

The Portents of “Peak Oil”*

James L. Smith¹

Search and Discovery Article #120033 (2009)

Posted December 11, 2009

*Adapted from presentation at Public Forum: America’s Energy Heartland, America’s Energy Future, at AAPG Mid-Continent Section Meeting, October 13, 2009

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Key Points

What Would the Market Do?

- A market economy will deplete a fixed resource in finite time, subject to a backstop technology.
- The price will rise over time, to choke off demand as the supply is exhausted.
- Demand for the resource disappears (due to high prices) just when the price reaches the cost of the backstop technology.

But...

- What does the production path look like?
- When does the peak occur?
- What happens after the peak?

Market Fundamentals Determine Shape of the Peak.

The Peak is an Ambiguous Indicator.

Even under the simplest (easiest) of assumptions:

1. The Peak does not signal whether remaining resources are plentiful or scarce.
2. The Peak does not signal whether current prices are high or low.
3. The Peak does not signal whether future output will fall precipitously or gradually (or fall at all)

Take-Aways

- “Peak Oil” is meaningless hype.
 - No depletable resource has yet been exhausted.
 - The coal age did not end because we ran out of coal.

- Resources are exhaustible in *theory*, not in *practice*.
- Petroleum will be no different.

Key Reference

Hubbert, M.K., 1971, The energy resources of the earth: Scientific American, v. 225, p. 31-41.

The Portents of “Peak Oil”

