

2008 ASPO-USA Peak Oil Conference

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GRAPPLING WITH ENERGY “RISK”

ASPO-USA 2008 Conference
Sacramento, CA
September 22, 2008

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Financial Markets Finally Grappling With Understanding “Risk”

- Era of deregulation, “transparency”, globalization of capital markets and securitization were supposed to tame “financial risk.”
- Derivatives were supposed to disperse risk “elsewhere.”
- Risk-free markets could then safely exponentially increase leverage.

Instead, we created a Wild West worse than the Roaring Twenties

Proper Size Deemed To Create A System Too Big To Fail

- Mega financial institutions were so large they were considered too big to fail.
- Size of capital markets grew exponentially.
- Audited financial reports created “risk transparency.”



This underpinned our financial marketplace.

Then Vesuvius Erupted (aka “The Week That Was”)

- Long-term capital market was prelude to how markets blow-up (a decade ago).
- Enron was first inning of how rapidly failures occur (7 years ago).
- Sub-prime crisis caused fault lines to tremble.



And The Lava Gushed



- The “Bear”
- Freddie Mac and Fannie Mae
- Lehman, Merrill, AIG
- Who will be next?

Lessons To Be Learned

- Risk is real.
- Leverage can be dangerous.
- Audited financial reports do not always represent genuine numbers.
- The greater the risk, the the faster big systems can fail.

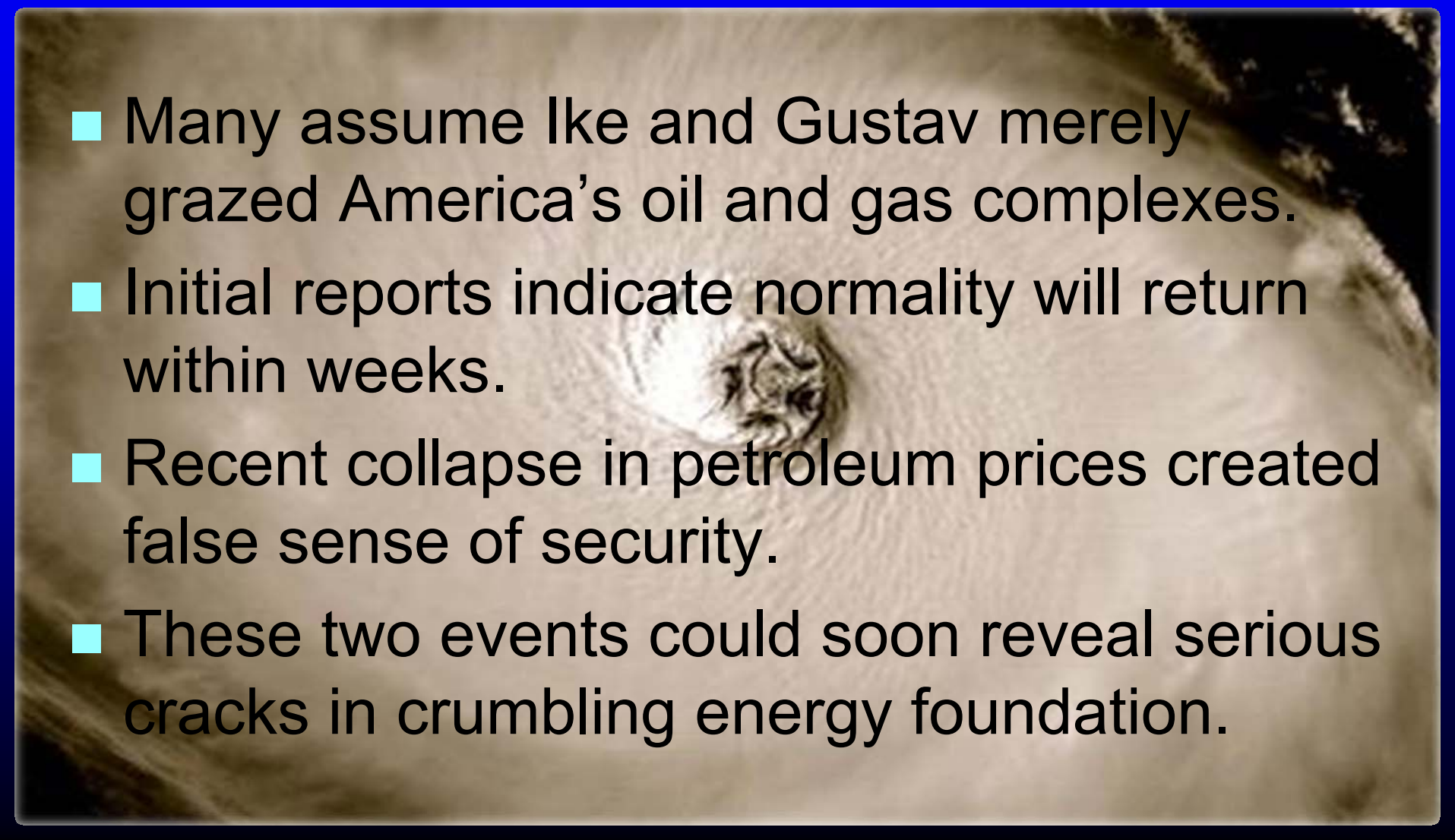
The current financial crisis is fortunately all about paper assets and liabilities. Over time, they can heal. (This, too, shall pass.)



