Perils of convergence

Aligned forecasts not risk-free or revision-proof

IEA & OPEC revisions of world oil demand growth projections for 2012
Game changers or risk factors?

- Mid-term IEA forecasts a “new oil map”
- OPEC spare capacity seen back at 10-year highs
- Forecasts hinges on a handful of game changers:
  - N. American supply revolution
  - Non-OECD demand shift but China slowdown
  - Iraq supply takeoff
- Includes key points of IEA/OPEC divergence
Global supplies increase by 9.3 mb/d

Iraq and US support growth in production

Global Liquids Growth 2011-17

<table>
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<tr>
<th>mb/d</th>
<th>Crude</th>
<th>US Light Tight Oil</th>
<th>Total</th>
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<td>7</td>
<td>3.3</td>
<td>2.5</td>
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<tr>
<td>1</td>
<td>2.5</td>
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</table>

OPEC*

Non-OPEC

Total

* OPEC crude is capacity additions.

Global Refinery processing gains included in Non-OPEC.
Americas dominates supply growth

North America increases by 4.0 mb/d from 2011-17

From 2013-2017, growth expected to average 860 kb/d
US LTO up 2.5 mb/d by 2017
Labor, infrastructure, legislation most acute constraints

- US oil (incl NGLs) supply grows by over 3 mb/d.
- Crude and condensate output grows by 2.5 mb/d.
- LTO makes up 15% of supply in 2011, > 40% in 2017
North American supply risks

- All revolutions are inherently unpredictable
- The N. American supply revolution is no exception
- Uncharted territory
  - Too short a history to inform forecasts
  - Past performance is no guarantee of future success
  - Labor constraints
  - Land management
  - Financing
  - Takeaway capacity
- Political risk looms large
  - Misalignment of resources and regulations
  - Export restrictions steeped in the 1979 oil crisis
  - Export legislation could become top N American supply risk
  - De-optimisation of capacity - production and refining
  - Is supply moving faster than public opinion?
  - Workarounds and band-aids?
Iraq leads OPEC crude capacity growth
Libyan recovery contributes to 3.34 mb/d total increase

Incremental OPEC Crude Production Capacity 2011-17

- Iraq
- Libya
- UAE
- Angola
- Nigeria
- Venezuela
- Saudi Arabia
- Qatar
- Ecuador
- Kuwait
- Algeria
- Iran

mb/d -1.2 -0.8 -0.4 0.0 0.4 0.8 1.2 1.6 2.0

- OPEC effective spare capacity seen recovering to 5.3 mb/d in 2017
..but challenges abound

- Potential game changer, but risks are high
- Dec. production dip to 2.97 mb/d.
- Record highs in 2012, but below growth expectations
- KRG-Baghdad relations a key challenge
Demand: Non-OECD overtakes OECD

- OECD contracts by 200 kb/d per year while non-OECD grows 1.3 mb/d
Asia leads demand growth

Strong demographics, economic growth and subsidies support increase in non-OECD demand


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<th></th>
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*thousand barrels per day*
Chinese demand seen switching gears...

China: Oil Demand Growth by Product, 2010-2017, mb/d

- Gasoline
- Distillates
- LPG & Naphtha
- Total (RHS)
...but Chinese market only getting more opaque

- End of Sep 2011-Aug 2012 slowdown?
- 2013 growth forecast raised to 4%, to 10 mb/d
- One-off factors: tax change – borrowed demand?
- Refining capacity surge – jump in min. op. stocks?
- One-off product stock builds?
- Excess refining capacity injects a new layer of uncertainty in Chinese demand data

**Source:** IEA Oil Market Report
Have supply outages become a fact of life? Outages reached 1.2 mb/d in 2Q12

Non-OPEC Selected Shut-ins & Maintenance

- Unplanned outages
- Other Unplanned Outages
- Middle East
- Sudan & S. Sudan
- Unplanned Outages (N.Sea)
- Peng Lai Field (China)
- Planned Maintenance (N. Sea)

1Q11 2Q11 3Q11 4Q11 1Q12 2Q12 3Q12 4Q12

kb/d

0

-260
-680
-440
-680
-1160
-1210
-1050
-1030

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Other blind spots and risk factors

- Non-contested demand issues hide other major blind spots:
  - African demand
  - Off-grid diesel power generation demand
  - Marine bunkers

- Iranian supply
Beyond supply and demand: a new crude trade map

Crude Exports in 2017 and Growth in 2011-17 for Key Trade Routes*

(million barrels per day)

* Excludes Intra-Regional Trade

Red number in brackets denotes growth in period 2011-17
Refining expansions again outpace demand

4.4 mb/d capacity needs to shut to return to pre-crisis utilization rates

- Refinery profitability to be pressured unless closures, delays, cancellations are announced.

Refining expansions again outpace demand

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- Refinery profitability to be pressured unless closures, delays, cancellations are announced.
All refining capacity growth from non-OECD countries

- 7 mb/d of net capacity additions by 2017
- OECD industry consolidation continues
- Upgrading and desulphurisation capacity adds 5.9 mb/d and 5.4 mb/d respectively
- OECD contraction, Europe – 1.7 mb/d 2008-12
The benchmark oil market report since 1983, with extensive, up-to-date, statistical data plus 12-18 month global fundamentals outlook

Detailed, up to the minute market analysis underpins the IEA’s emergency response mandate

Seventh edition in October 2012 of this annual outlook looking five years ahead

Closes previous gap between short-term OMR and long-term World Energy Outlook (‘WEO’)