Dr. James L. Smith

Cary M. Maguire Chair in Oil & Gas Management



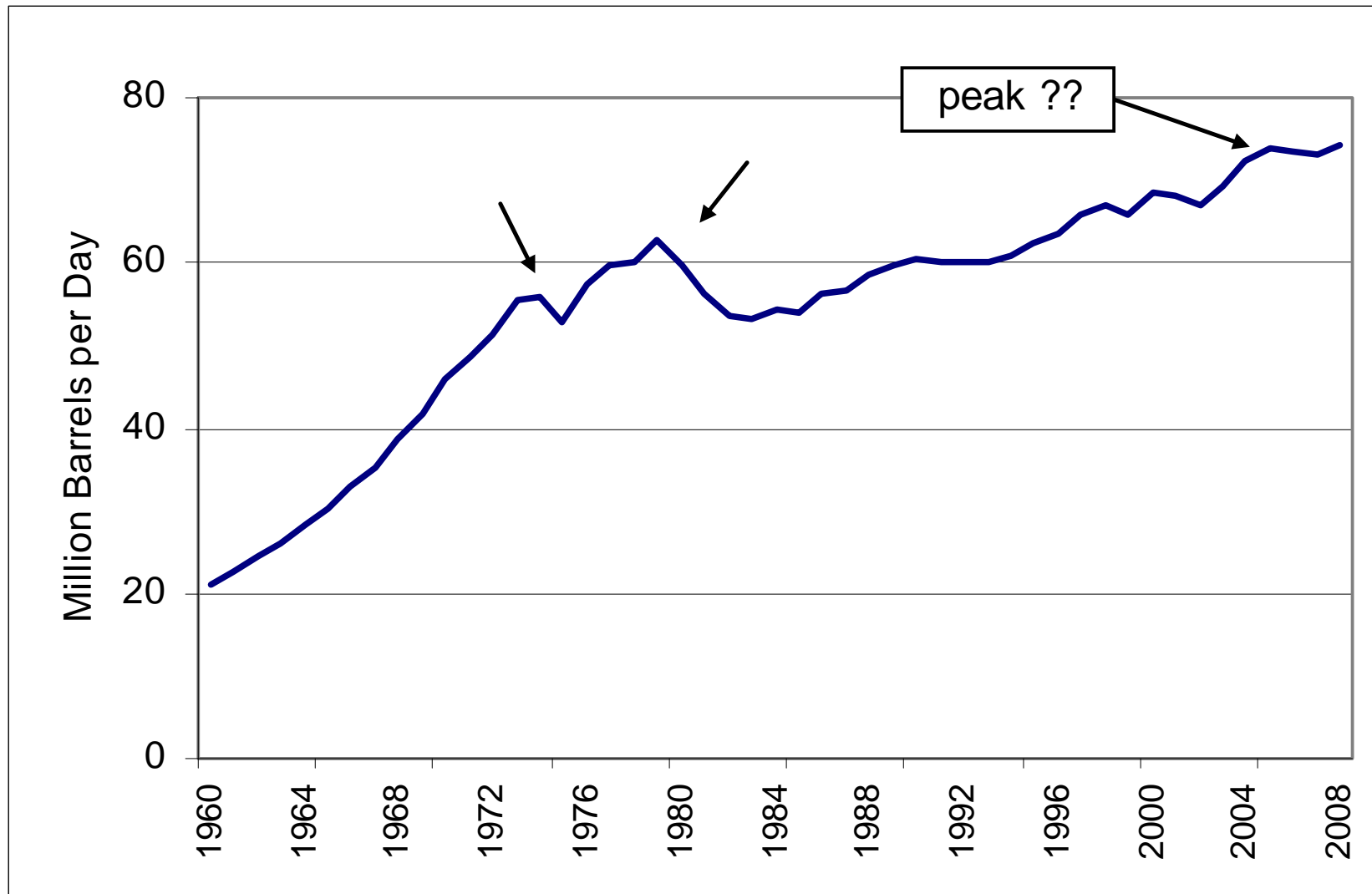
AAPG Forum, Tulsa OK

October 13, 2009

America's Energy Future



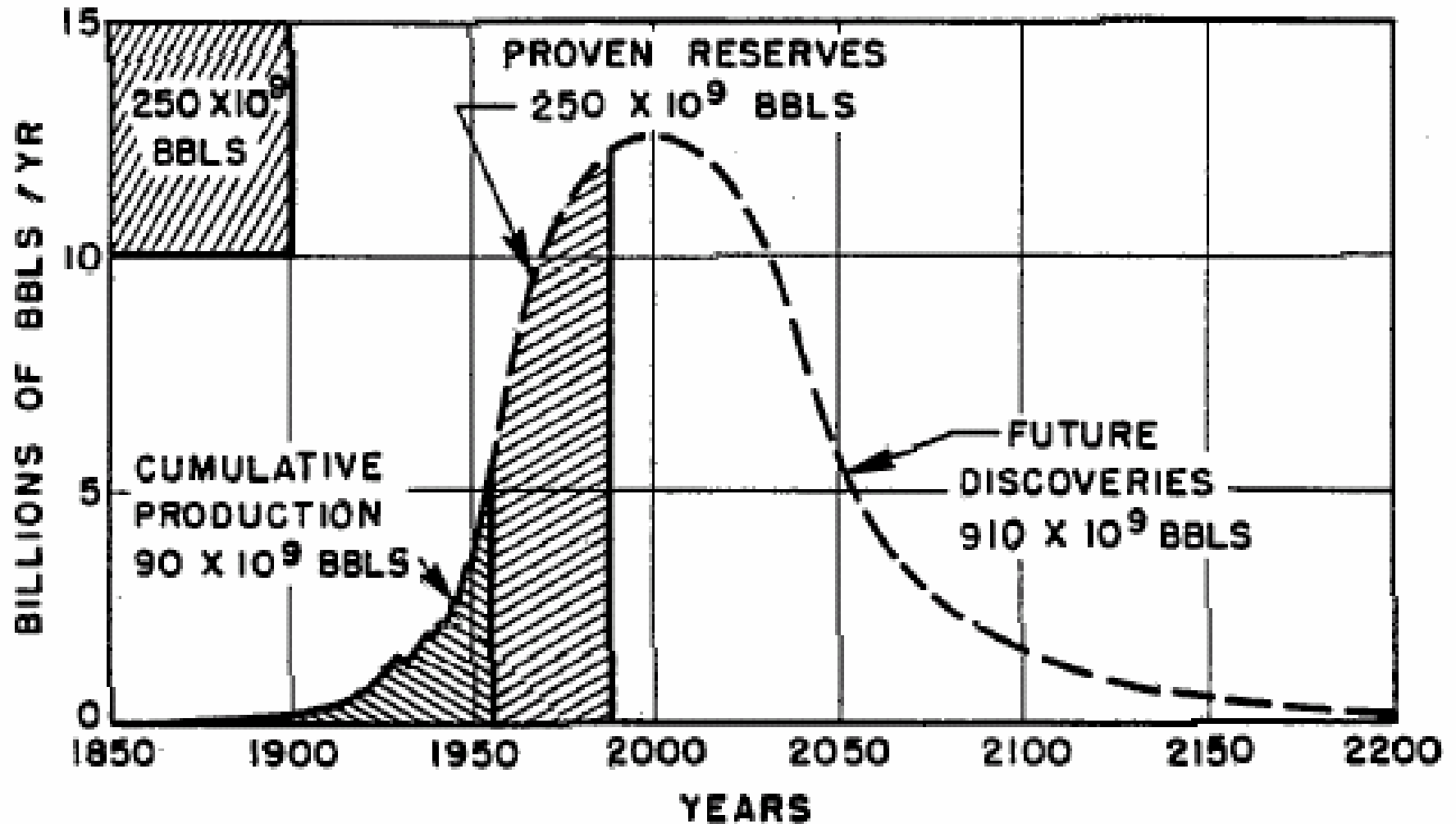
Total Crude Oil Production (Worldwide)



Warning from the “Hirsch Report” (2005)

"The peaking of world oil production presents the U.S. and the world with an unprecedented risk management problem. As peaking is approached, liquid fuel prices and price volatility will increase dramatically, and, without timely mitigation, the economic, social, and political costs will be unprecedented."