Peak Oil And Gas Has Ominous Parallels To Financial Crisis

- Most wise observers do not grasp meaning of Peak Oil.
- Too many energy pundits assume Peak Oil can not happen.
- Few appreciate the flimsy nature of most key oil and gas data.
- Few grasp how savage a post-peak oil world can be and how swift a tipping point could happen.

Were Gustav And Ike The Initial Tremors Of The Big Bang Crisis?

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- Many assume Ike and Gustav merely grazed America's oil and gas complexes.
 - Initial reports indicate normality will return within weeks.
 - Recent collapse in petroleum prices created false sense of security.
 - These two events could soon reveal serious cracks in crumbling energy foundation.

What We Know Thus Far About Hurricane Aftermath

- Gulf of Mexico (GOM) oil and gas production has been off-stream since early September ($\approx$ 30 million barrels oil lost).
- Many key refineries and gas plants still shut or barely producing.
- LOOP and GOM oil import systems have been crimped.
- These events are draining key crude stocks and depleting critical gasoline and diesel pools.
- No one knows how much longer this can last before scarcity sets in.

How Exposed Is America's Petroleum Supply For A Run On The Bank?

- The lower we draw down crude, gasoline, heating oil and diesel stocks, the closer we move towards breaching “minimum-operating” levels.
- After minimum-operating levels are breached, shortages become imminent.
- Fear of scarcity encourages users to “top off” the tanks.
- “Topping Off Tanks” creates a run on the bank.



Who Are The Likely “Topping Off Culprits?”

- Refineries for scarce crude.
- Jobbers for finished product.
- All service stations.
- Heating oil distributors.
- Petrochemical users.
- And, the residential consumers: *The ultimate risk carrier.*



An Example Of How Fast We Could Break The Bank

- America has 220 million passenger vehicles.
- Assume average vehicle can hold 20 gallons.
- Assume average current tank has 5 gallons.
- Topping off ≈ 15 gallons $\times$ 220 million = stock draw of 78 million barrels
- Current finished stocks (excl. blending supply) ≈ 87 million.
- This creates a real crisis.

What Happens When Usable Stocks Deplete?

- Vehicles stop until system gets refilled.
- Without transportation, America's food supply in jeopardy within a week.
- The economy slows to a crawl.
- The financial markets panic.
- Energy risk is finally grasped in its rawest sense.



If Heating Oil Also Becomes Scarce, A Cold Winter Will Be Disastrous

- America's heating oil is already nearly at all time lows.
- A few weeks of winter could deplete usable stocks.
- 9 – 10 million homes' rely 100% on heating oil for winter heating.
- Implications for northeastern states would be catastrophic:
 - Migration or hypothermia
 - Bankrupting costs for heat



What Are Odds This Calamity Could Happen?

- No one knows since data is skimpy at best:
 - Reported petroleum stocks are only estimates of primary stocks (limited samples then grossed up)
 - There is zero data on secondary/tertiary stocks
- The odds of this eruption occurring are higher than another hurricane occurring.

