

Challenging Energy Markets: Stormy Weather or Worse?



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ICoTA Roundtable
Calgary, Canada

October 20, 2011

Great Political Turmoil

Middle East



Wisconsin



Great Political Turmoil

Greece

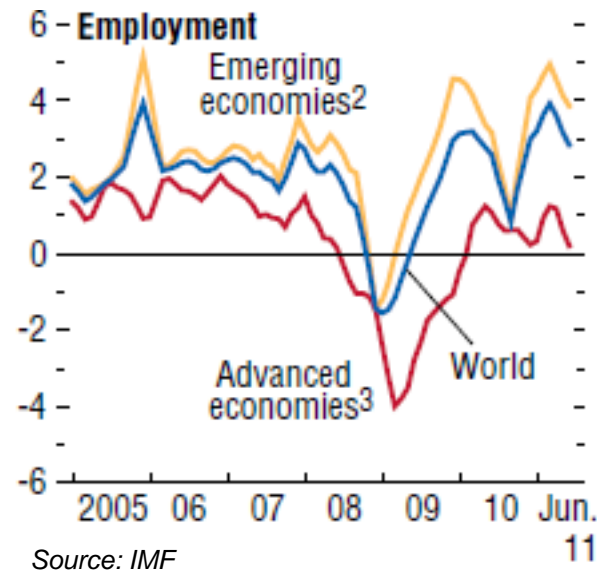


Wall Street

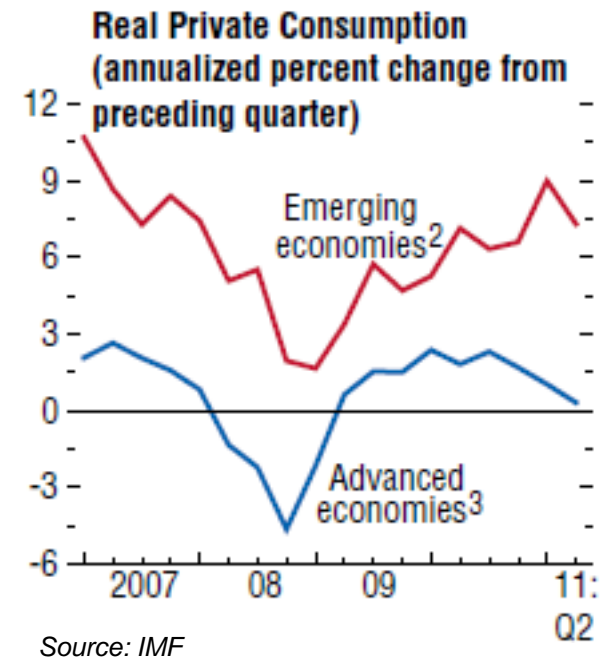


Great Economic Turmoil

Employment

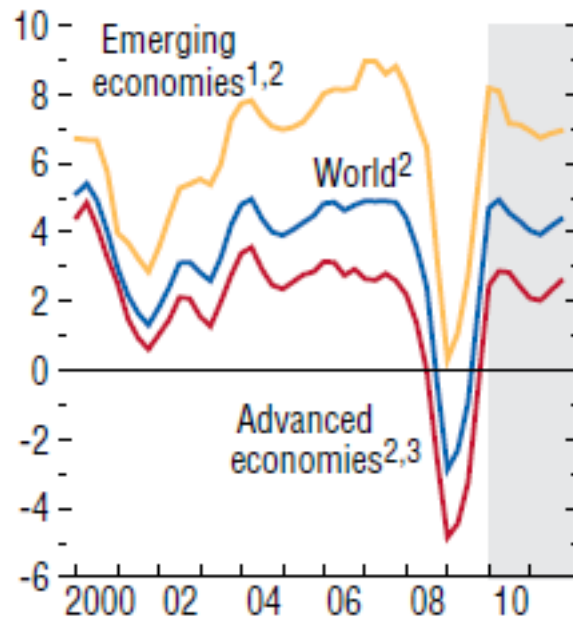


Consumption



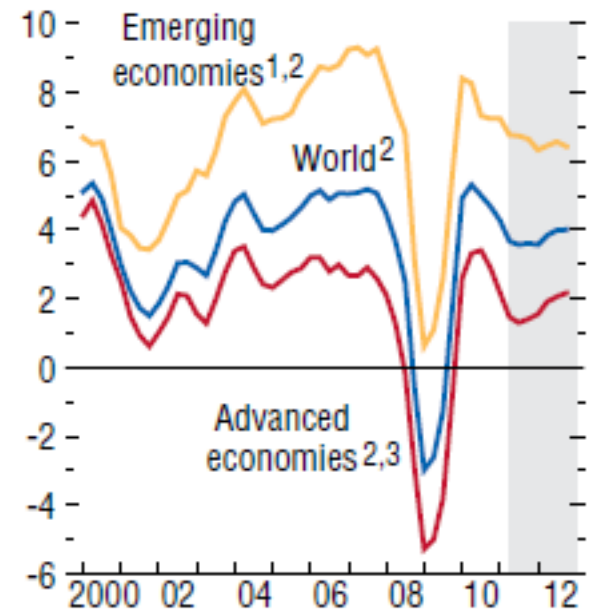
Economic Growth Assumptions are Falling

2010



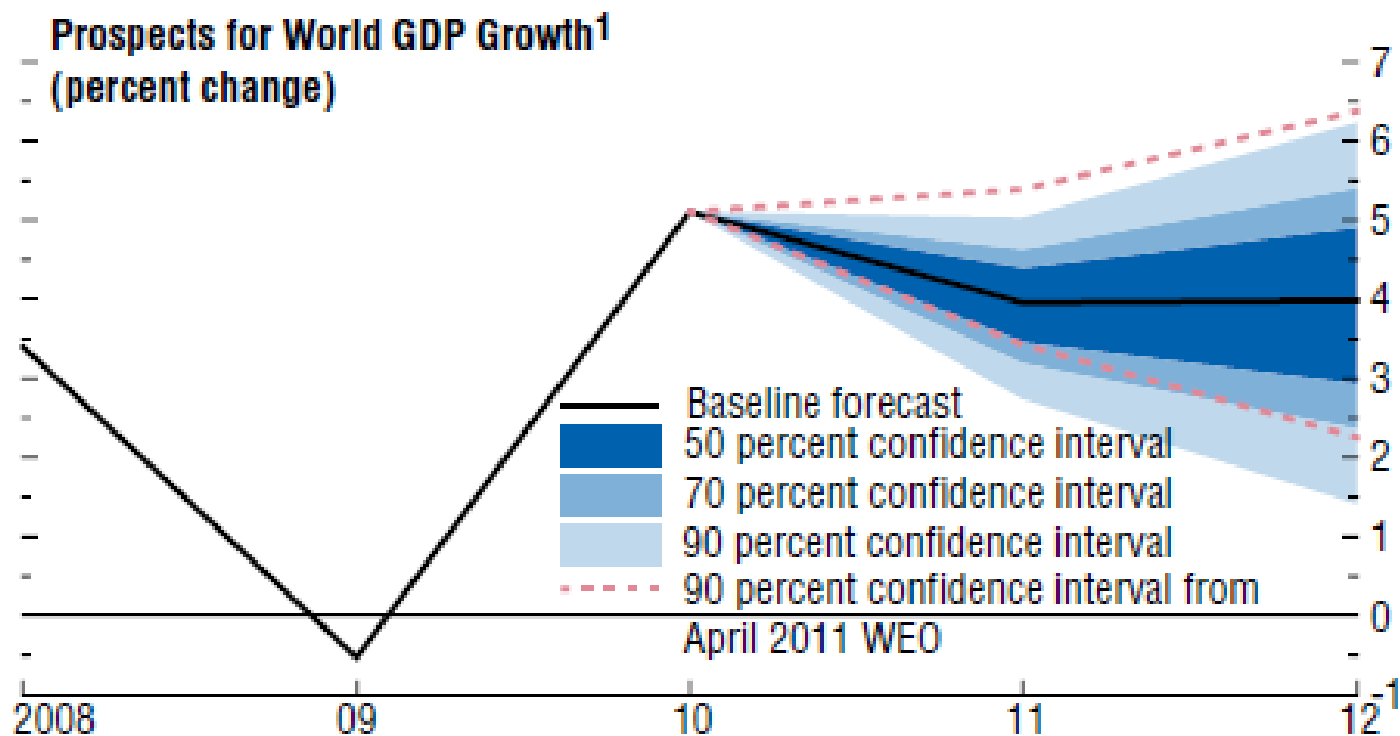
Source: IMF

2011



Source: IMF

IMF Says Greater Risk to Downside for Growth

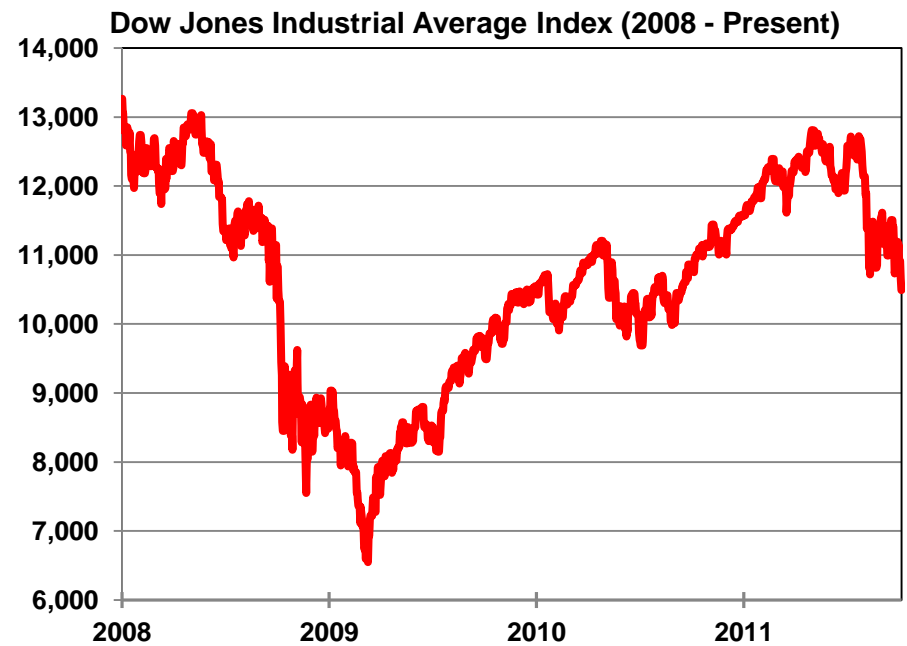


Questions for 2011

What Political Resolve?