Hubbert's Curve (Peak Oil)



Peak Oil Quiz

Instructions: With books closed and eyes on your own paper, please mark the single best answer.

1. Peak oil production indicates:
 - a) Half gone.
 - b) Running out.
 - c) Starting out.
 - d) None of the above.
 - e) All of the above.

Peak Oil Quiz -- Answer Key

Instructions: With books closed and eyes on your own paper, please mark the single best answer.

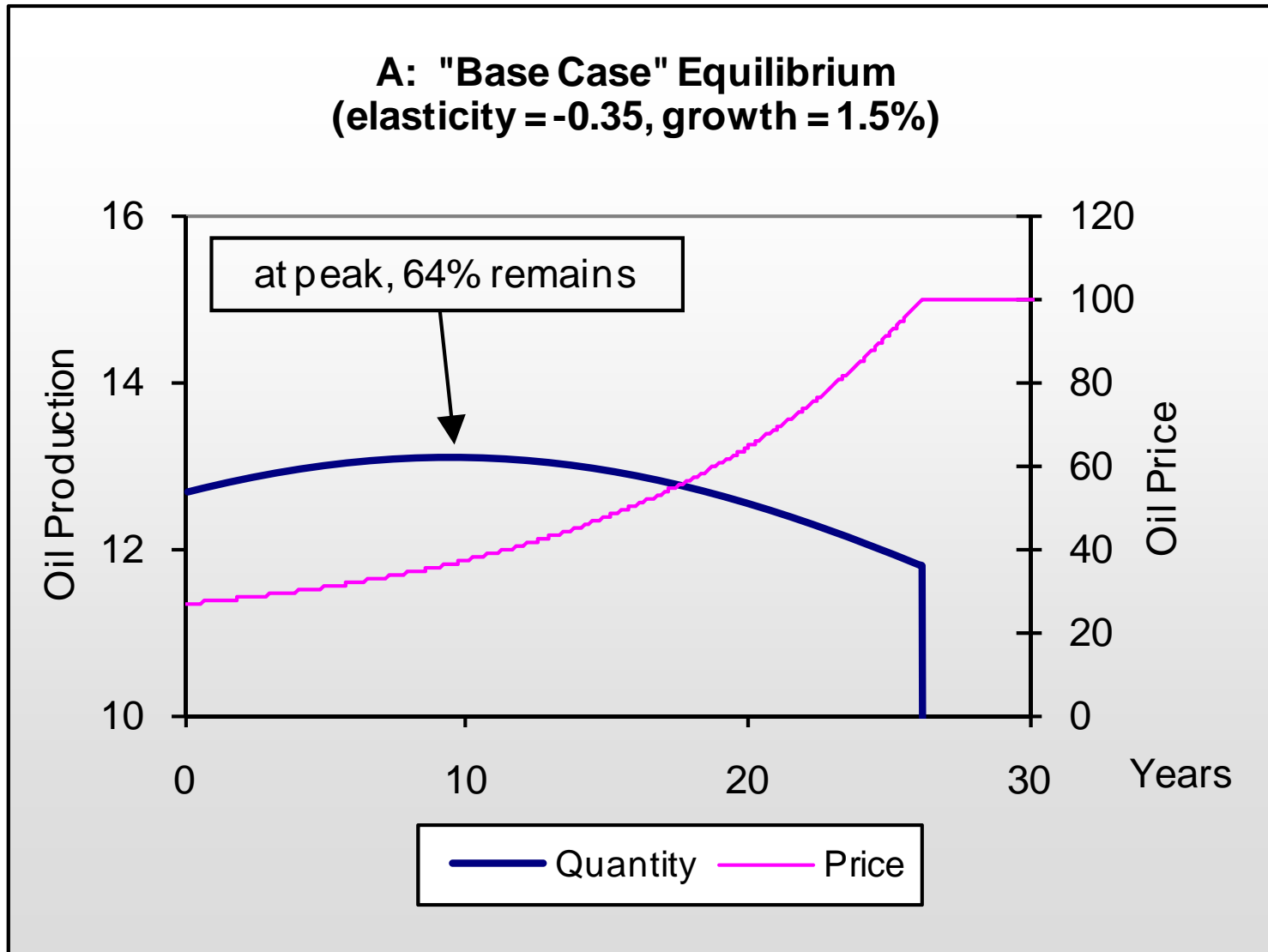
1. Peak oil production indicates:
 - a) Half gone.
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 - c) Starting out.
 - d) None of the above.
 - e) All of the above.
 - ✓ f) Need more information.

What Would the Market Do?

