

October 21, 2014

A Perspective on Oil Prices

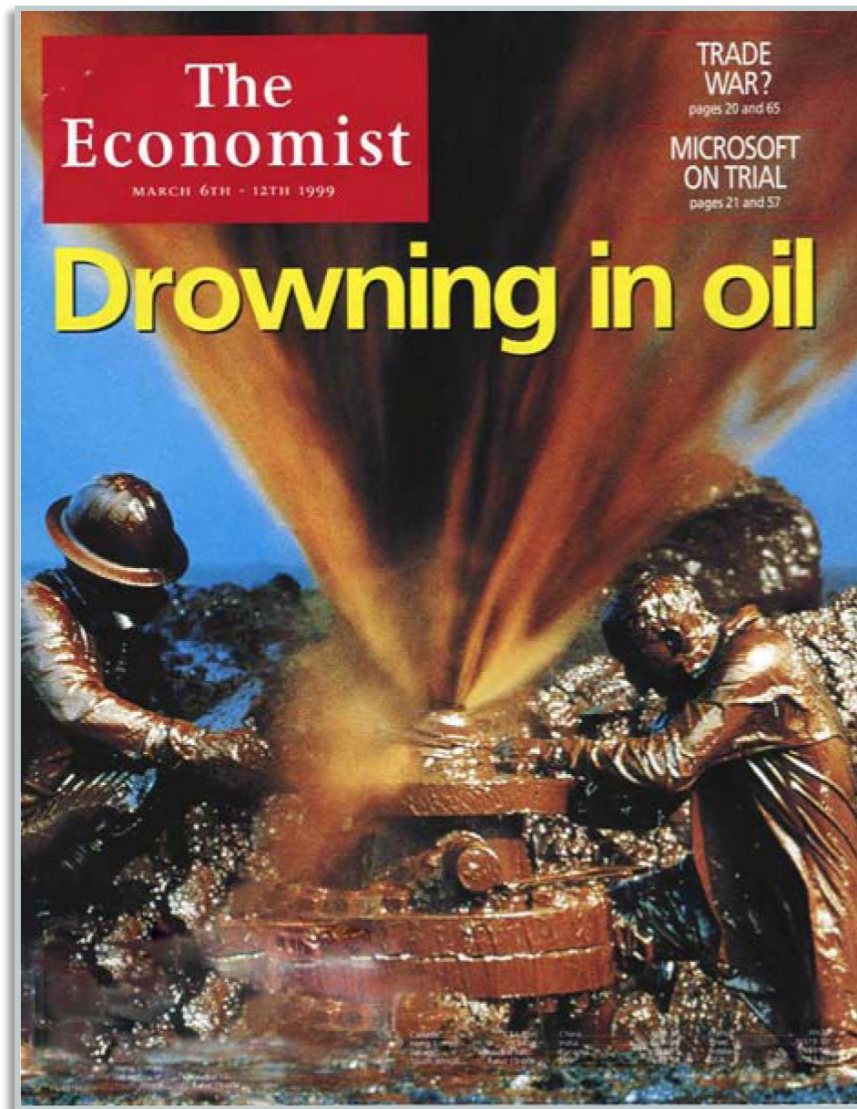
Howard Newman, President and CEO

PINE BROOK

Frequently Asked Questions (FAQ)

- Is there a bottom to oil prices?
- What does this price decline mean for the unconventional revolution?
- Can the world do without U.S. unconventional resources?
- Will tight oil go the way of shale gas?
- What are the geopolitics of this decline?

Drowning in Oil



1998 - What happened?

- Asian demand (IMF crisis)
- Dollar strengthened
- Iraqi oil (humanitarian)
- OPEC production up
- Drilling costs down
- New, lower cost supplies
 - North Sea
 - Rise of the “Stans”

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1998 - What didn't happen?

- Marginal cost of oil didn't go down
- Demand didn't remain depressed
- OPEC didn't discover fiscal discipline

Differing Perspectives, Both Are Right (or Wrong)



Déjà Vu All Over Again

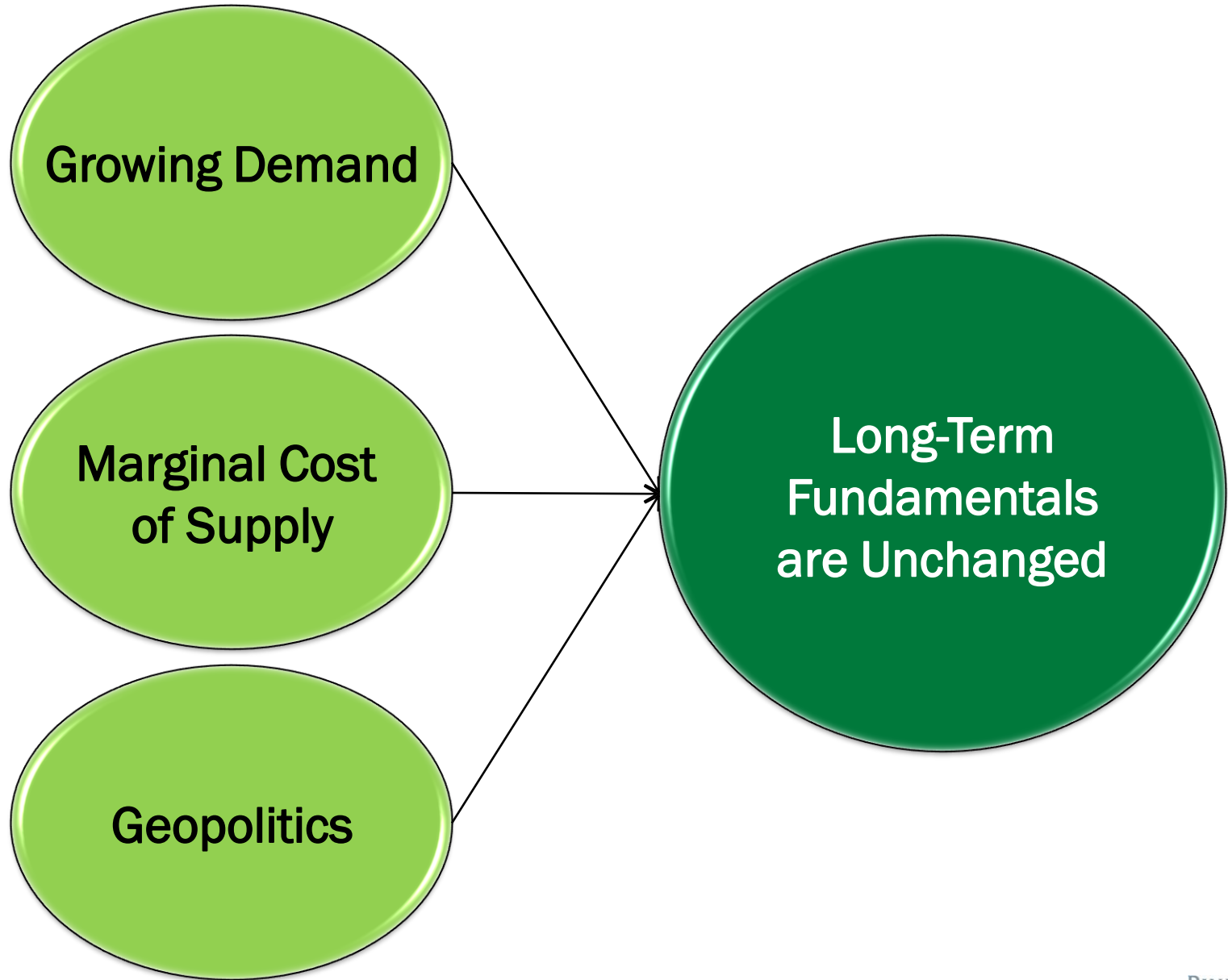
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2014 - What is happening?