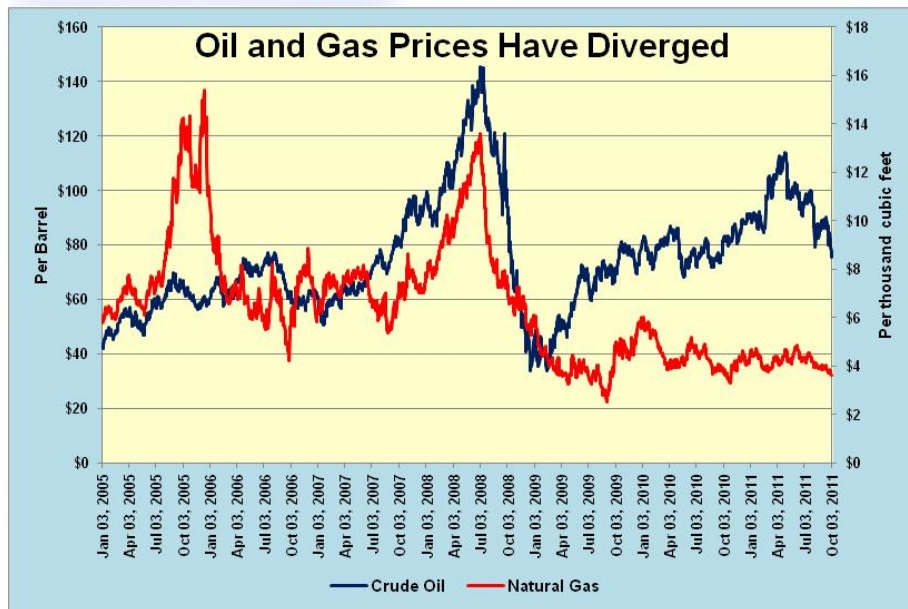


Careening for a 2008 Repeat?

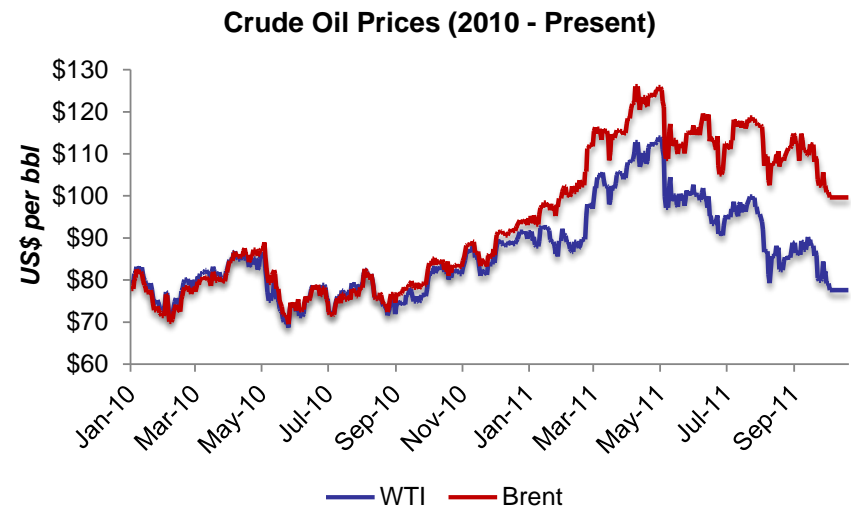


Energy Markets in Turmoil

Oil & Gas Prices have Diverged



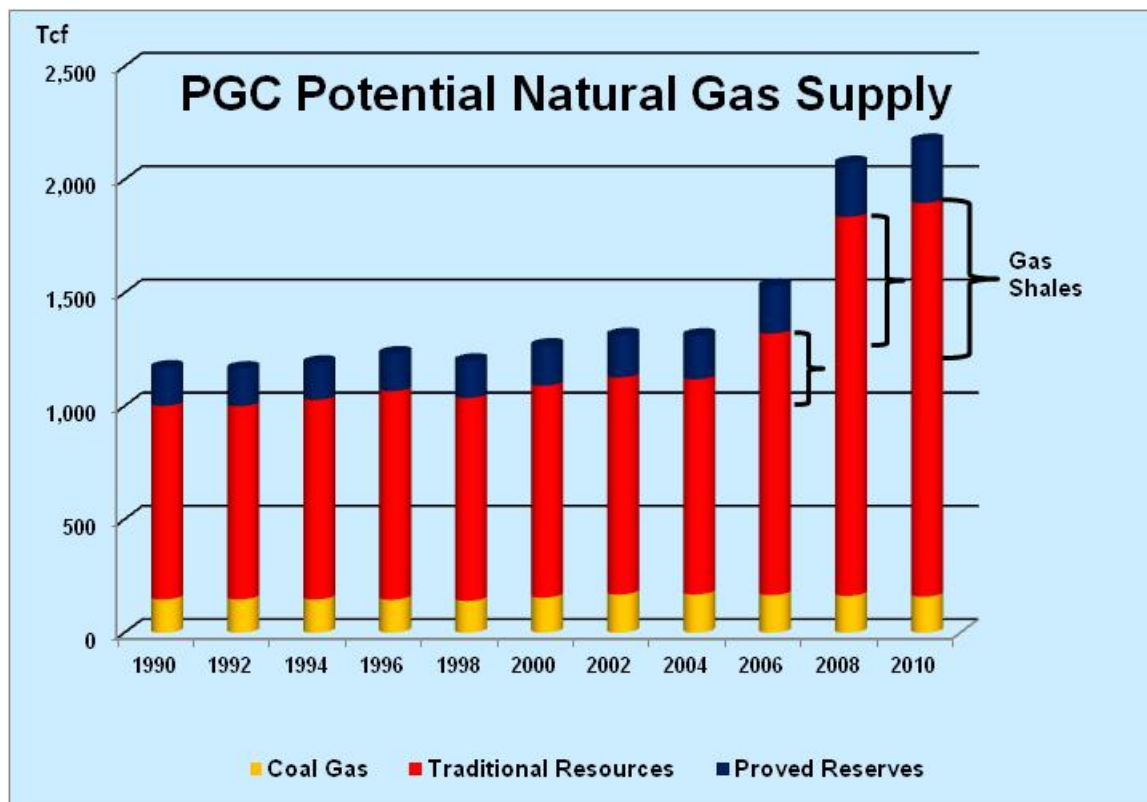
Global & U.S. Oil Prices Diverged



Energy Markets in Turmoil

- **Arab Spring Impact**
 - **Libya Production**
 - **Saudi / OPEC Resolve**
 - **Israeli / Palestinian Question**
- **Energy Demand Growth**
- **Green Energy**
- **U.S. Oil Production Growth**
- **Shale Gas Revolution**

Shale Gas is Revolutionizing the Industry



50 years; 100 years; maybe 200 years of supply colors views

Natural Gas is Becoming Bridge to the Future

Golden Gate Bridge under construction in 1936



Anne T. Kent California Room Collection, Marin County Free Library

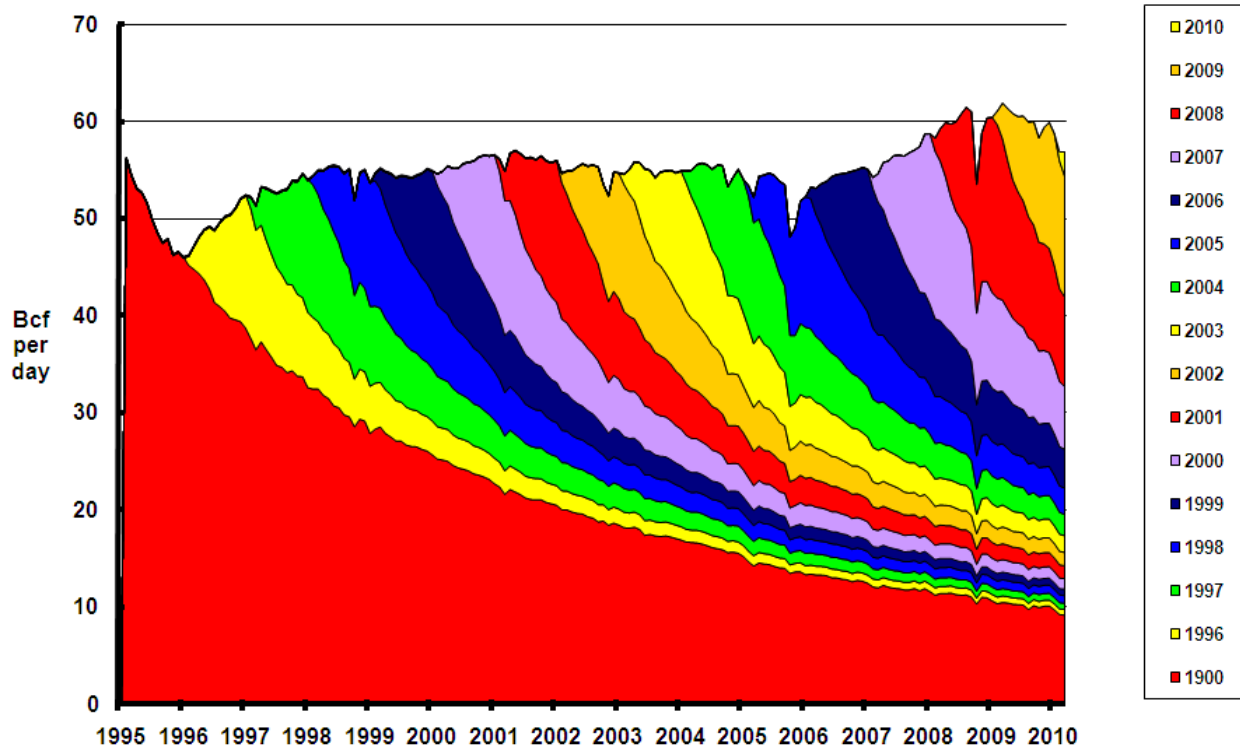
Building a Bridge Assumes the Future Doesn't Change

