Making Sense of Prices for Oil & Natural Gas

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Colorado Business Economic Outlook - 2016

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... the short story:

- technology (i.e. fracking)
- policy (i.e. environmental)
- demand (i.e. China)
- pricing strategy (i.e. OPEC)
Natural Gas - recent history

- How did we get here?
Natural Gas – recent history

natural gas drilling rig and Fort Worth, Texas skyline

David Kent / ZUMA
Natural Gas – recent history

US Electricity Net Generation (billions of kilowatt hours)

US EIA, Monthly Energy Review, November 2015, figure 7.2
Natural Gas – recent history

US Natural Gas Prices and US Production

US EIA, data downloaded December 4, 2015
Natural Gas – recent history

- hydraulic fracturing and horizontal drilling
- environmental policy, gas-fired electrical generation

(price, quantity)

$P_t > 0$?

$Q_0$ $Q_{t>0}$

$S_0$ $S_{t>0}$

$D_0$ $D_{t>0}$

$P_0$
Oil- recent history

- How did we get here?
Oil – recent history

Crude Oil Prices

US EIA, data downloaded December 6, 2015
Natural Gas – recent history

price

quantity

S_0

D_0

Q_0

P_0

P_{1>0}

Q_{1>0}

hydraulic fracturing and horizontal drilling

environmental policy, gas-fired electrical generation

natural gas a complement in production of shale oil
Oil – recent history

Crude Oil Prices and US Production

US EIA, data downloaded December 6, 2015
Oil – recent history

Crude Oil Prices and US Production

US EIA, data downloaded December 6, 2015
Looking forward:

- making sense of natural gas requires making sense of oil
- making sense of oil requires making sense of OPEC
Looking forward - oil:

• Q: ‘the end of OPEC’? A: not so fast
  • Why would OPEC cut revenue by $60 per bbl on 30MMBOPD for a gain of 2MMBOPD at $40 per bbl?
  • Why would Saudis cut revenue by $60 per bbl on 10MMBOPD for a gain of 2MMBOPD at $40 per bbl?

• Potential gains from current price cut:
  • Political = leverage against Iran?
  • Commercial = re-stimulate Chinese demand?
    = discourage non-OPEC production
      • shale oil?
      • conventional, large-scale developments?
Looking forward - oil:

- Q: ‘the end of OPEC’? A: not so fast
  - Why would OPEC cut revenue by $60 per bbl on 30MMBOPD for a gain of 2MMBOPD at $40 per bbl? A: they wouldn’t.
  - Why would Saudis cut revenue by $60 per bbl on 10MMBOPD for a gain of 2MMBOPD at $40 per bbl? A: they wouldn’t.

- Potential gains from current price cut:
  - Political = leverage against Iran? A: will take through 2016 Q2.
  - Commercial = re-stimulate Chinese demand? = discourage non-OPEC production A: long-term objective.
    - shale oil? A: No. Too elastic.
    - conventional, large-scale developments? A: Yes. Trying to discourage high-fixed cost developments.
Looking forward - oil:

- Q: ‘the end of OPEC’?  A: not so fast

- Potential gains from current price cut =>
  - Political = leverage against Iran – Saudi Oil Minister indicates Iranian impact on global markets will be better understood in summer 2016.
  - Commercial = re-stimulate Chinese demand = long-term goal. = discourage non-OPEC production
    - shale oil is too elastic to be true target of price cut
    - conventional, large-scale developments
      - will produce at Poil > operating cost ≈ $25/bbl
      - but investment can be discouraged ≤ $70, $80/bbl
Outlook:

- **Oil:**
  - OPEC will curtail production to raise prices as they confirm
  - Iran is not a threat
  - Large, fixed-cost investments are discouraged for non-OPEC producers (Canadian Oil Sands? Alaska? Brazilian PreSal? Mexico? Russia?)
  
  => Prices to < $70, $80/bbl (large-projects break-even) mid-2016 (post Iran-market-impact uncertainty)

- **Natural Gas:**
  - High storage and mild winter to keep short-term prices low
  - Rebound in oil prices in mid 2016 => rebound in (elastic) shale oil production => return of associated gas production
  
  => medium-term prices remain low