- Global demand in question
- Dollar strengthening
- Iranian oil (sanctions)
- OPEC production up
- Drilling costs down
- New supplies
 - U.S. shale oil
 - International tight oil

Long-Run View Remains Strong

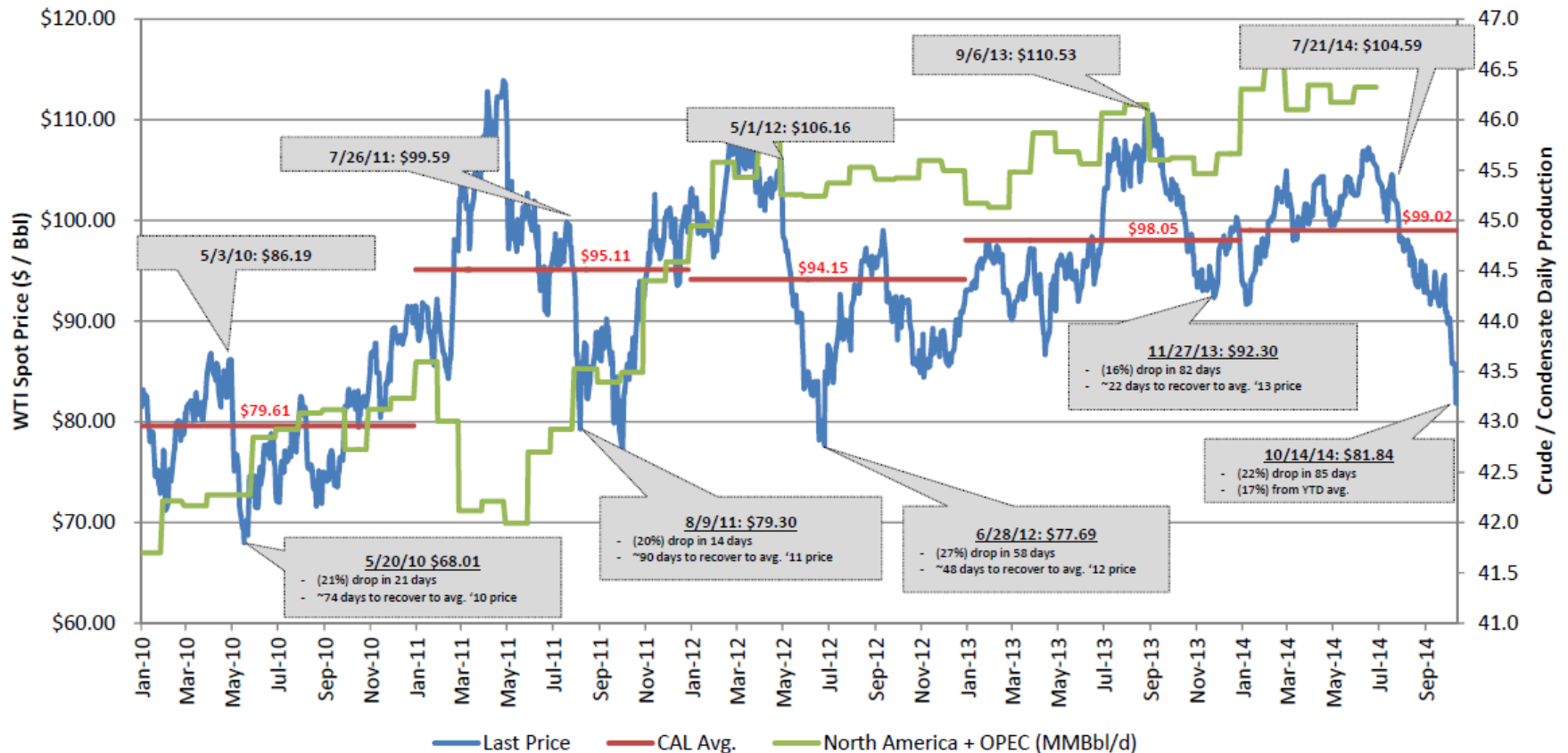


It Depends on Your Point of View

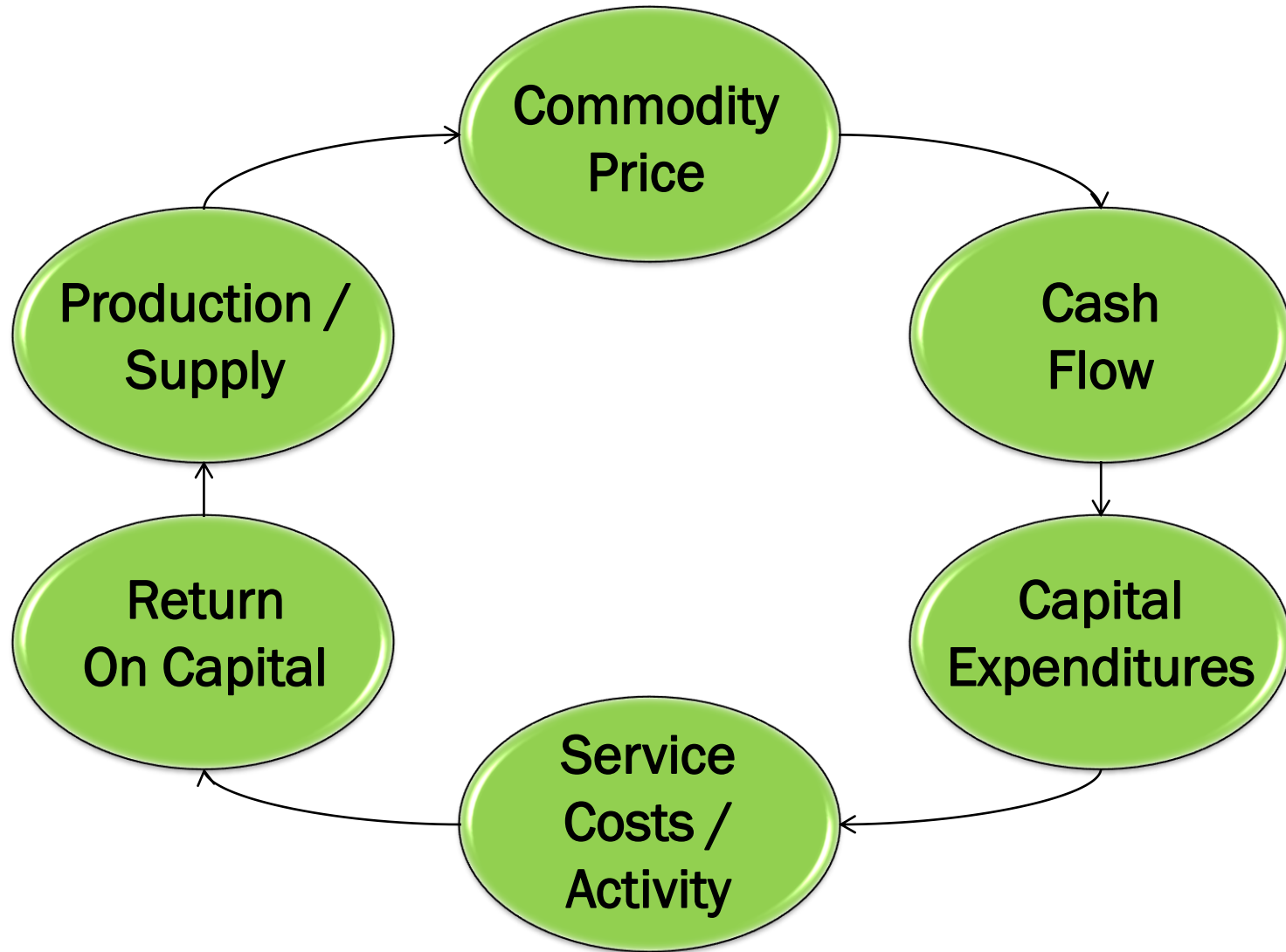
**Price Equals Marginal Cost and
Marginal Cost is a Fluid Concept**

Short-Term Price Volatility Is Not a Surprise

WTI Spot Price and OPEC / North America Daily Crude Oil Production



The Cycle – Vicious or Virtuous?



Marginal Cost is a Fluid Concept

Typical Resource Play Economics

Oil price of	\$80 / bbl
Realized price of	\$69 / bbl
Operating costs of	\$18 / bbl
Cash margin of	\$51 / bbl
Half cycle economics	33% IRR / 2.4x MOIC
Full cycle economics	26% IRR / 2.1x MOIC