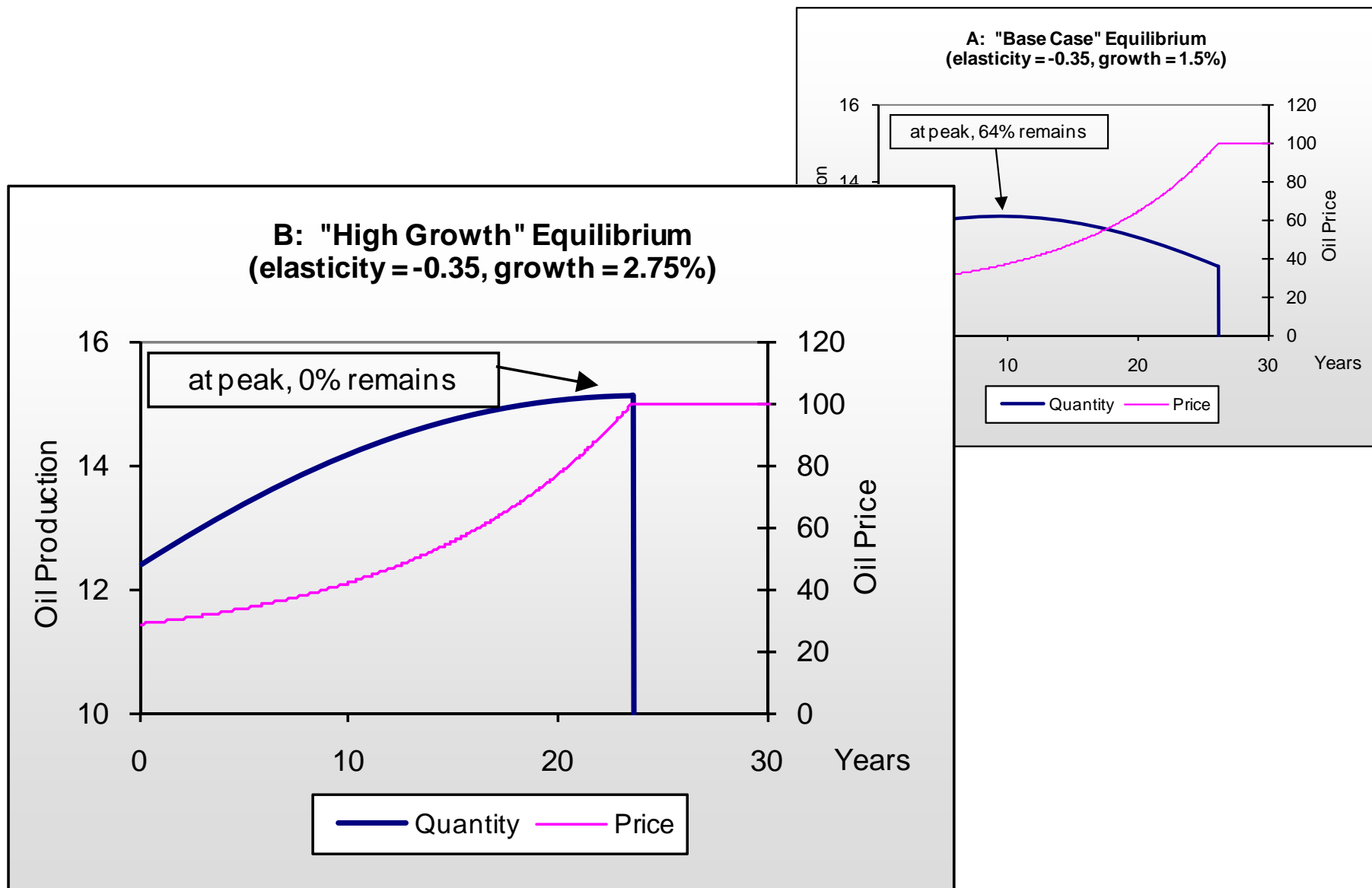
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- *But...*
 - What does the production path look like?
 - When does the peak occur?
 - What happens after the peak?

