International perspectives on energy prices - gas pricing in a world of $60/bl crude

IFIEC Europe – Energy Forum 2015
Matthew Monteverde
4 June 2015
Commodity prices have declined
Commodity prices in abstract

US shale gas

Index: October 2001 = 100, adjusted for inflation

NBP  DE Power  API 2  Ammonia NOLA  Brent  WTI  Gold  Ethylene NWE  Henry Hub
Commodity prices in abstract

German power and the Energiewende

Index: October 2001 = 100, adjusted for inflation

- NBP
- API 2
- Ammonia NOLA
- Brent
- WTI
- Gold
- Ethylene NWE
- DE Power
- Henry Hub
Commodity prices in abstract

UK gas prices exposed to global market conditions

Index: October 2001 = 100, adjusted for inflation

API 2 Ammonia NOLA Brent WTI Gold Ethylene NWE NBP DE Power Henry Hub
Commodity prices in abstract

Crude prices held firm before collapse

Index: October 2001 = 100, adjusted for inflation

- NBP
- DE Power
- API 2
- Ammonia NOLA
- Henry Hub
- Gold
- Ethylene NWE
- Brent
- WTI
Crude prices held firm before collapse
Commodity prices have declined

Index: October 2001 = 100, adjusted for inflation

NBP  DE Power  API 2  Ammonia NOLA  Henry Hub  Brent  WTI  Gold  Ethylene NWE
Commodity prices in abstract

Rare earths – Chinese law (and law breaking)

Index: October 2001 = 100, adjusted for inflation

- NBP
- DE Power
- API 2
- Ammonia NOLA
- Henry Hub
- Brent
- WTI
- Gold
- Ethylene NWE
- Neodymium oxide
- Terbium oxide
Gas prices in a low-oil price world
NBP forward month prices collapse — twice

Oct-13  •  Nov-13  •  Dec-13  •  Jan-14  •  Feb-14  •  Mar-14  •  Apr-14  •  May-14  •  Jun-14
Jul-14  •  Aug-14  •  Sep-14  •  Oct-14  •  Nov-14  •  Dec-14  •  Jan-15  •  Feb-15  •  Mar-15
Apr-15  •  May-15  •  Jun-15  •  Jul-15  •  Aug-15  •  Sep-15  •  Oct-15

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European gas price update

Forward price ranges – 2014-15 v2015-16

GY 13-14

Range GY 14-15

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European gas price update

Forward price ranges – 2014-15 v2015-16

Added political risk premium on low prompt prices

GY 13–14

Range GY 14–15
European gas price update

Forward price ranges – 2014-15 v2015-16

- Added political risk premium on low prompt prices
- End-of-year price collapse

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European gas price update

Forward price ranges – 2014-15 v2015-16

- Added political risk premium on low prompt prices
- End-of-year price collapse
- First-quarter rally on lower Russian receipts, storage

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European gas price update

Forward price ranges – 2014-15 v2015-16

- Added political risk premium on low prompt prices
- End-of-year price collapse
- First-quarter rally on lower Russian receipts, storage
- Wider Q2-Q3 spreads than in 2014

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European gas supply
European supply sources

Western European supply – monthly through mid-May 2015

- NL/UK production
- NO
- RU
- N. Africa
- LNG

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Russian supply shortfall

Winter 2014-15 v winter 2013-14

- Yamal: -3.2bn m³
- Wysokoje: -3.7bn m³
- Velke Kapusany: -15.1bn m³
- Tietierowka: -0.1bn m³
- Drozdwicze: -2.5bn m³
- Beregdaroc: +0.1bn m³

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Russian supply shortfall

Russian deliveries to Poland, Slovakia and Hungary v nominations

- Drozdowicze
- Tietierowka
- Wysokoje
- Kondratki - Yamal
- Velke Kapusany
- Beregdaróc

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Russian supply shortfall

Russian deliveries to Poland, Slovakia and Hungary vs nominations

Russian deliveries to Poland, Slovakia and Hungary vs nominations

- Drozdowicze
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- Velke Kapusany
- Beregdaróc

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Russian under-deliveries to Italy

Italian deliveries v nominations

Jan 14  Apr 14  Jul 14  Okt 14  Jan 15  Apr 15

m³/d

Nominated
Delivered
Russian under-deliveries to Italy

**Italian deliveries v nominations**

- Nominated
- Delivered

**Supply shortfall**

- Nominated
Larger European stockbuild required

Aggregate European gas storage

2015 - 2010

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Oil indexed contract prices
Oil indexed price evolution

Various oil-indexed contract formulations

€/MWh

Oil index
Oil indexed price evolution

Various oil-indexed contract formulations

Oil index range  Oil index

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Oil indexed price evolution

Various oil-indexed contract formulations

- Oil index
- TTF m1

Oil-index range

Date: Okt 2004 to Okt 2014

Price: €/MWh

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Oil indexed price evolution

Various oil-indexed contract formulations

Historic
TTF m1

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Forward pricing in December 2013

Various oil-indexed contract formulations

Historic
TTF ml
Dec-13
TTF curve

€/MWh

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Forward pricing in May 2015

Various oil-indexed contract formulations
A narrower price channel
Forward price channel relatively narrow

Oil index and market prices

- EU oil index
- TTF m1
- TTF forward

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Fuel switching prices remain below the market

Fuel switching?
Asian LNG backstop?