Prices and Costs Adjust to Protect the Margin

	\$60/bbl	\$80/bbl	\$100/bbl
Half Cycle IRR Sensitivities			
Current Costs	14%	33%	57%

Full Cycle IRR Sensitivities			
Current Costs	11%	26%	46%

Prices and Costs Adjust to Protect the Margin

	\$60/bbl	\$80/bbl	\$100/bbl
Half Cycle IRR Sensitivities			
Current Costs	14%	33%	57%
Adjusted Service Costs ⁽¹⁾	27%	56%	94%
Full Cycle IRR Sensitivities			
Current Costs	11%	26%	46%
Adjusted Land + Service Costs ⁽²⁾	21%	45%	76%

Note: "Current Costs" economics assumes \$8 million well cost and \$5,000/undeveloped acre acquisition cost.

(1) Assumes \$6.4 million well cost (~80% of base case)

(2) Assumes \$6.4 million well cost (~80% of base case) and \$4,000/undeveloped acre acquisition cost.

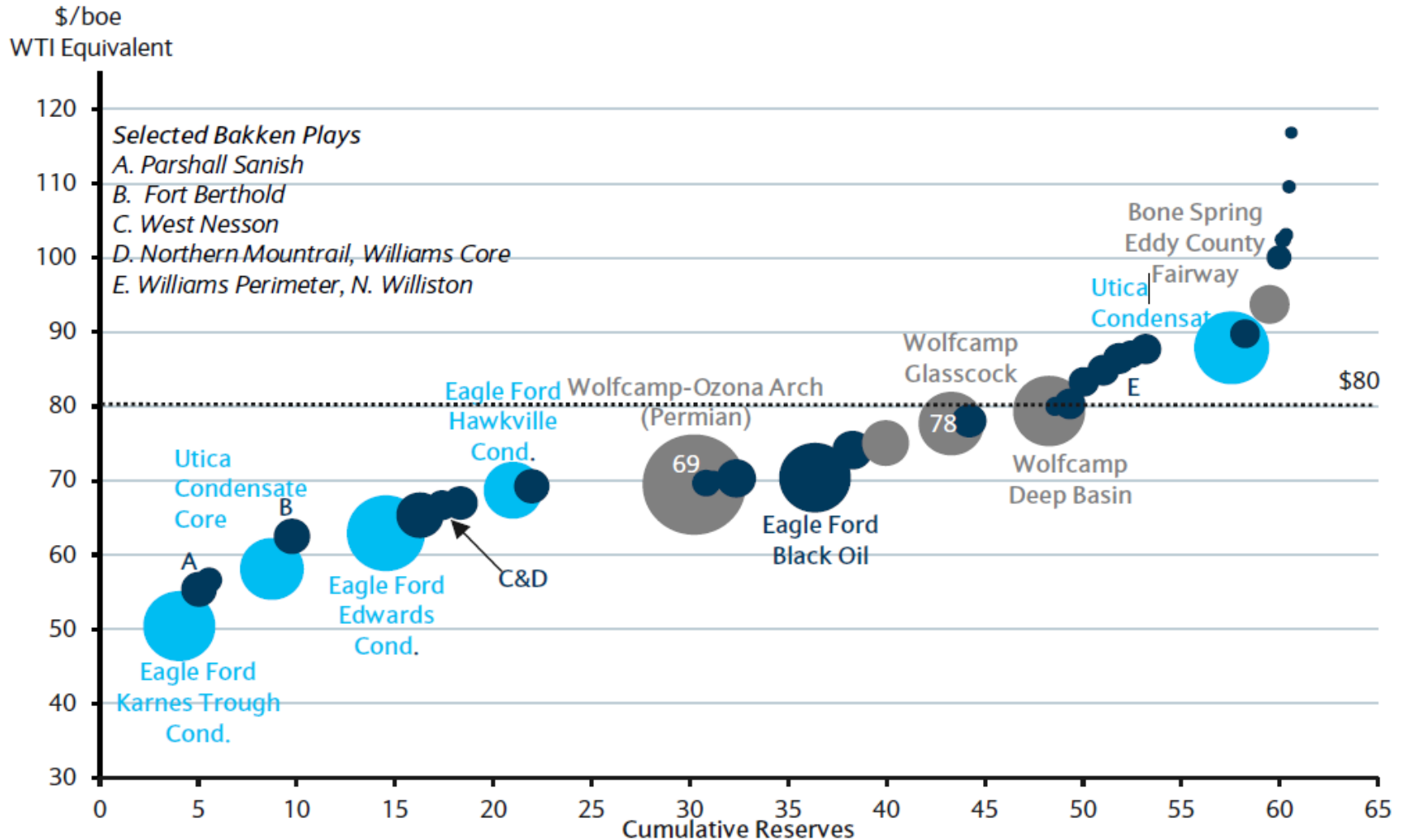
What Does this Price Decline Mean for the Unconventional Revolution?