Bridge in Honduras after Hurricane Mitch in 1998



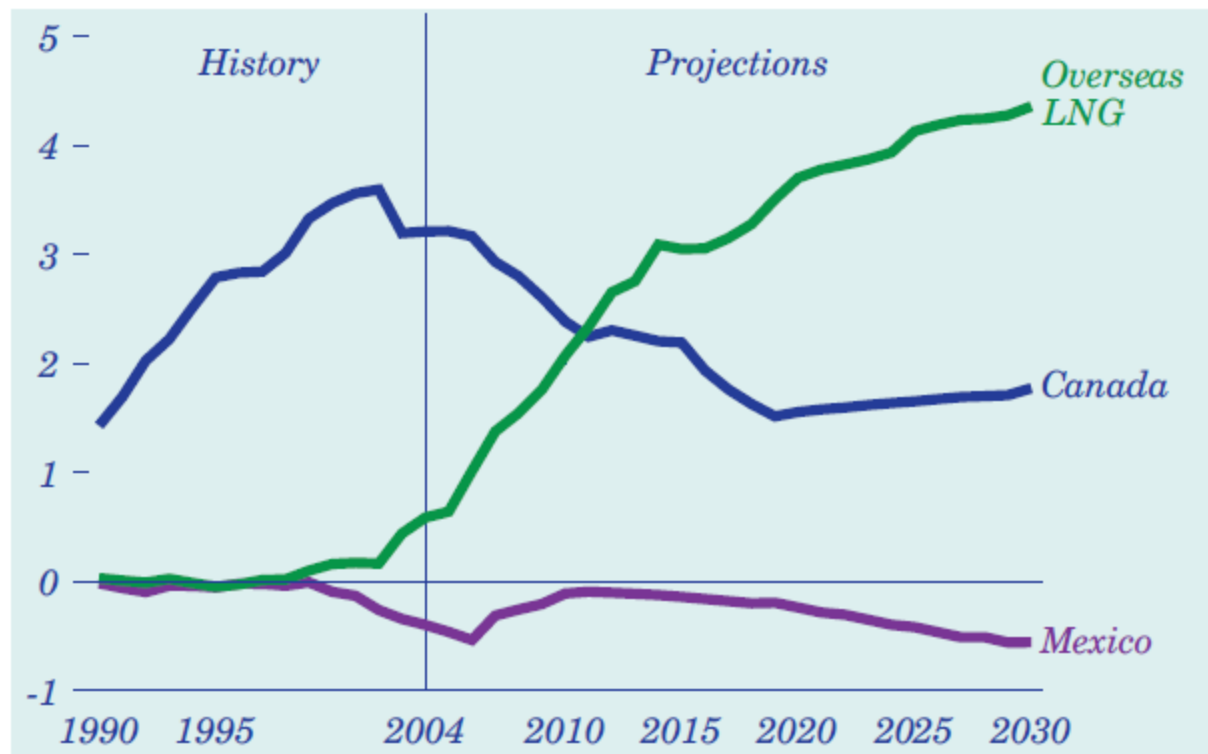
How We Used to View Domestic Gas Supply

U.S. Natural Gas Production History



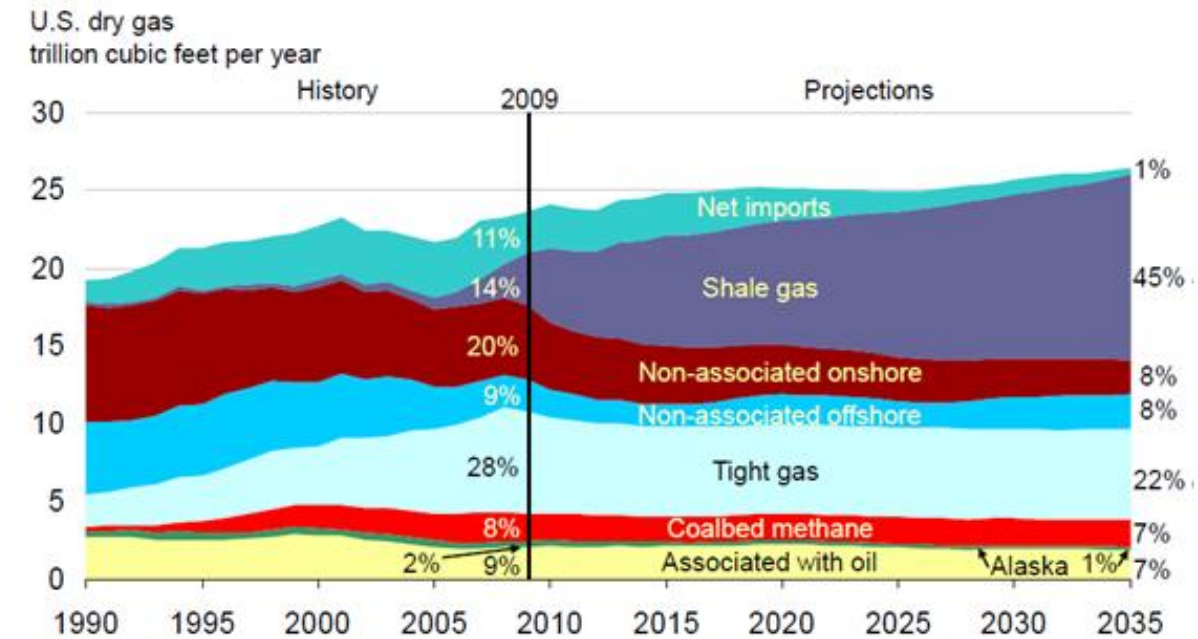
Source: IHS

The Old View of Our Future Gas Supply



The Future Outlook for Domestic Gas Supply

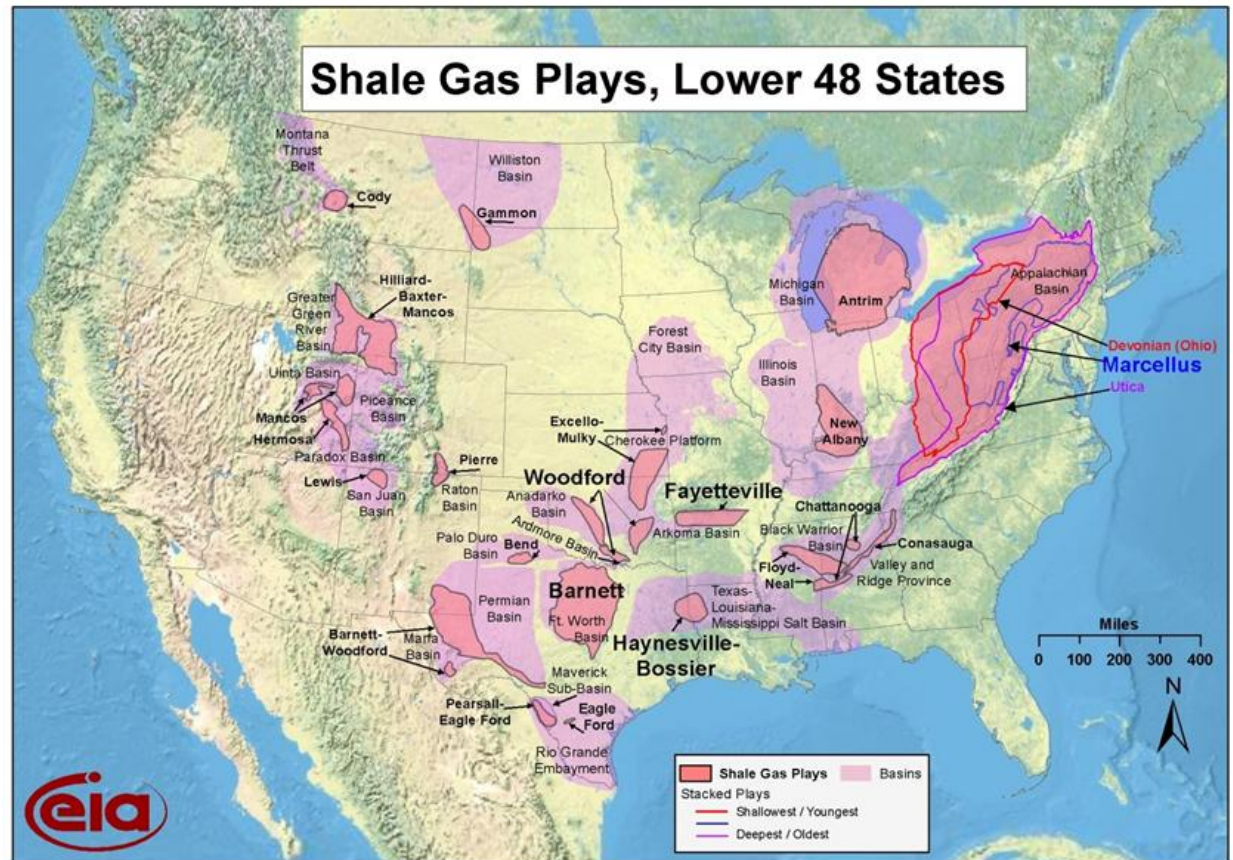
Shale gas offsets declines in other U.S. supply to meet consumption growth and lower import needs