How could the world's most prosperous, advanced society move into harm's way so fast?



Peak Oil Is Like Gustav/Ike²

- The hurricanes are merely tremors to Peak Oil risk.
- Ebbing of high quality light oil supply is equivalent to America's current crisis for petroleum supplies.
- It triggers same chain of events: Shortages, spiking prices and hoarding begin on a global basis.
- The vacuum of petroleum data globally makes US data look pristine.
- Are we flying blind into a Category 6 storm?



Data We Should Have Demanded (But Failed To Request)

- Reliable country-by-country production data:
 - By key oil and gas fields
 - By light, medium, heavy and toxic crude grade
- Global petroleum stock data far more accurate than EIA data.
- Transit time impact as short haul crudes get replaced by long haul:
 - The oil at sea differential between Mexican/Venezuela crude vs. Middle East crude
 - Replacing North Sea crude by what other source?
 - Etc, etc.



Other Key Fault Lines

As Energy Foundation Trembles

- The energy intensity to create usable petroleum from unconventional crudes.
- The drilling rig tightness/shortage.
- The far larger oil service/petroleum equipment assets scarcity.
- The growing human resource shortage.
- The absence of many known frontier areas to drill.
- A realistic sense of future demand growth.

Is Size Of Oil Markets Too Big To Fail?

- Global petroleum use now $\approx 85+$ million barrels per day.
- This is world's single largest industrial market by factor of several fold.
- Since it is so big, is it like Freddie Mac and Fannie Mae?
- No. Since there are no energy regulators, no audited data and no firewalls.



The world is totally at risk with no insurance policy the Fed has no energy tool box.

Are There Any Other Risks That Could Become Tipping Points?

■ Yes. Choke points for the supply flows:

– The “straits”:

- ❖ Straits of Malacca
- ❖ Straits of Hormuz
- ❖ Yucatan/Cuba passage
- ❖ Etc.

■ Key transportation/processing facilities:

- Abqaiq oil processing plant
- LOOP
- Capline
- Taps, etc.

All are easily broken

Do We Have Any “Insurance Policy” Or Disaster Recovery Plan?

- Limited SPR oil (that should not be used to manage oil prices).
- Untested EIA member country energy stocks.
- Line fill in pipelines and tank bottoms.
- Afterwards, we are in an uncharted sea and probably “out-of-gas.”



Could An Energy Pandemic Really Happen?

- Is this scary set of scenarios just a thriller movie?
- How long would it take to go from “half-empty” to “out-of-gas?”
- If America has a run on the bank, could this trigger a global topping off our tanks?



The World Is Sleeping Walking Through These Energy Events

- Most global leaders have no idea any of these risks are so real.
- “Peak Oil” as a term is still only slightly understood by America’s political and business leaders.
- Those who warned were called:
 - Alarmists
 - Pessimists
 - Oil Bulls
 - Wolf Criers

It Took Five Months To Melt Down Key Financial Institutions

- Alan Greenspan: “What has just occurred is a once a century event.” (September 15, 2008)
- Bear Stearns run on the bank happened in two days.
- Lehman Brothers finale took four days to happen.
- AIG debacle occurred in two days.
- Too many key financial players kept assuring each other “the worst is behind us” while things “got worse and worse.”



Energy Markets Can Unwind Faster

- A global run on the energy bank would happen in less than a 30-day window.
- It will take a “decade +” to rebuild any genuine energy cushion.
- This is the most serious global risk of the 21st century.

RISK IS REAL. Energy risk is real risk²

Rust Is Also Energy Risk²

- Large portion of complex infrastructure to find, produce, transport and process oil and gas is beyond original design life.
- 98%+ built out of steel.
- Steel begins to rust as soon as it is casted.
- Rust never sleeps.
- But this a crisis hidden by water and dirt.
- Nevertheless, it is a ticking time bomb.