Depends on the Play

**Prices and Costs will Adjust to Protect
Half-Cycle Economics**

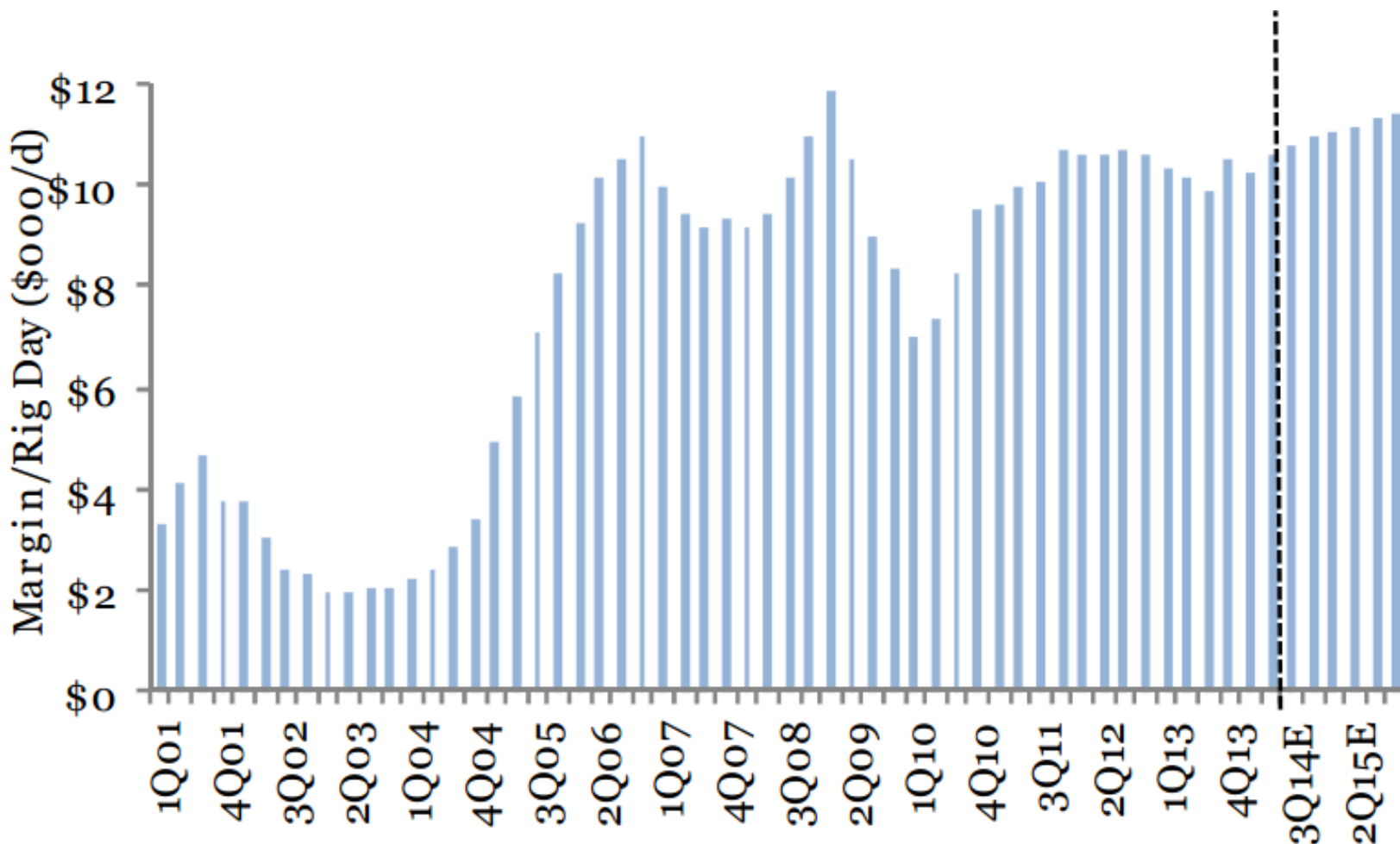
All Shales Are Created Equal, But Some Shales are More Equal Than Others