Richard Newell, December 16, 2010

Source: EIA, Annual Energy Outlook 2011 24

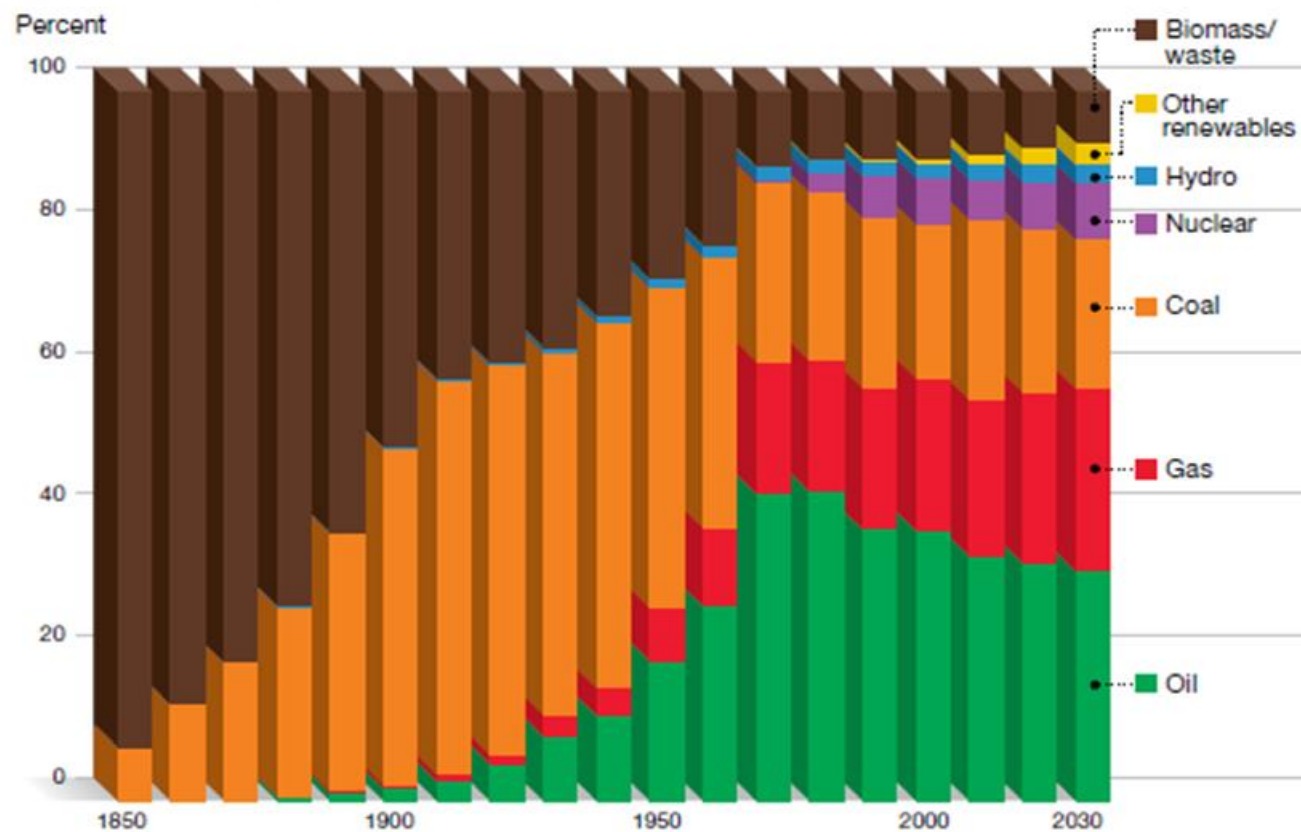
Unconventional is Now Conventional



Source: Energy Information Administration based on data from various published studies.
Updated: March 10, 2010

Natural Gas to Play Greater Role in Future

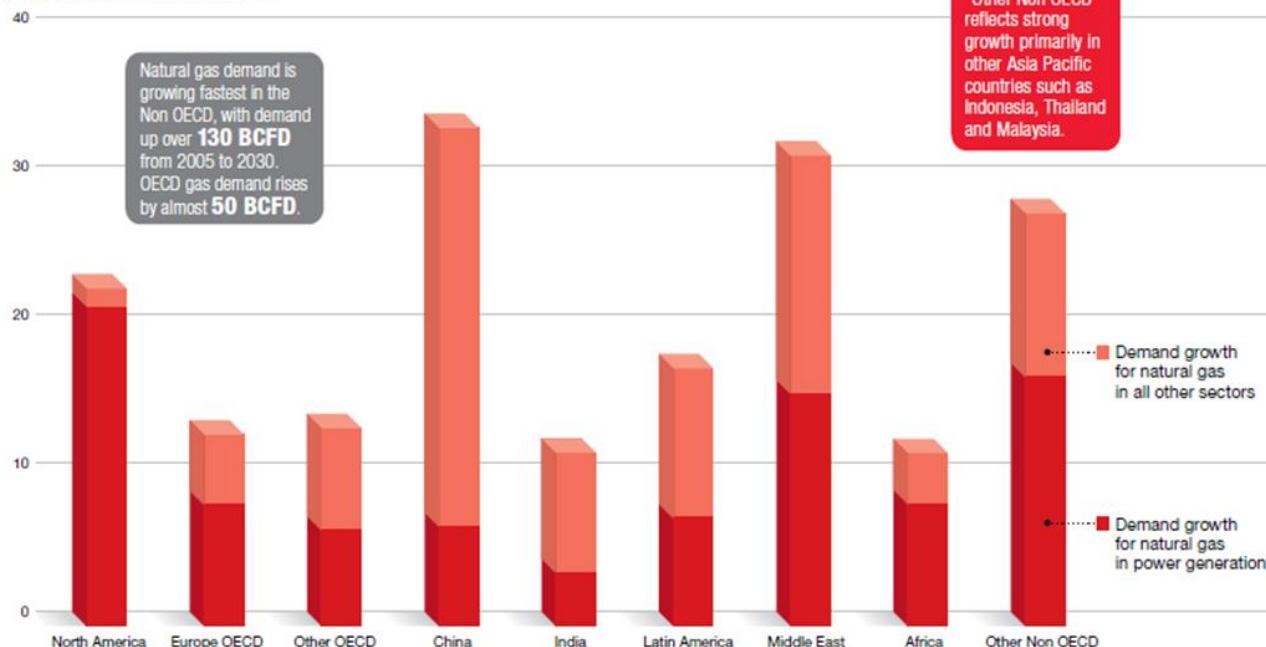
Global demand by fuel



After Decades, Age of Gas May Be Arriving

Natural gas demand growth 2005-2030

Billions of cubic feet per day (BCFD)



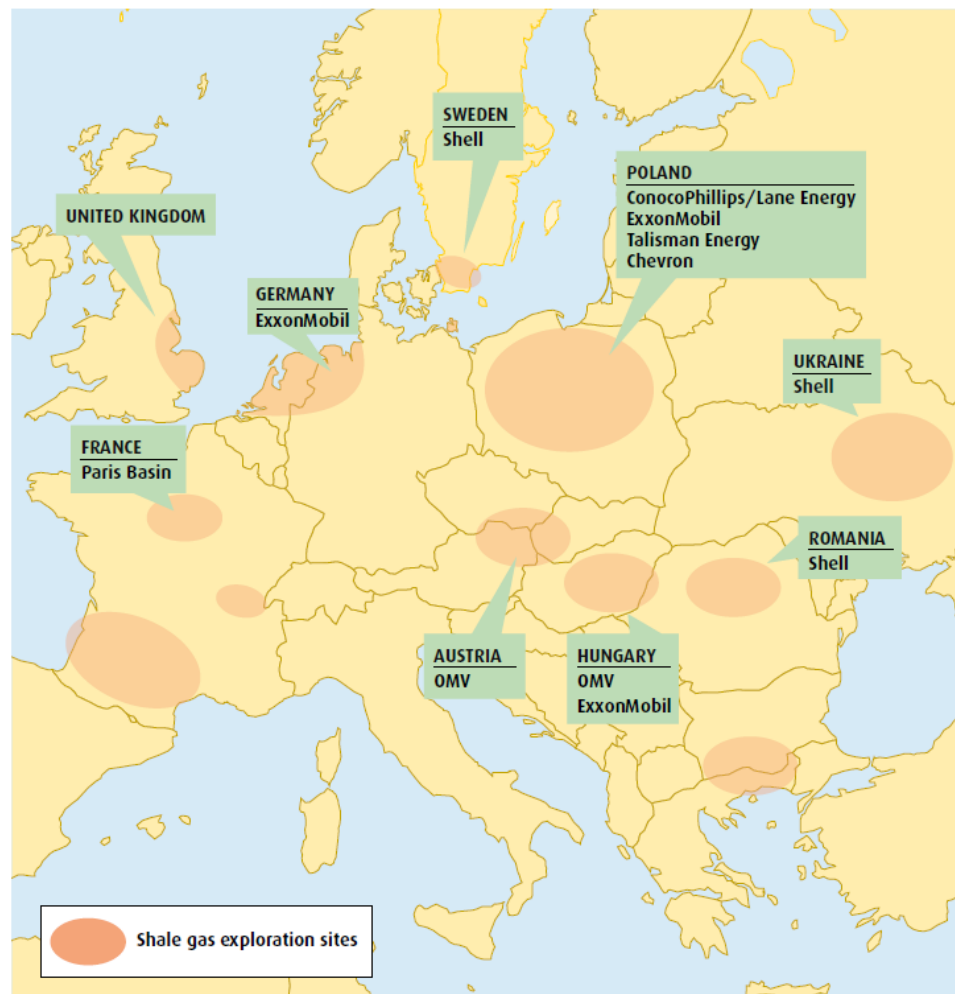
Global Gas Shale Prospects are Potentially Huge



Where Is The Gas Business Heading?