The Economic Peak

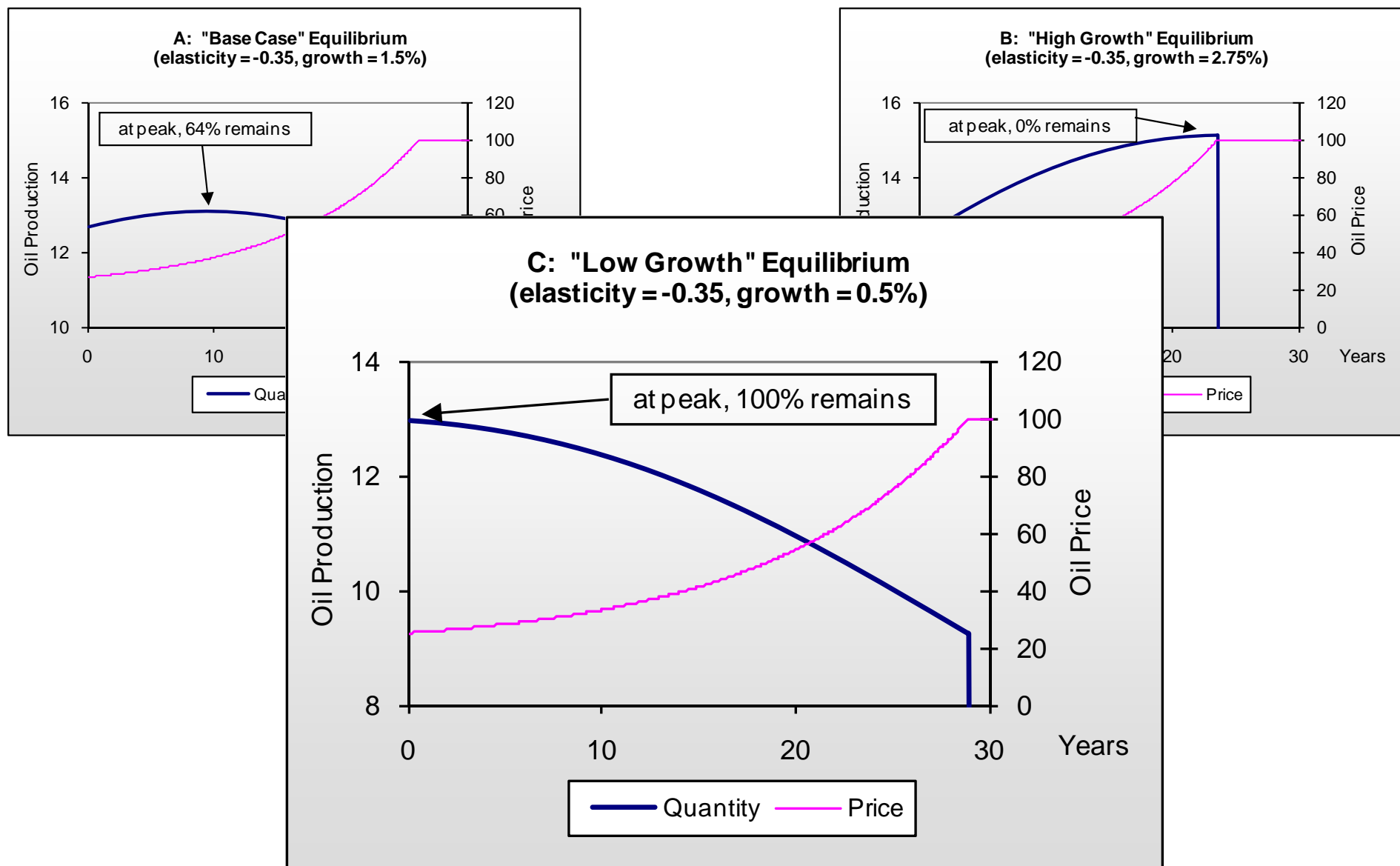
A: "Base Case" Equilibrium
(elasticity = -0.35, growth = 1.5%)