U.S. Tight Oil Play Breakeven Prices



Downward Correction in Service Costs Expected

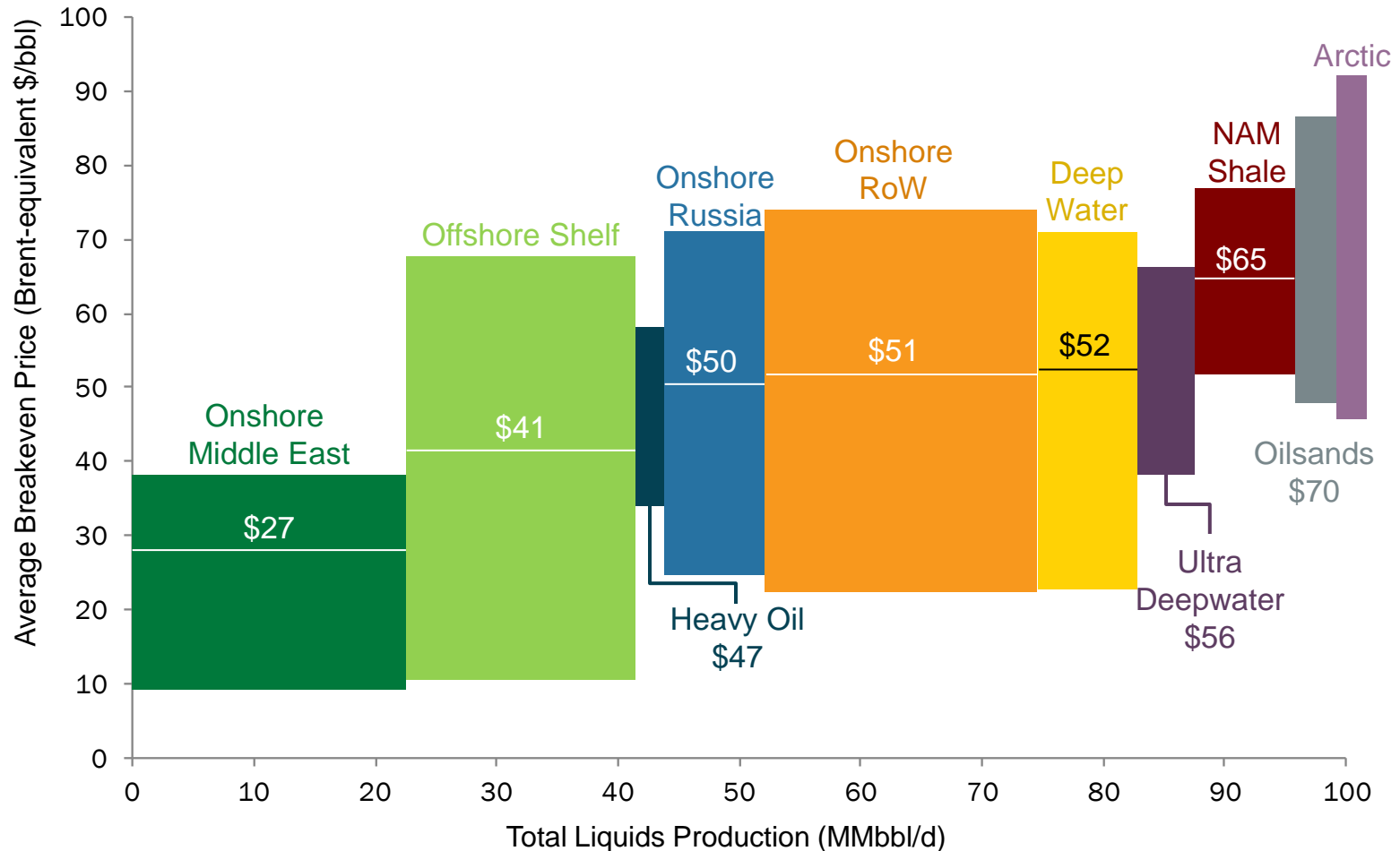
Land Rig Margin Per Rig Day



**U.S. Unconventional Resources
are Needed to Balance
the World Oil Markets
Today and in the Future**

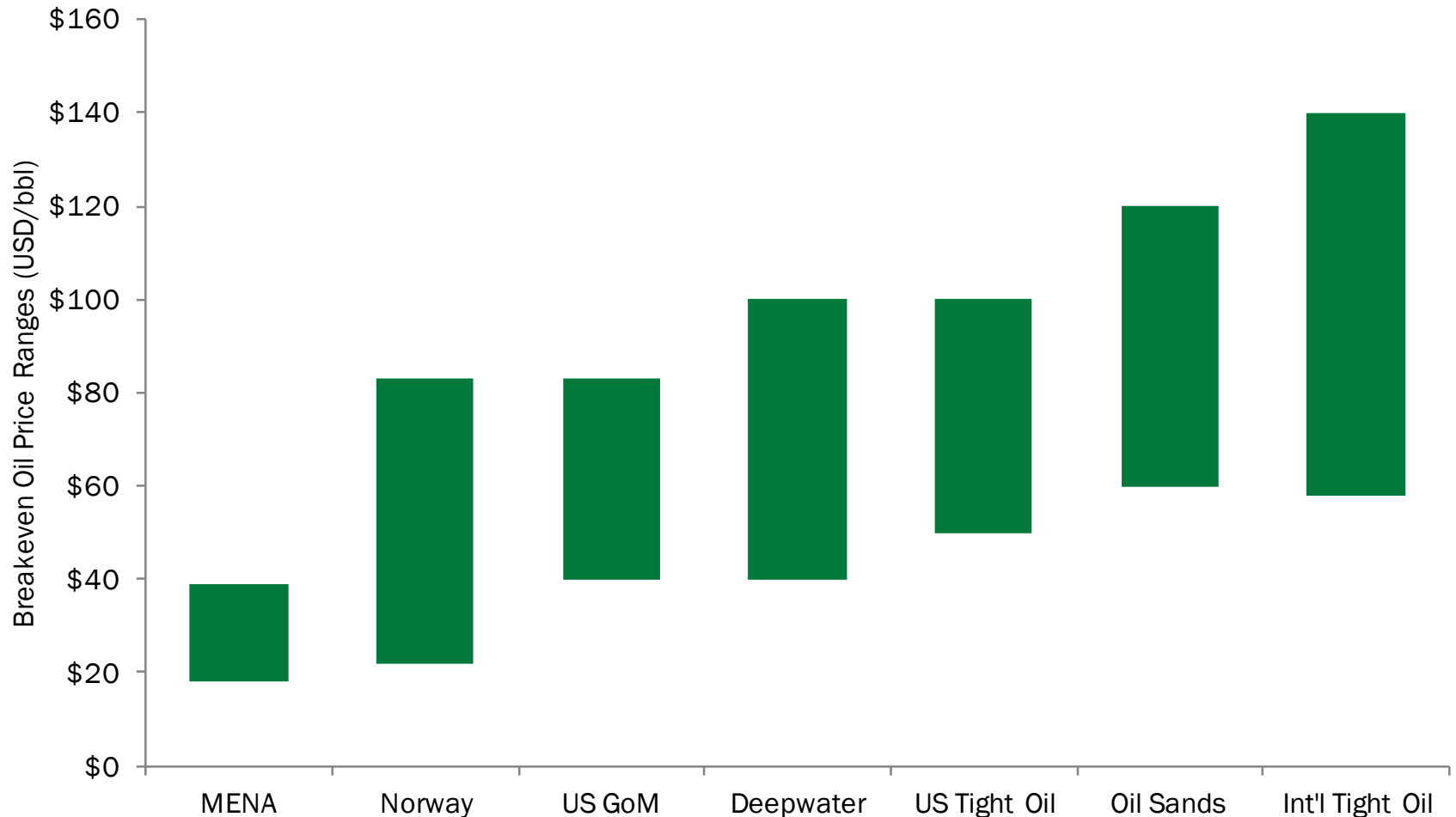
Global Supply Curve – Shales Needed to Meet Demand