Asia-Pacific oil index and EU prices

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LNG prices and changing supply patterns
Asia-Pacific LNG price formation

Japanese LNG customs prices

Term: Abu Dhabi, Australia, Brunei, Indonesia, Malaysia, Oman, Qatar, Russia, US
Spot: Algeria, Belgium, Egypt, Equatorial Guinea, France, Norway, Nigeria, Peru, Papua New Guinea, Spain, Trinidad, Yemen
Asia-Pacific LNG price formation

Japanese LNG customs prices v modern oil index

Term: Abu Dhabi, Australia, Brunei, Indonesia, Malaysia, Oman, Qatar, Russia, US
Spot: Algeria, Belgium, Egypt, Equatorial Guinea, France, Norway, Nigeria, Peru, Papua New Guinea, Spain, Trinidad, Yemen
Asia-Pacific LNG price formation

Japanese LNG customs prices v modern oil index

Term: Abu Dhabi, Australia, Brunei, Indonesia, Malaysia, Oman, Qatar, Russia, US
Spot: Algeria, Belgium, Egypt, Equatorial Guinea, France, Norway, Nigeria, Peru, Papua New Guinea, Spain, Trinidad, Yemen
Asia-Pacific LNG price formation

Japanese LNG customs prices v modern oil index

Spot: Algeria, Belgium, Egypt, Equatorial Guinea, France, Norway, Nigeria, Peru, Papua New Guinea, Spain, Trinidad, Yemen
Asia-Pacific LNG price formation

Japanese LNG customs prices v modern oil index v ANEA

Spot: Algeria, Belgium, Egypt, Equatorial Guinea, France, Norway, Nigeria, Peru, Papua New Guinea, Spain, Trinidad, Yemen
Gap between Atlantic and Pacific prices is closing
European LNG receipts

Monthly LNG imports

BE  FR  PT  ES  UK  NL  IT

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European LNG receipts

Monthly LNG imports

NBP-Asia-Pacific oil index

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Japanese LNG supply
Japanese long-term supply contracts

Known long-term supply contracts

- Osaka Gas
- Tokyo Gas
- Tepco
- Tohoku Electric
- Chubu Electric
- Chogoku Electric
- Hiroshima Gas
- Japex
- JX
- Tohoku Electric
- Tohoku Electric
- Kansai Electric
- Nihon Gas
- Kyushu Electric
- Nippon Steel
- Mizuho Electric
- Saibu Gas
- Shikoku Electric
- Shizuoka Gas
- Toho Gas
- Sendai

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Japanese long-term supply contracts

Known long-term supply contracts vs gas demand

- Osaka Gas
- Chogoku Electric
- Kansai Electric
- Saibu Gas
- Tokyo Gas
- Hiroshima Gas
- Nihon Gas
- Shikoku Electric
- Tepco
- Japex
- Tohoku Electric
- Kyushu Electric
- Nippon Steel
- Shizuoka Gas
- Toho Gas
- Chubu Electric
- Mitsubishi
- Gas demand

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Japanese long-term supply contracts

Known long-term supply contracts v gas demand

- Australia
- Brunei
- Indonesia
- Malaysia
- Oman
- PNG
- Portfolio
- Qatar
- Russia
- Trinidad
- UEA
- USA
- USA (new)
- Gas demand

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Coal, China and the slow collapse of prices
Commodity prices have declined

Index: October 2001 = 100, adjusted for inflation

- NBP
- DE Power
- API 2
- Ammonia NOLA
- Henry Hub
- Brent
- WTI
- Gold
- Ethylene NWE
Coal prices have fallen since early 2011
Benchmark coal prices

Northwest European prices and key events

Chinese import tax, ash and sulphur limits

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Northwest European prices and key events

Chinese import tax, ash and sulphur limits

Chinese trace element limits

Benchmark coal prices

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July 14 to April 15
Benchmark coal prices

Northwest European prices and key events

- Chinese import tax, ash and sulphur limits
- Chinese trace element limits
- Brent crude bottoms out at $45/bl

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Benchmark coal prices

Northwest European prices and key events

- Chinese import tax, ash and sulphur limits
- Chinese trace element limits
- Colombian night-time rail freight suspension
- Brent crude bottoms out at $45/bl

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Overcapacity and a change in China
Will overcapacity come out of the market?

Price and historic export growth

- Export growth rate
- API2 annual average

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Chinese demand growth has slowed

Historic demand and growth

- Growth rate
- Chinese demand
Coastal power station coal burn is down

Coal burn at major coastal plants

- 2013
- 2014
- 2015

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The Chinese economy is shifting

Service sector larger than manufacturing for the first time in 2013

- Agriculture
- Industry
- Services, etc.
Economic output and coal consumption

2013 coal consumption and GDP

GDP (trillion USD) vs. mtoe coal consumption

- US
- China
- Japan
- India
- S. Africa

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Economic output and coal consumption

2003 coal consumption and GDP

GDP (trillion USD) vs. mn toe coal

- US
- Japan
- India
- China
- S. Africa

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Economic output and coal consumption

1993 coal consumption and GDP

GDP (trillion USD)

mn toe coal

US
Japan
India
China
S. Africa
Economic output and coal consumption

Historic Chinese coal consumption and GDP

GDP (trillion USD) vs. mn toe coal
Economic output and coal consumption

Historic Chinese coal consumption and GDP

16x GDP per 500mn toe coal consumption

6x GDP per 500mn toe coal consumption
Conclusions
Matthew Monteverde
VP — Generating Fuels

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