Market Fundamentals Determine Shape of the Peak



Market Fundamentals Determine Shape of the Peak

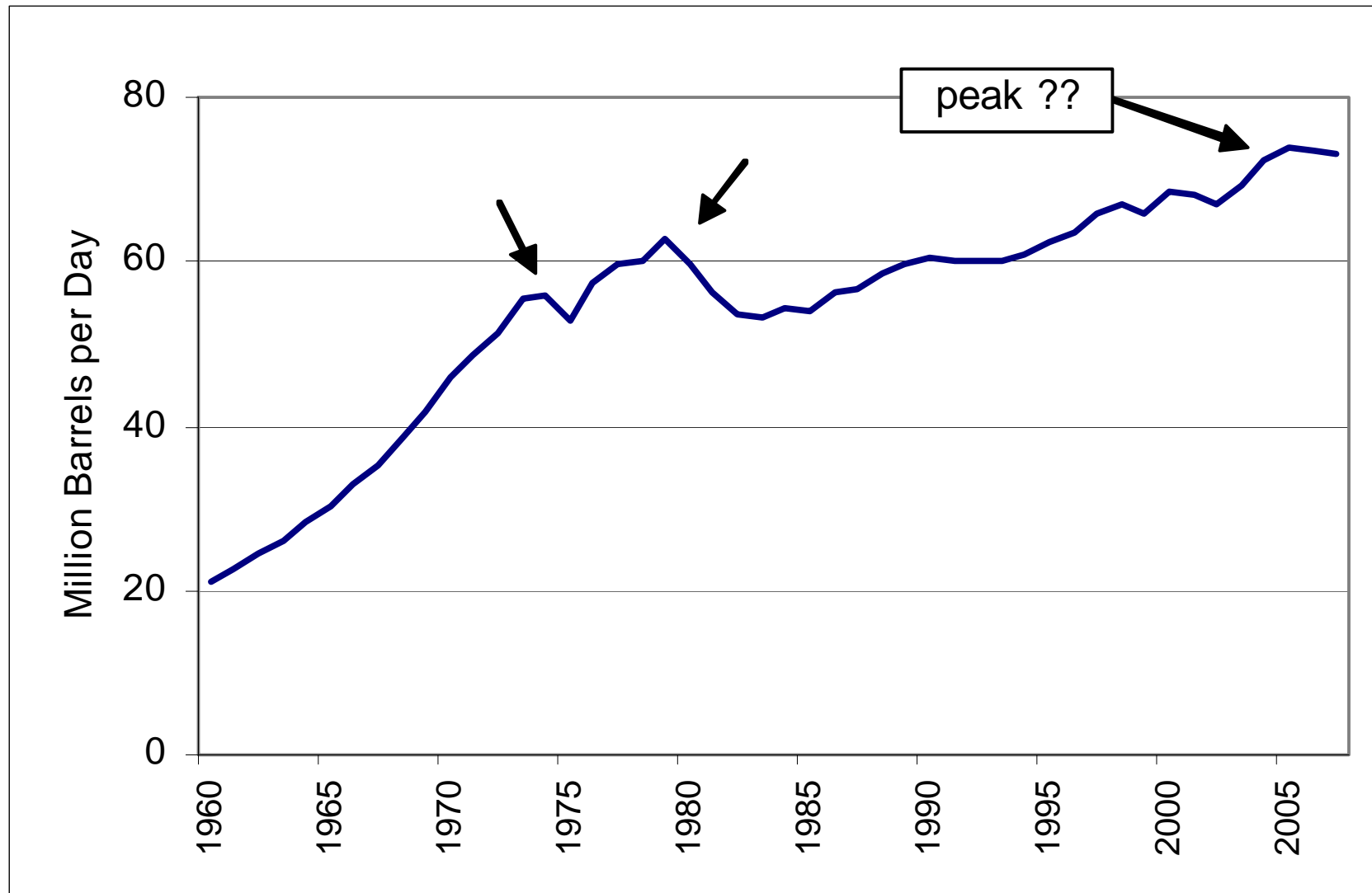


The Peak is an Ambiguous Indicator

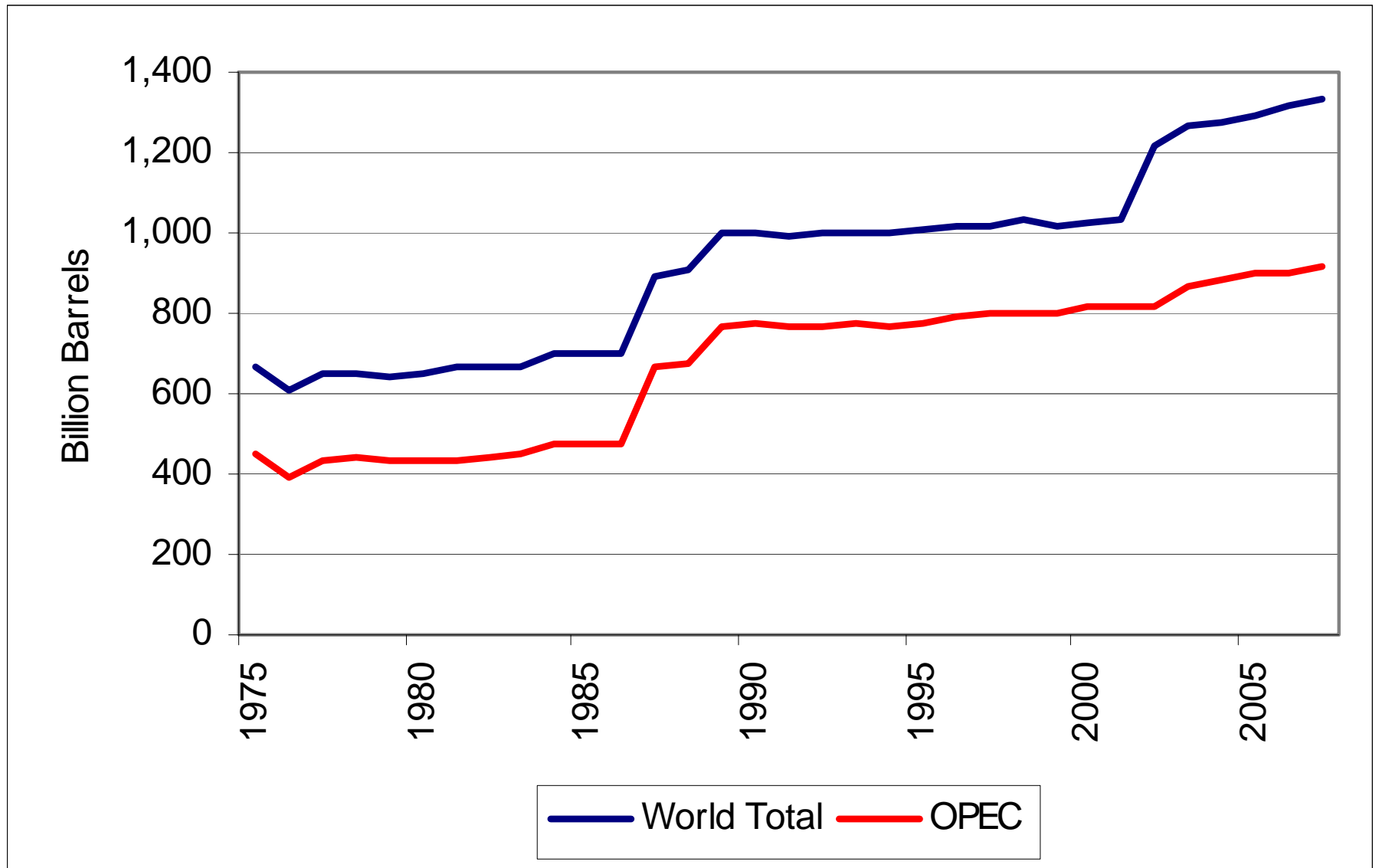