- “Prediction is very difficult, especially about the future.”
 - Niels Bohr
Nobel laureate in Physics
- “Those who have knowledge, don’t predict. Those who predict, don’t have knowledge.”
 - Lao Tzu
6th Century Chinese Poet

An Example of How Extensive Gas Shales Are



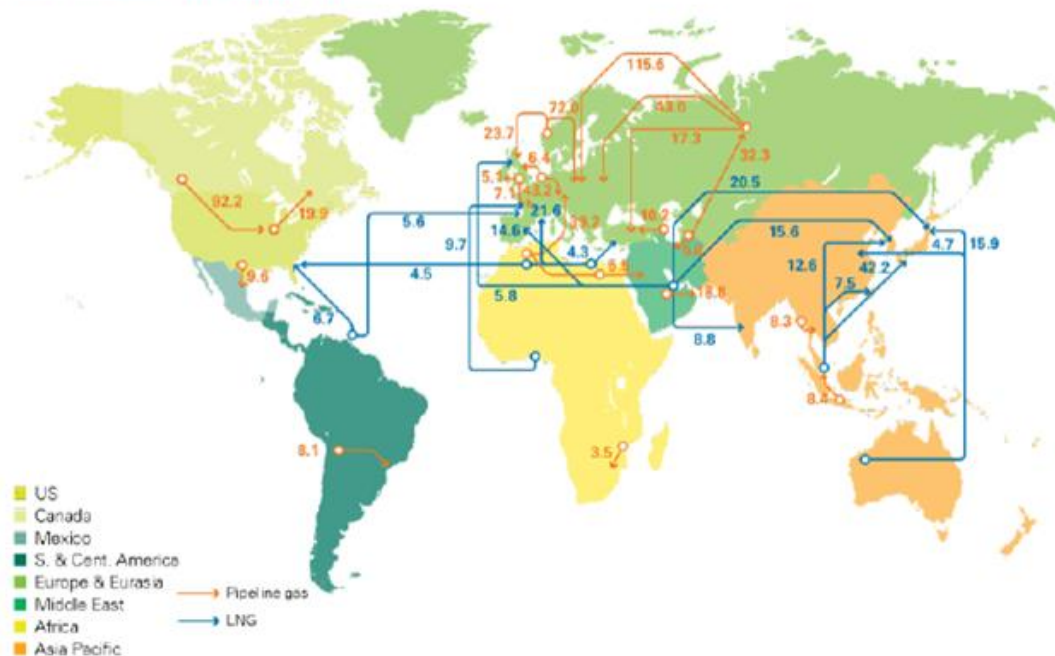
LNG Trade Routes May Be About to Change

Major gas trade movements

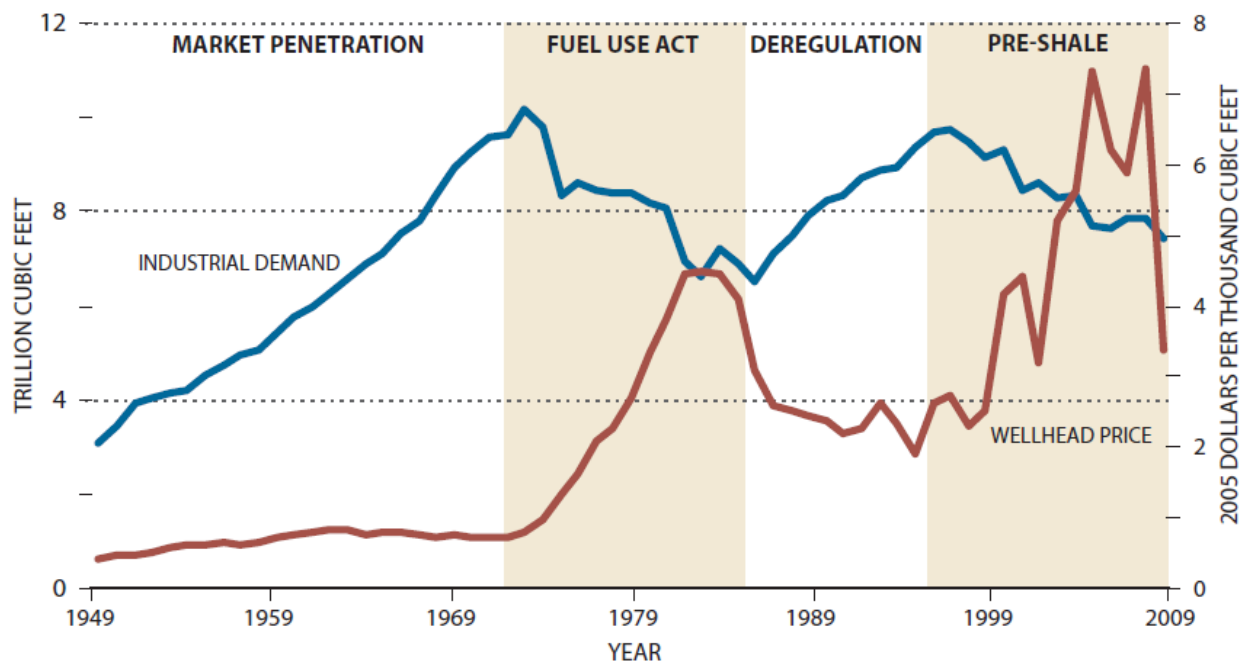


Major trade movements

Trade flows worldwide (billion cubic metres)



Gas Market Distortions Come from Government Regulation



Considerations Influencing Our Future – Government Policy

- Land Restrictions
- Energy Mandates
- Climate Change
- GOM Drilling Restrictions
- Fracturing Questions



Where is the Gas Business Heading?

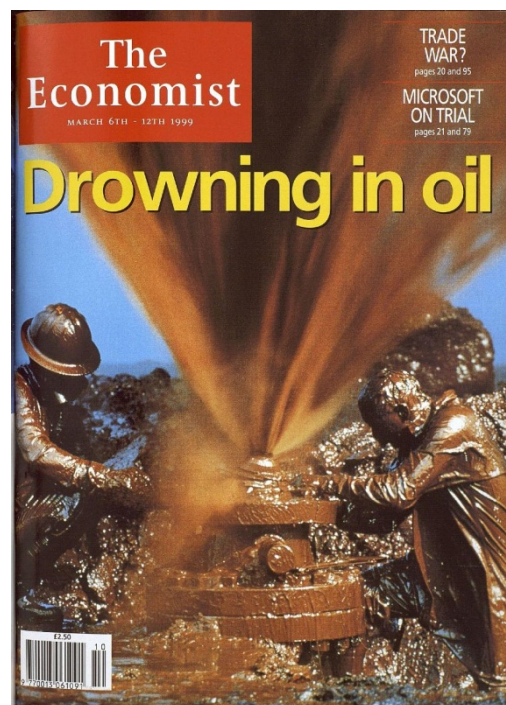
**“If you don’t know where you are going,
you might wind up someplace else.”**

- Yogi Berra
Yankee legend and philosopher



Classic Case of Getting it Wrong

March 1999



December 1999



Natural Gas and Alice



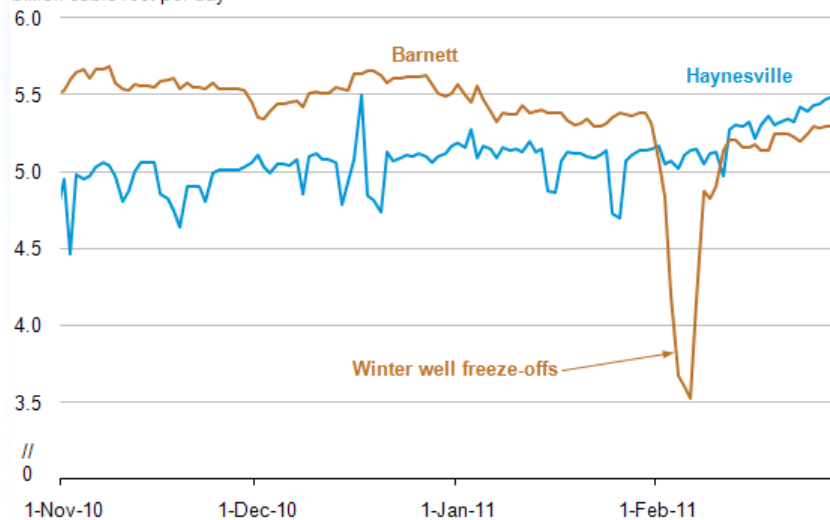
“It takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that.”