Finally, A Few Energy Oxymorons Refocus On Risk

Fashionable Energy Oxymorons

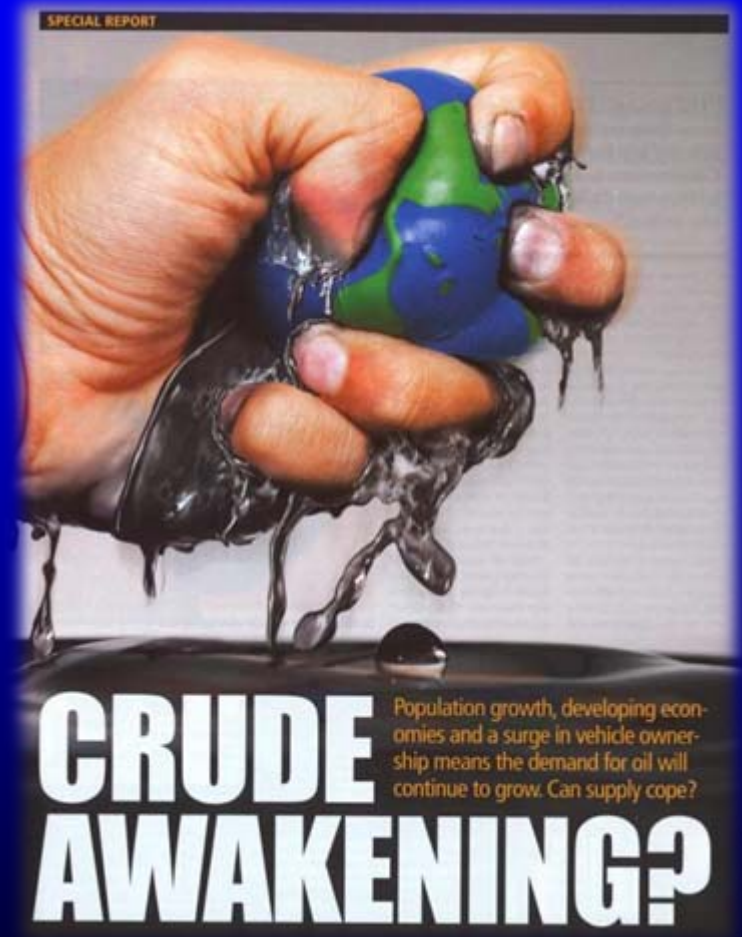
- We need energy independence.
- Technology is a game change.
- We can drill our way out of this mess.
- Our energy system is efficient and transparent.

Brutal Energy Reality

- 100% impossible to create.
- technology has zero impact on any of these risks.
- We have no spare rigs and few places to drill with timely high impact.
- We live in a dark world of hidden data unlike Wall Street.

This Problem Cannot Be So Ominous

- Yes. It can since oil and gas are “industrial oxygen.”
- Without either, the system soon dies.
- All past great crises were also ignored until they crossed tipping point.
- Our tipping point might be just around the corner and coming soon.

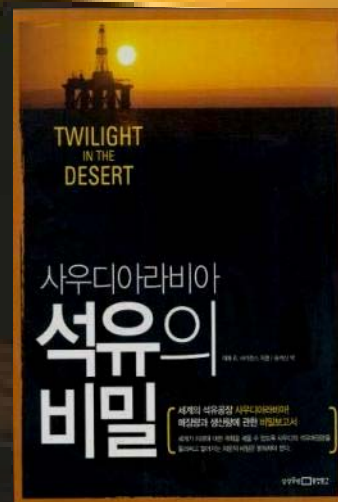
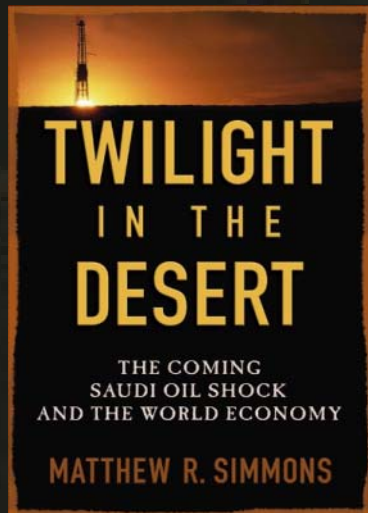


Source: Oil & Gas Middle East – April 2008

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PEAK OIL IS THE SINGULAR
AND MOST OMINOUS RISK OF
THE 21ST CENTURY.

Thanks ASPO for highlighting these risks.



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Investment *to the* Bankers
Energy
Industry

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