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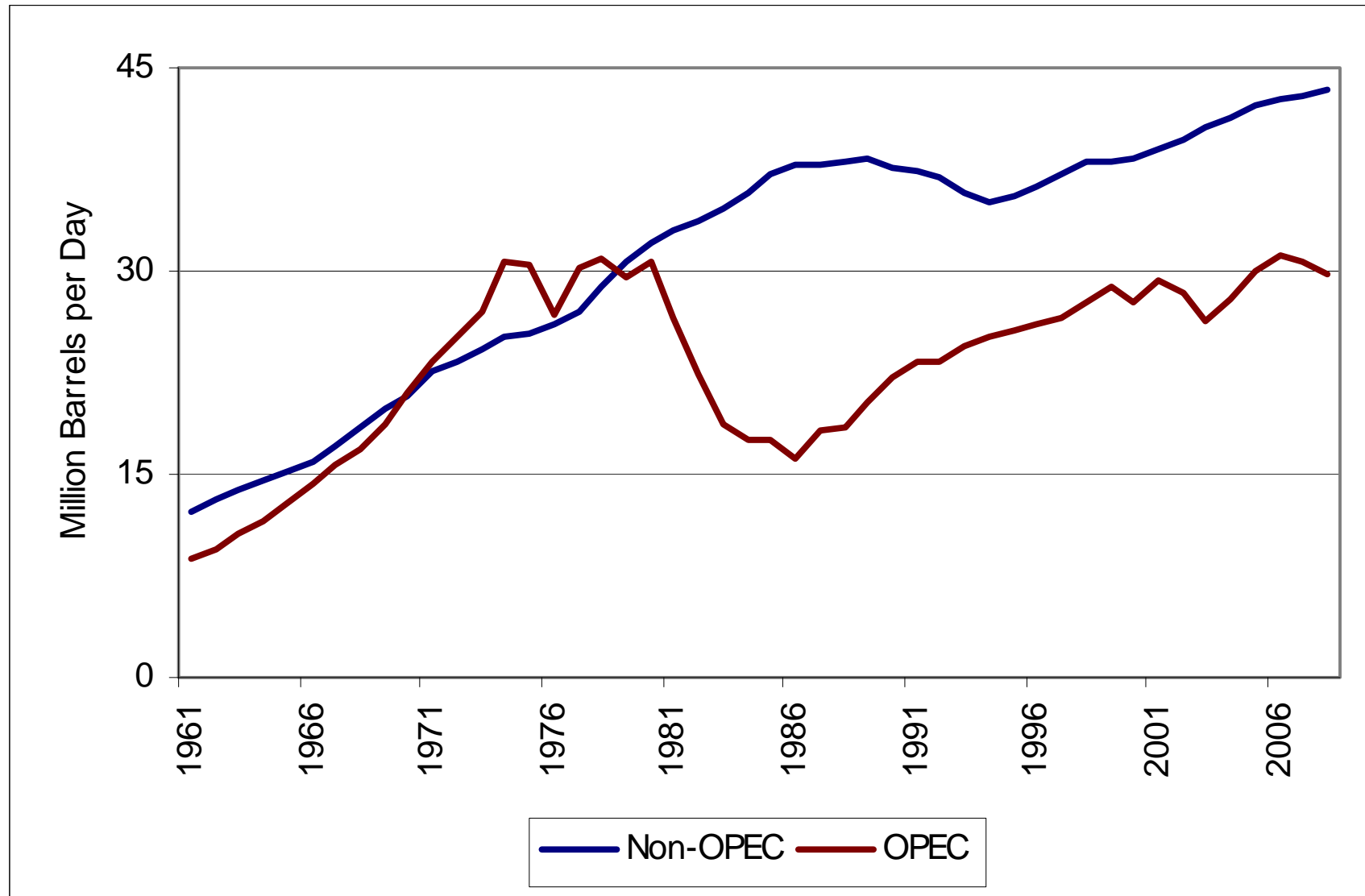
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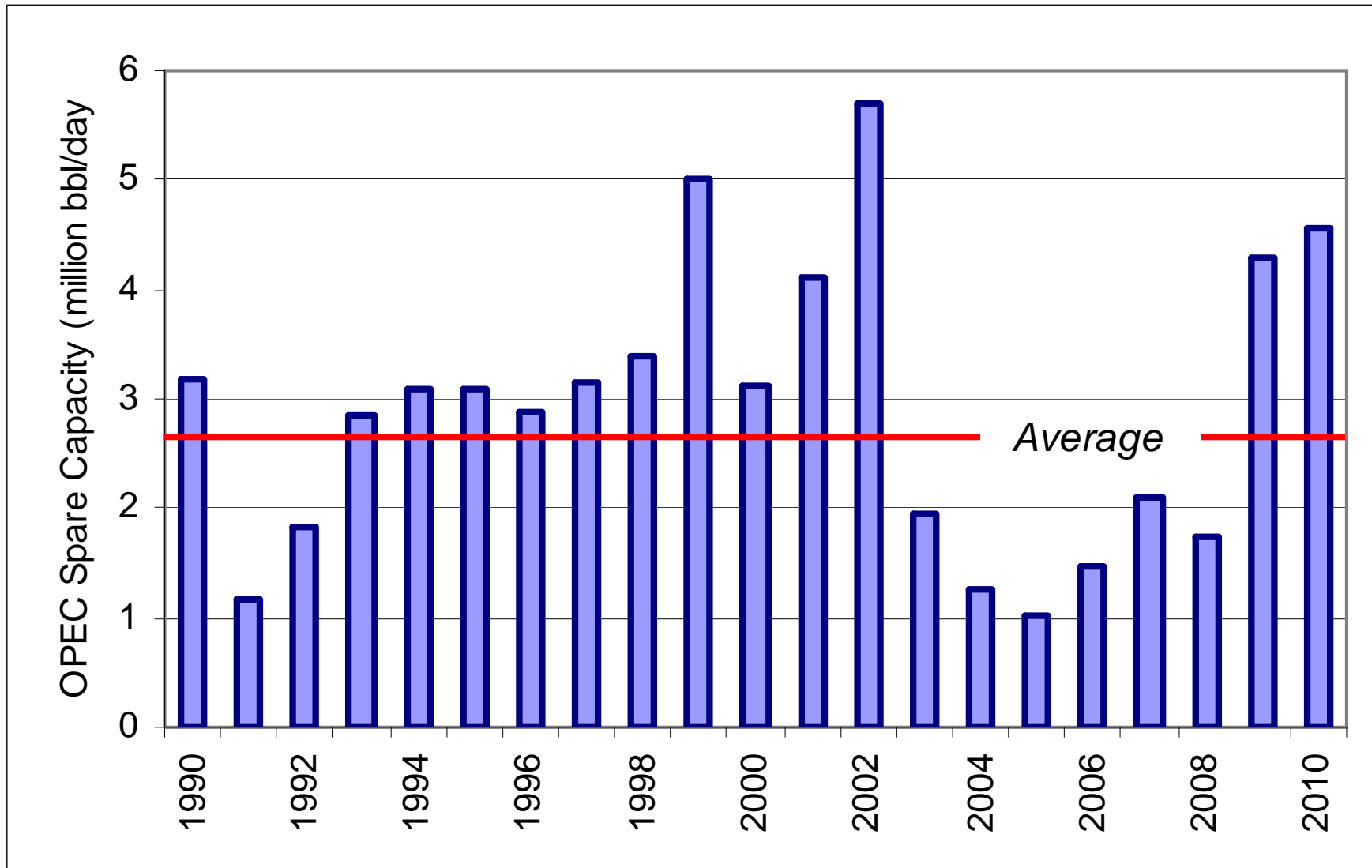
Proved Oil Reserves (Remaining)



Crude Oil Production, OPEC vs Non-OPEC



OPEC Spare Production Capacity



Take-Aways

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Thank You!



America's Energy Future