*- Queen of Hearts
Alice in Wonderland*

Mine's Bigger Than Yours: Barnett vs. Haynesville

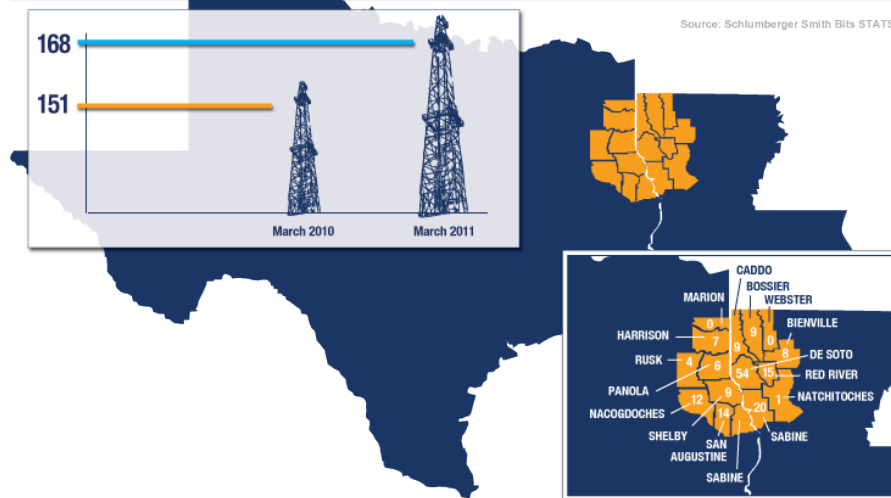
Haynesville and Barnett shale gas production

