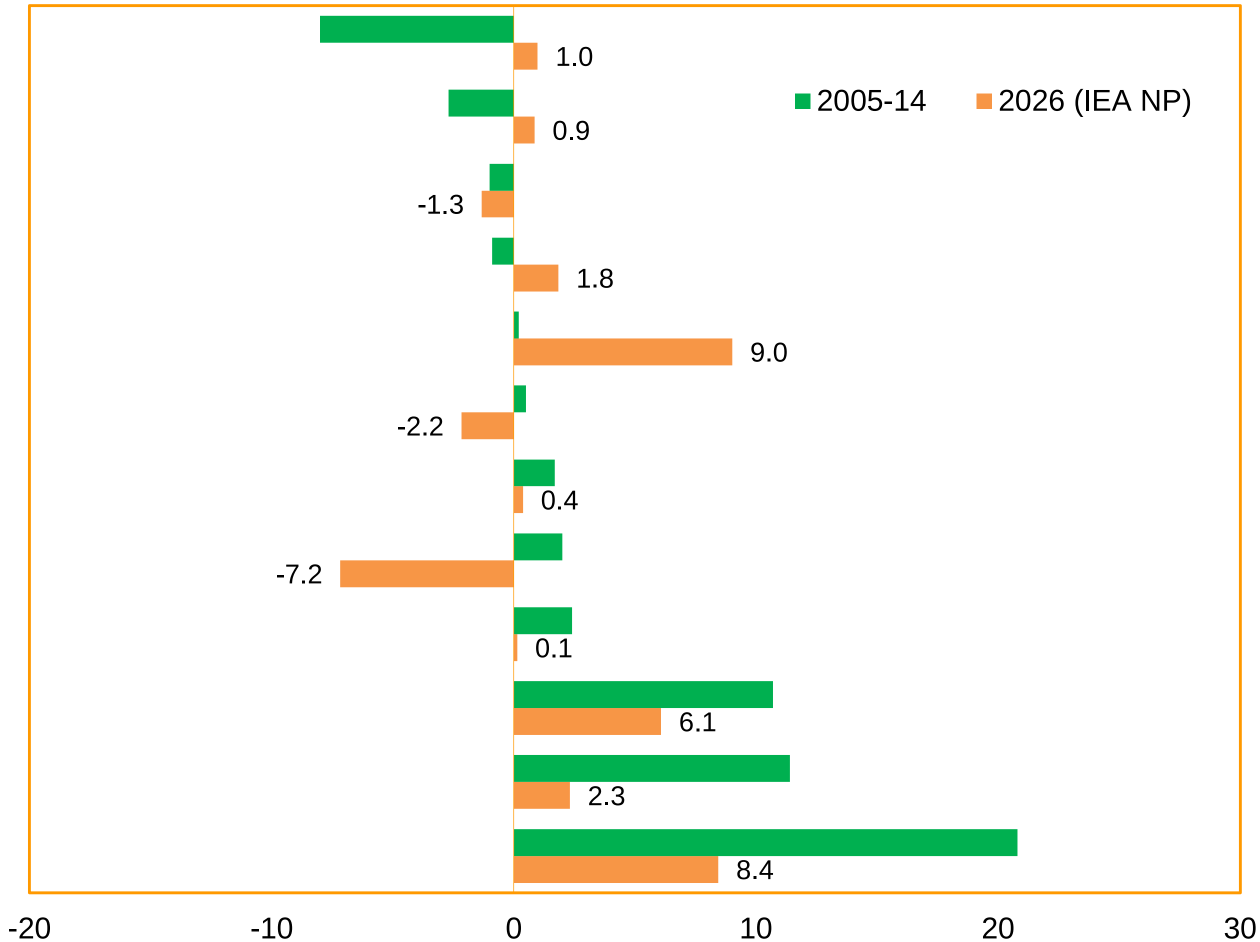
Public Balance (%GDP), average 2005-14 and 2026 (Brent IEA NP Scenario Price)



	Brent Price IEA NP
2017	55.4
2018	66.3
2019	77.6
2020	89.3
2021	94.7
2022	100.2
2023	105.9
2024	108.0
2025	110.5
2026	112.8

Source: Oxford Economics and Repsol Research Department

Main messages

- Uncertain oil price outlook, but most forecaster agree on an increasing oil price path
- Demand data support high sensitivity to prices and continuous growth
- Conventional production depend on investments and investment on operating cash flows and cash flows on prices, these facts implies higher prices are needed
- Unconventional revolution is marching on as the same productivity speed than in the past. It will need higher prices and also be aware of the cyclality of cost evolution
- Finally, most oil exporters have an incentive to improve its finals account through production agreements

Thank you