Global Marginal Breakeven Oil Supply Curve



Unconventional Resources Are Competitive

Global Breakeven Oil Supply Curve

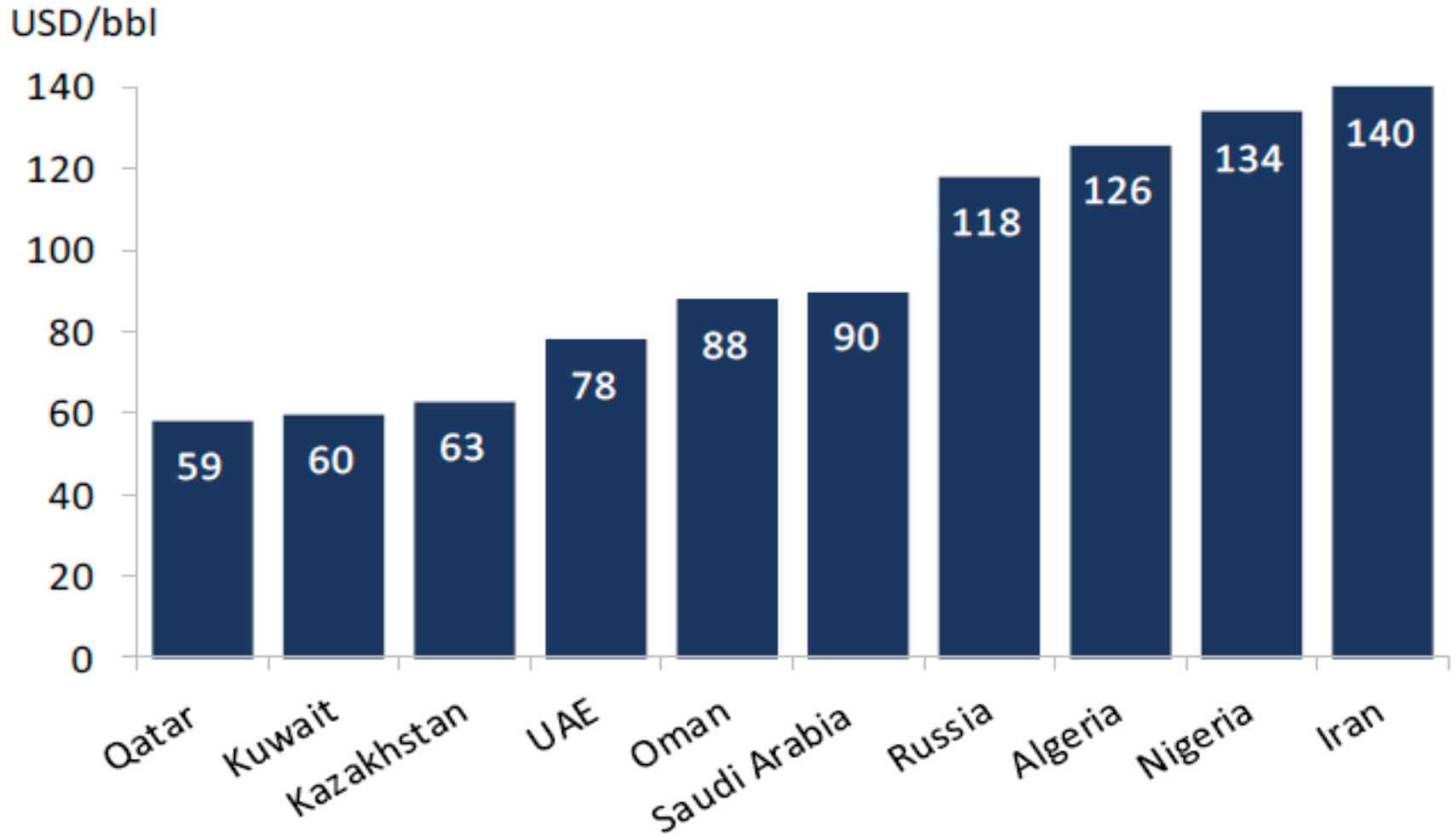


Source: IHS Cera; Wood Mackenzie; IEA; Pareto.

Note: Breakeven is calculated as the oil price that sets the Net Present Value (with a 10% WACC) to zero.