billion cubic feet per day

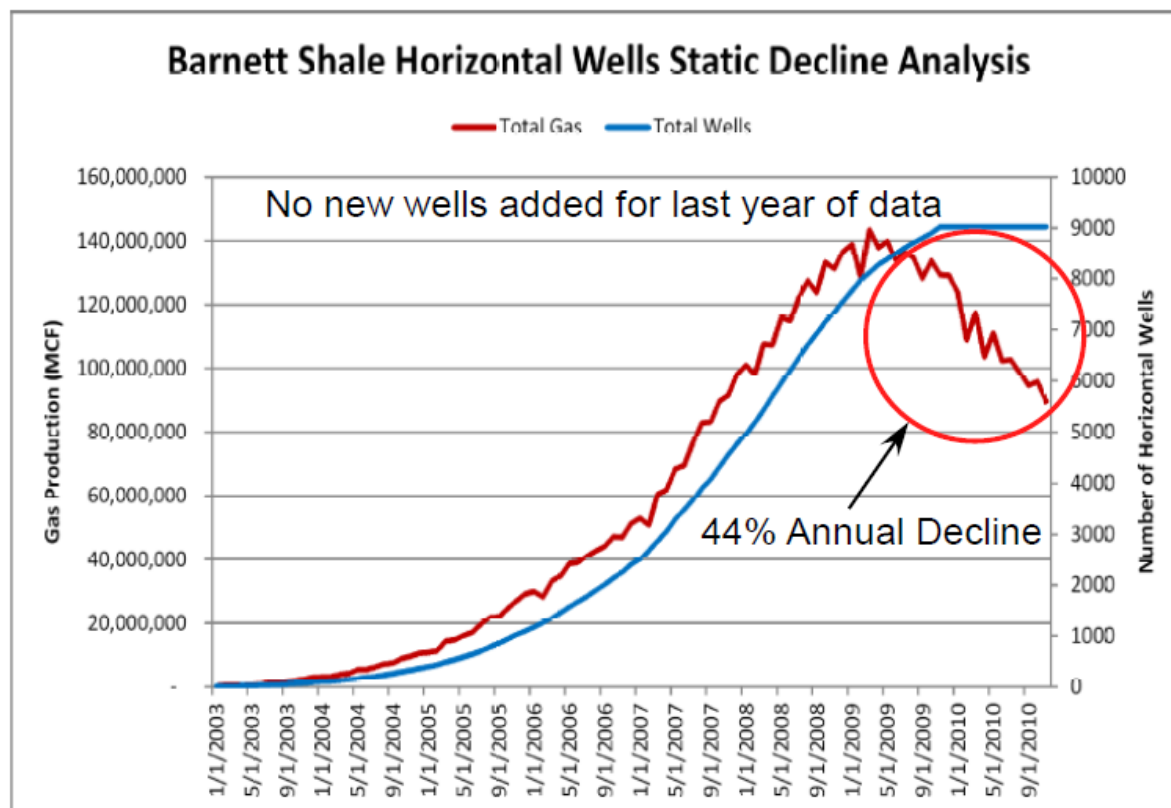


Haynesville Shale Rig Count

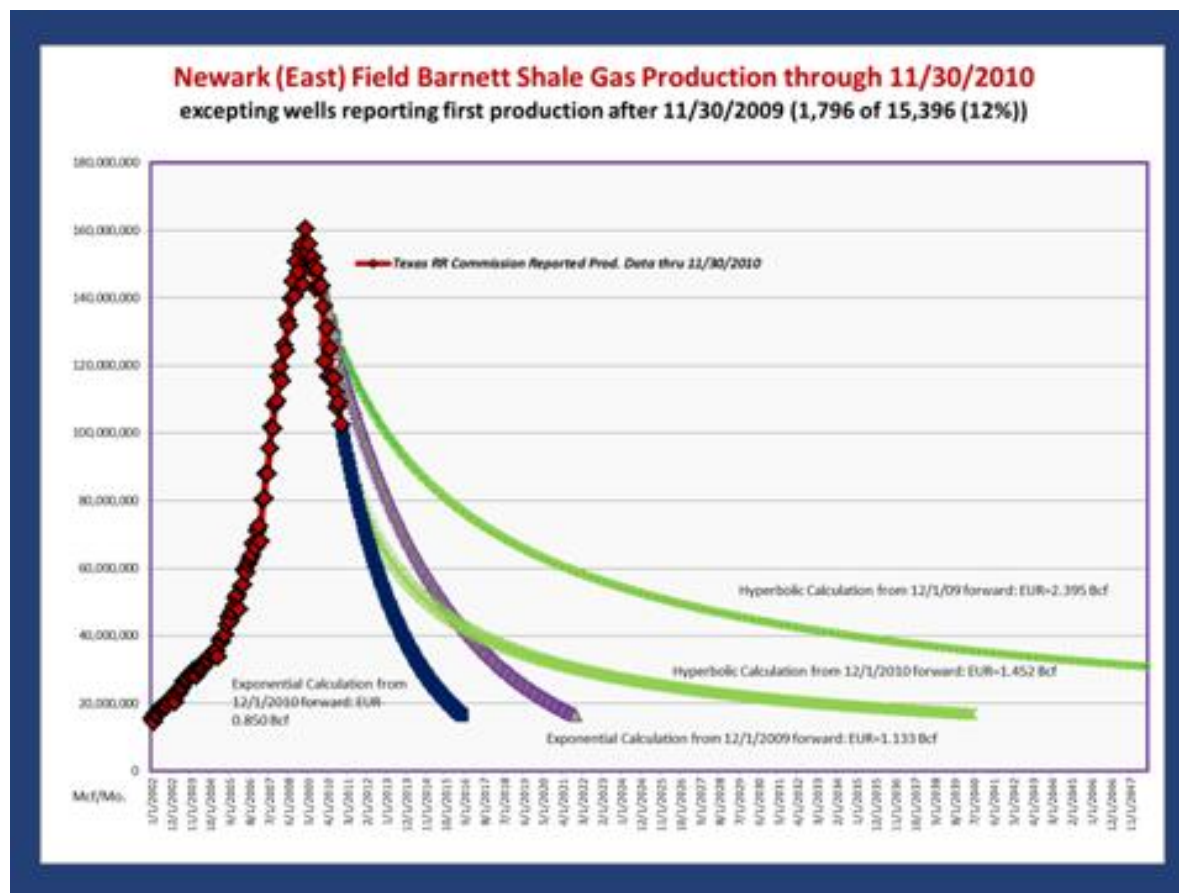
Source: Schlumberger Smith Bits STATS



The Problem for Gas Shales

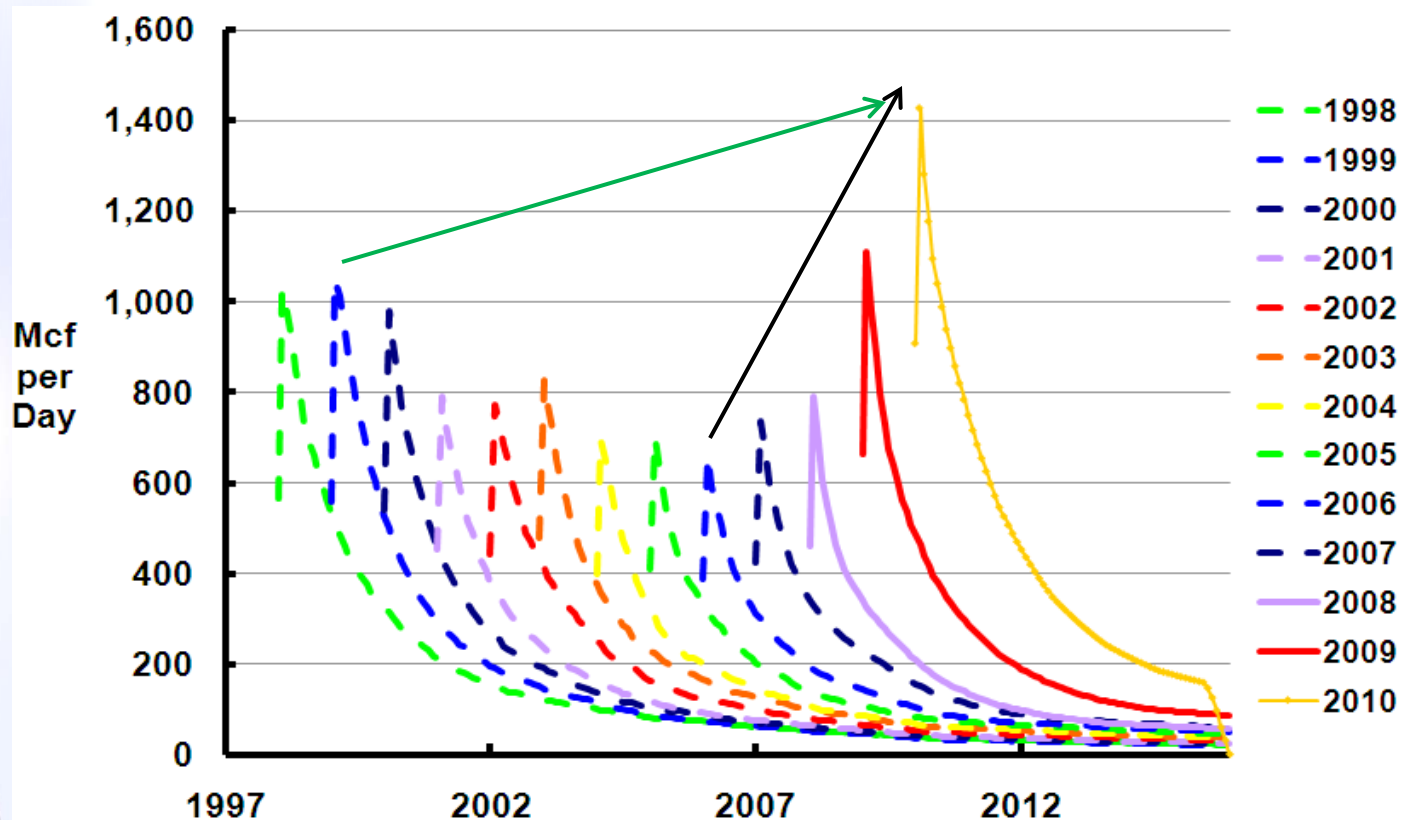


The Problem for Gas Shales



The Problem for Gas Shales

Changing Shape of Natural Gas Well Production Profiles

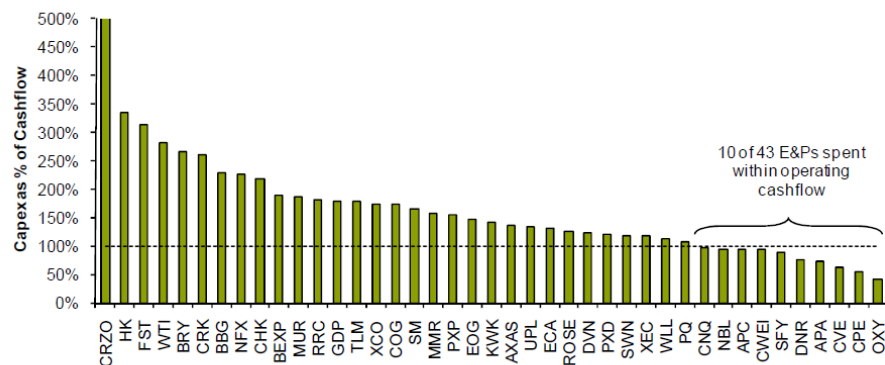


Source: IHS

Gas Shales and the Economic Challenge

Profitability

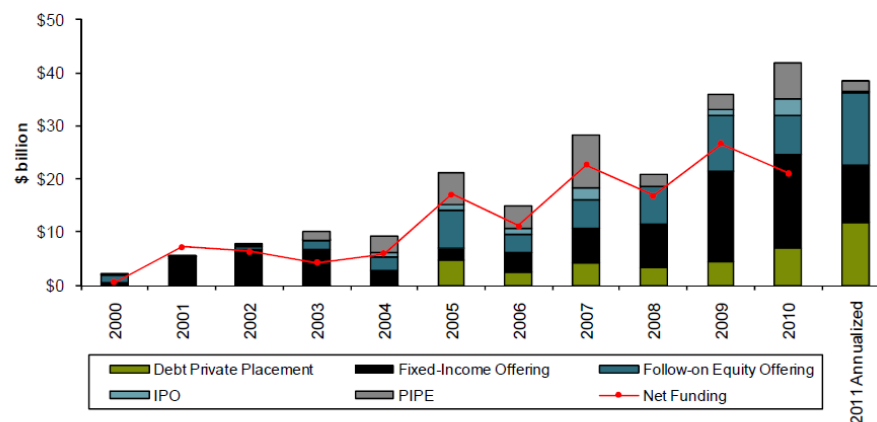
2Q11 Total Capital Expenditures as a % of Operating Cashflow