OPEC Needs High Oil Prices

Government Budget Breakeven Prices

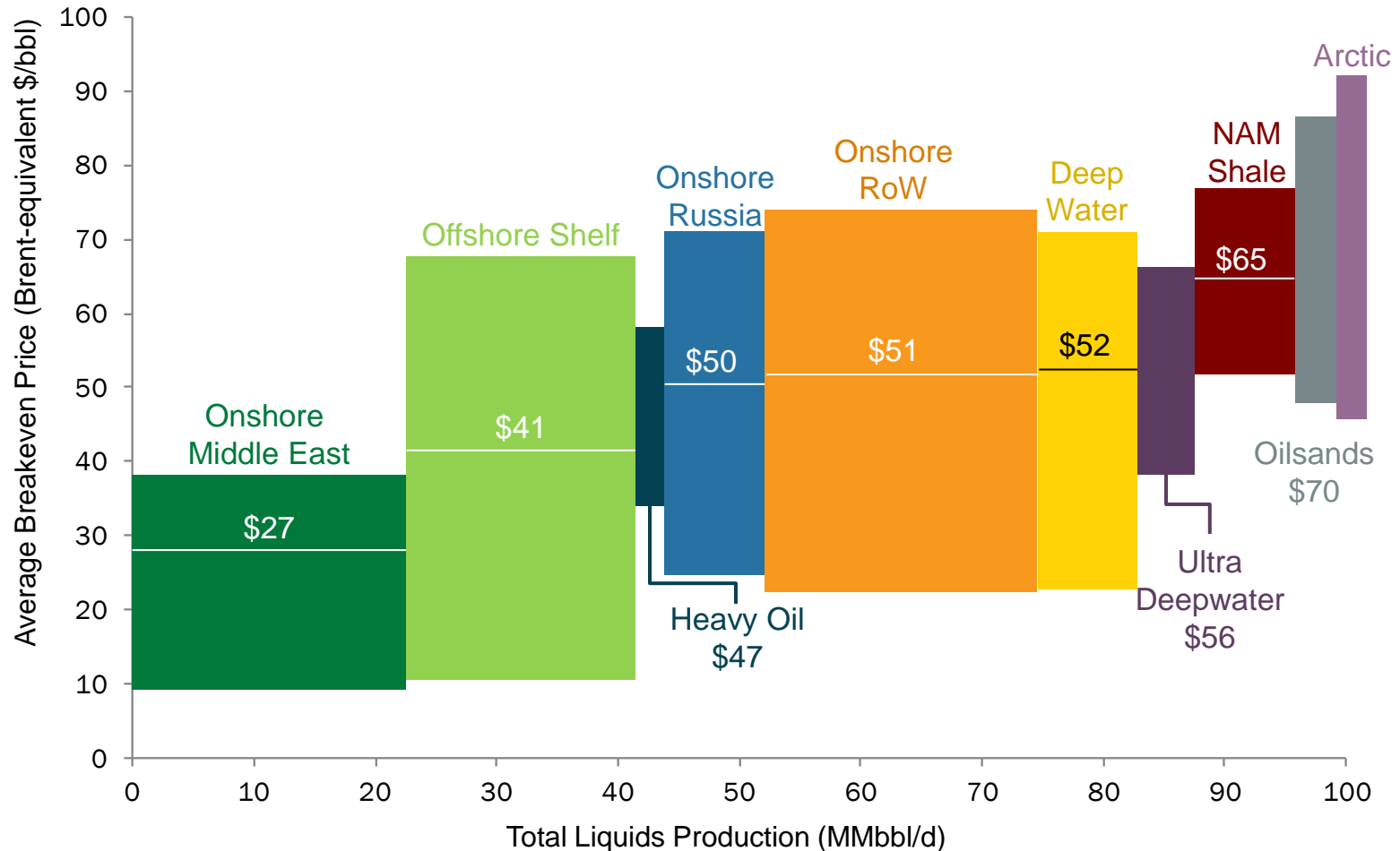


**Shale Gas Entered the Supply Curve
as the Low-Cost Resource**

**Unconventional Oil is
the Marginal Barrel**

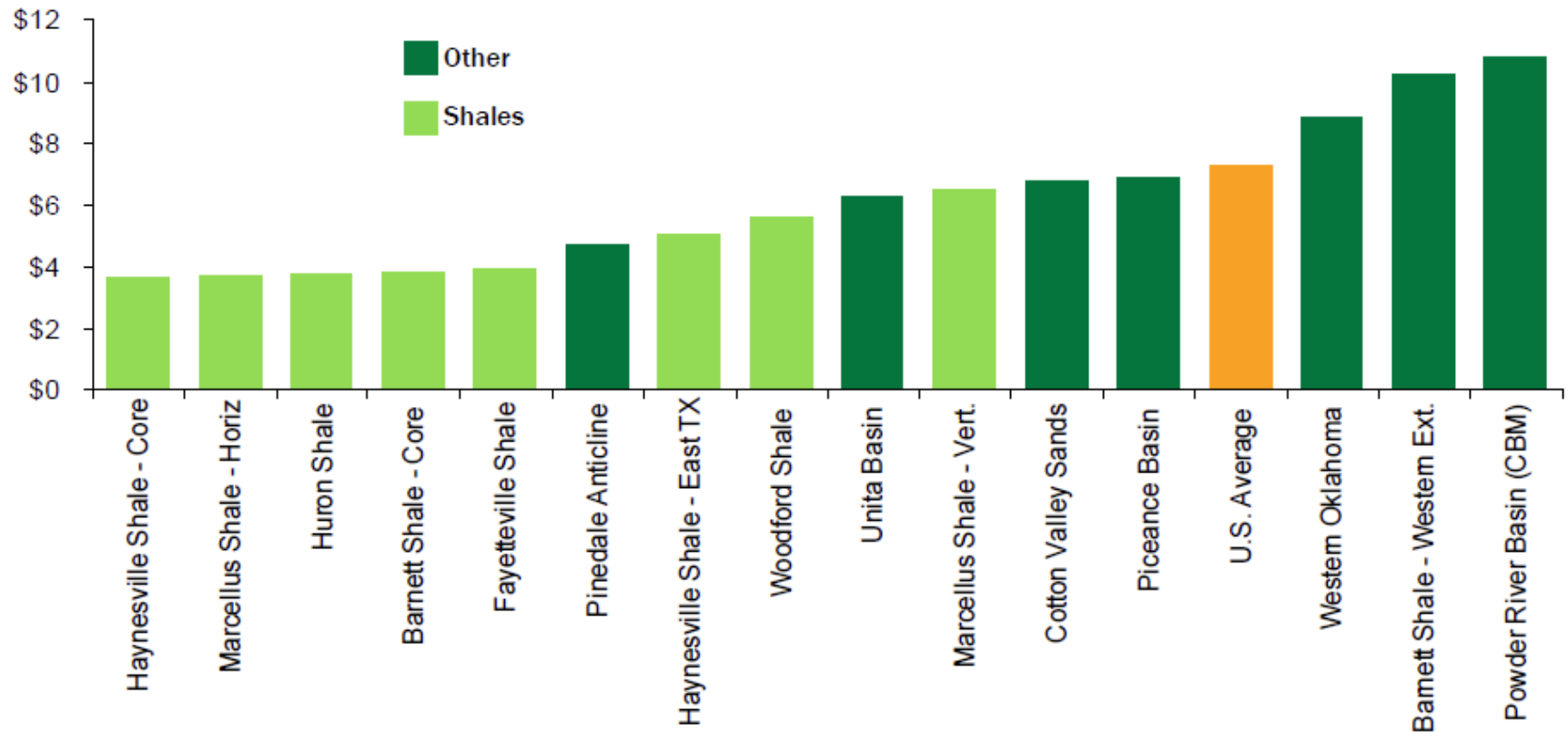
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Global Marginal Breakeven Oil Supply Curve



Will Tight Oil Go the Way of Shale Gas?

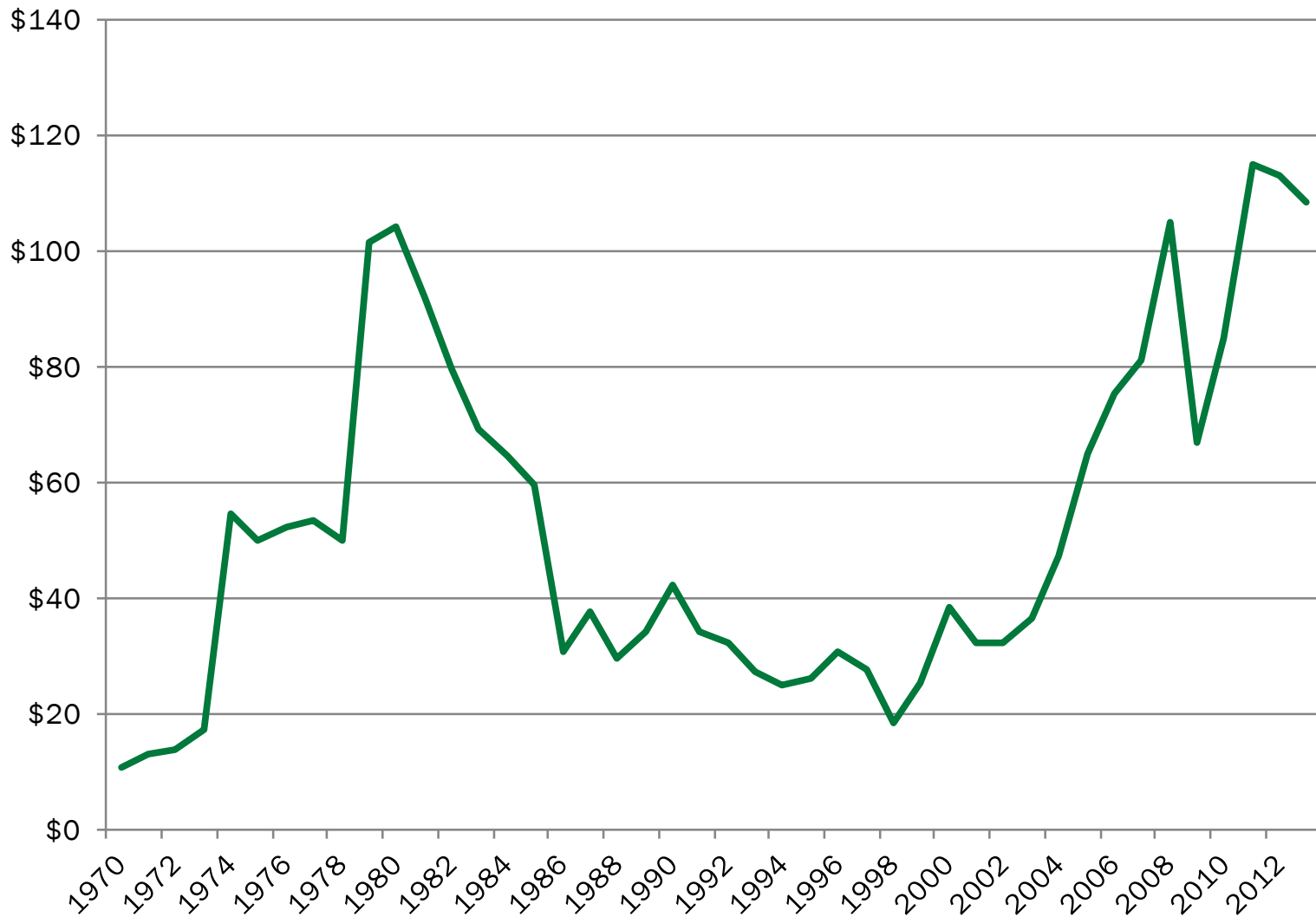
Shale Gas Breakeven Economics in 2010



What are the Geopolitics of this Decline?



Historical Crude Oil Prices (2013 Chained Dollars)



Winners and Losers in Low Oil Price Environment

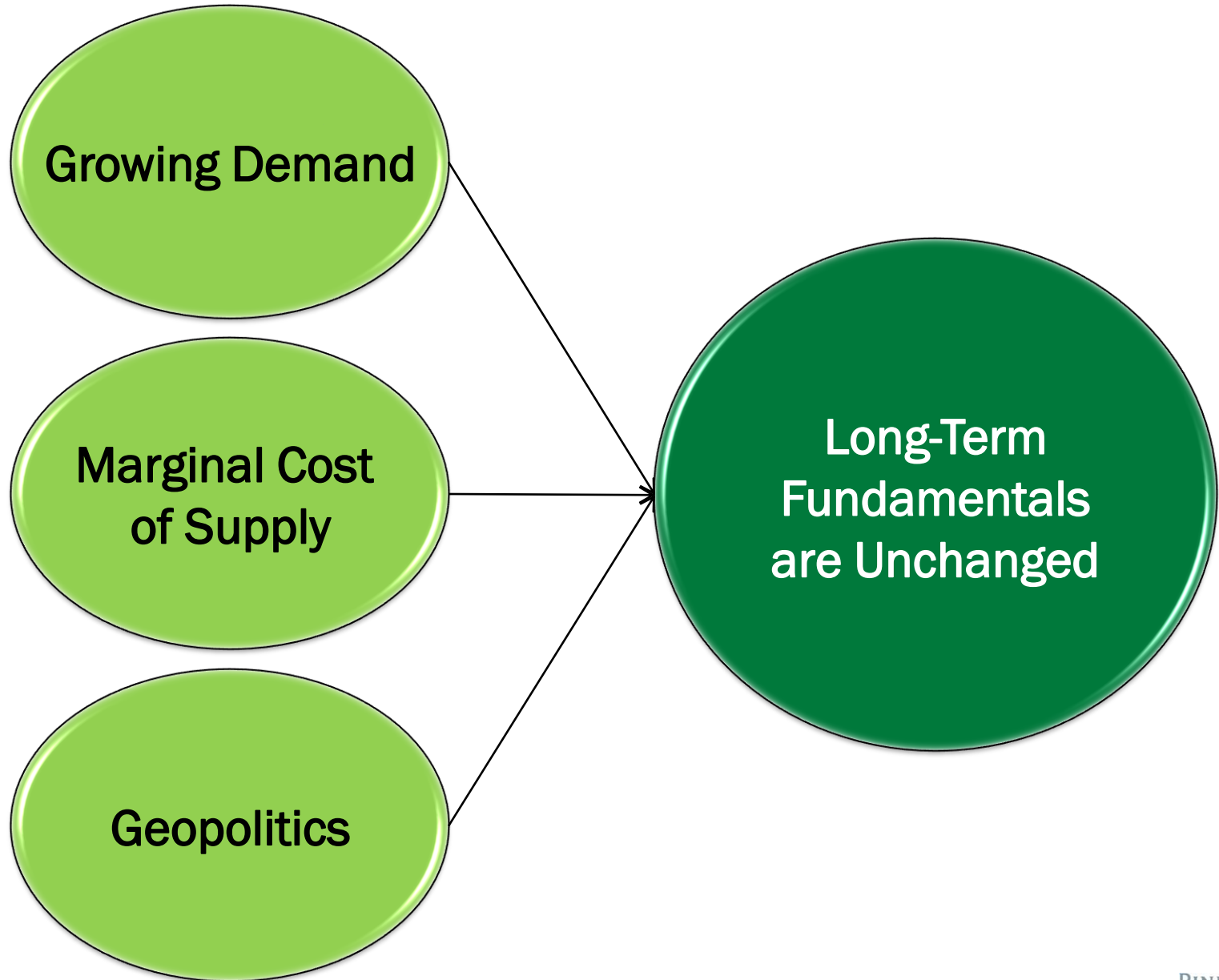
Winners

- Global Consumers
- ISIS and other extremists

Losers

- Friends
 - Saudi Arabia
 - Egypt
 - Iraq
- Enemies
 - Iran
 - Qatar
 - Russia
- Neutral
 - U.S. Shale Producers

Long-Run View Remains Strong



Fasten Your Seat Belts



RELAX