Source: Corporate Reports, Bernstein Analysis

Capital Markets

North American E&P Capital Raises by Year



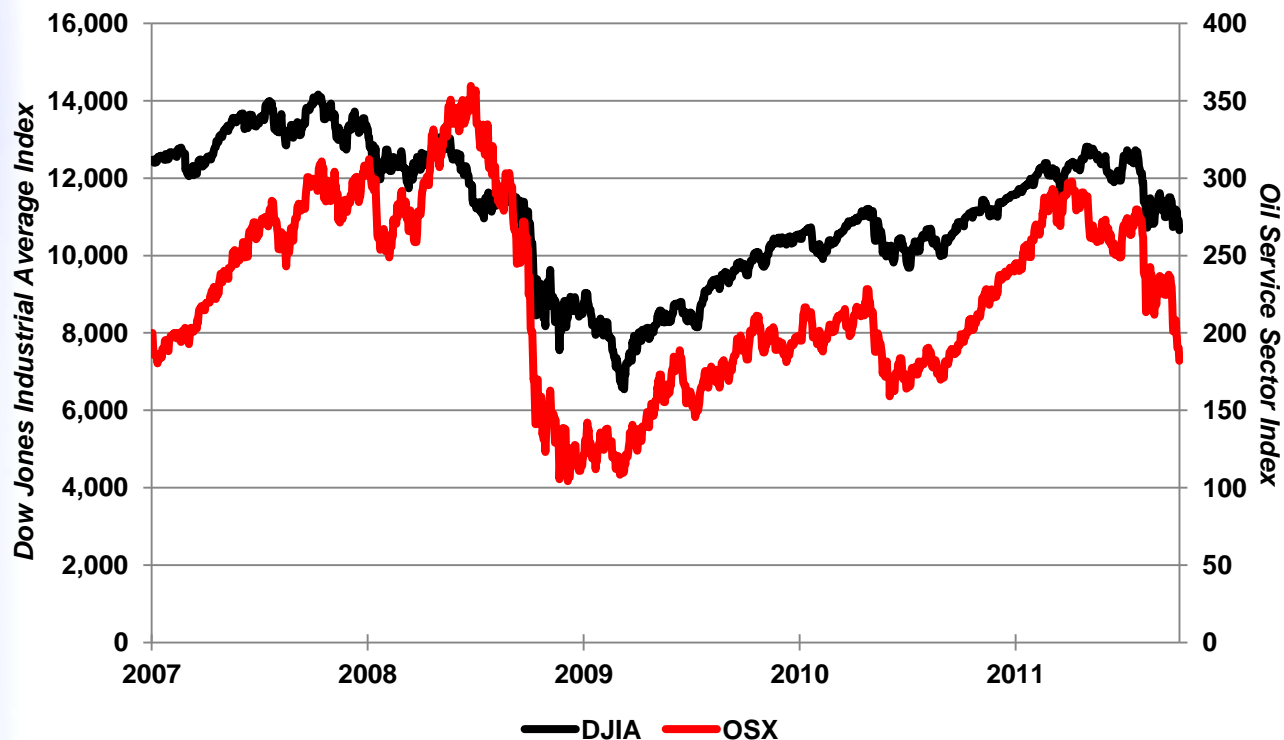
Source: Capital IQ and Bernstein

Black Swans

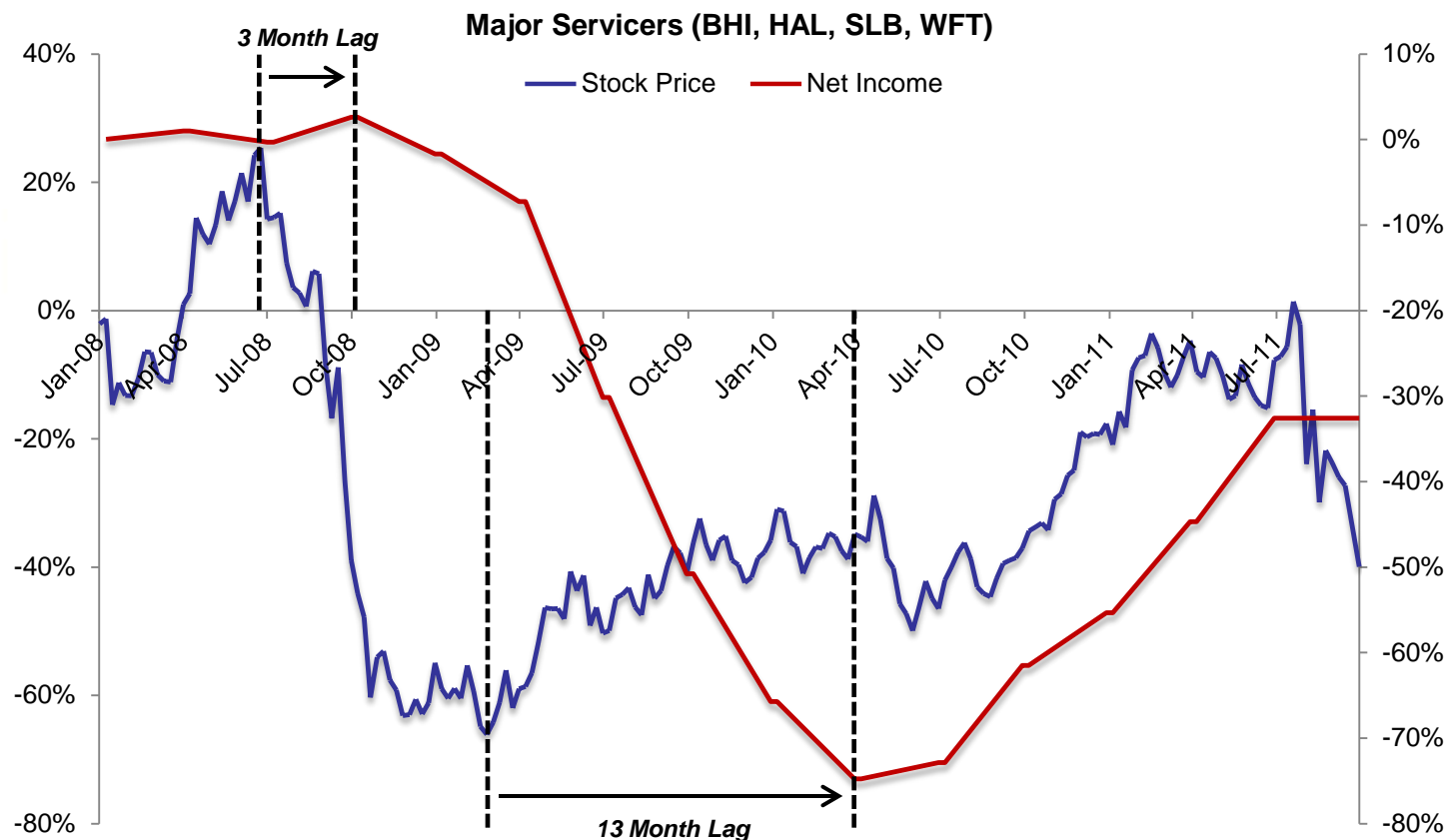


Performance of the Service Stocks

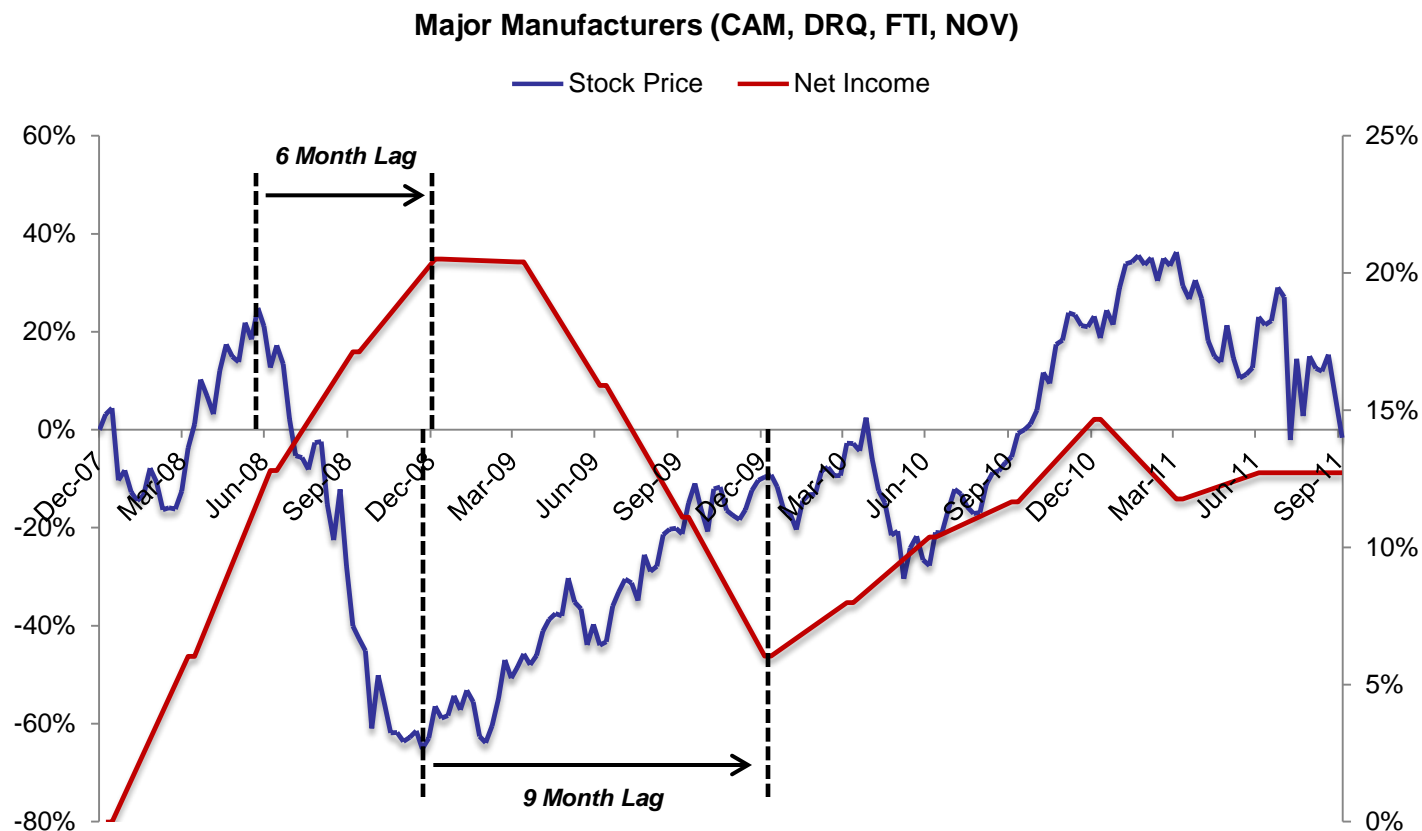
Dow Jones Industrial Average Index vs. Oil Service Sector Index (2007 - Present)



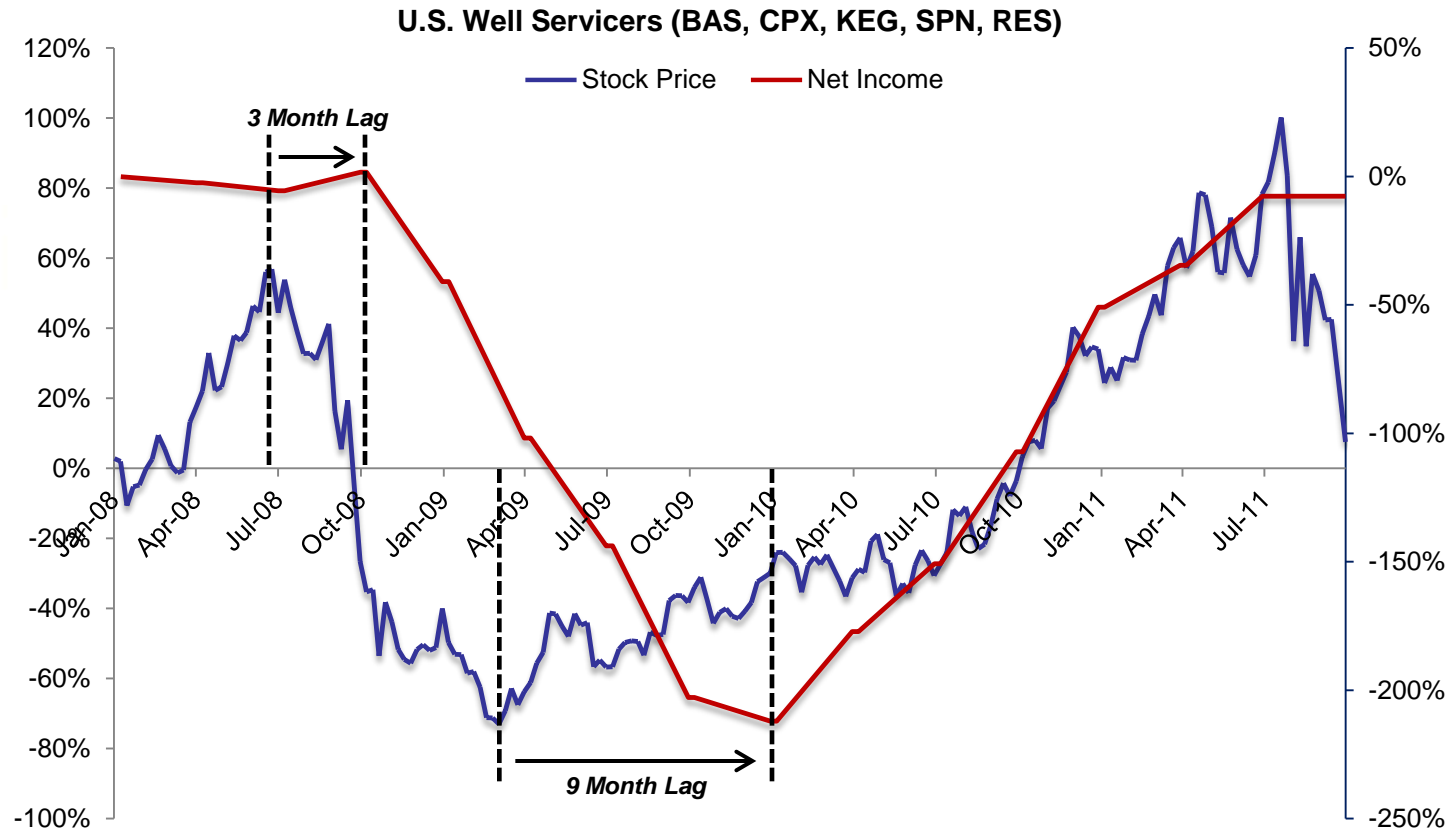
Performance of the Service Stocks



Performance of the Service Stocks



Performance of the Service Stocks



Building a Bridge Assumes the Future Doesn't Change

Bridge in Honduras after Hurricane Mitch in 1998





Thank You