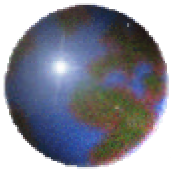


***COPING WITH OIL PRICE  
VOLATILITY:  
Welcome to the Roller Coaster  
PRAGUE IAEE***

June 6, 2003

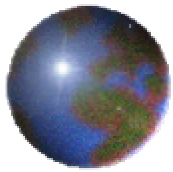
Michael C. Lynch, President, SEER, Inc.

[Lynch@EnergySEER.com](mailto:Lynch@EnergySEER.com)

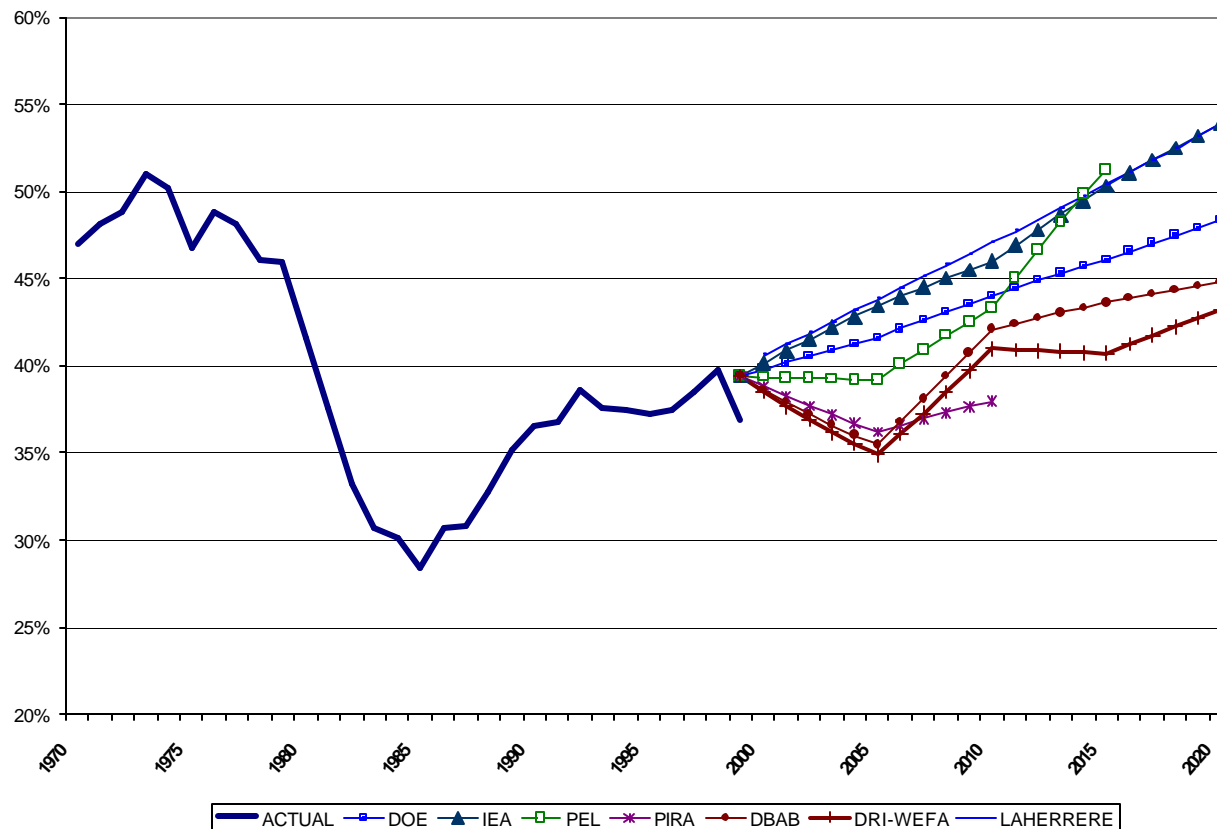


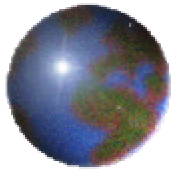
# *THE WOLF AT THE DOOR?*

- ✚ DISCOVERIES INADEQUATE
- ✚ CAPITAL NEEDS TOO HIGH
- ✚ ALL EFFORTS INTO DEVELOPMENT,  
NOT EXPLORATION
- ✚ ALL THE EASY OIL FOUND
- ✚ BIG, OLD OIL FIELDS
- ✚ DEJA VU



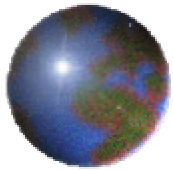
# *PROJECTIONS OF OPEC MARKET SHARE*





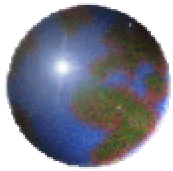
# *REALITY FOR 20 YEARS*

- ✚ ABUNDANCE OF OIL HAS KEPT MARKETS WEAK: BUST THEN RECOVERY, NOT BOOM
- ✚ END OF SURPLUS CAPACITY IN 1990S MEANS PRICE COLLAPSE IS FOLLOWED BY TIGHTNESS (Lynch 1987)
- ✚ DISPERSION OF PRODUCTION RAISES VULNERABILITY TO SMALL DISRUPTIONS
- ✚ PRICE WEAKNESS INCREASES EXPORTER INSTABILITY
- ✚ MARKET STRUCTURE CHANGES ENHANCE VOLATILITY



# *TYPES OF VOLATILITY*

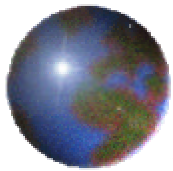
- ✚ NOT ETERNALLY RISING PRICES
- ✚ “NORMAL” COMMERCIAL VOLATILITY
  - ▣ LYNCH (2002)
- ✚ STABILIZATION VOLATILITY
  - ▣ RESPONSE TO NORMAL VOLATILITY
  - ▣ CARTEL ECONOMICS
- ✚ DISCRETE VOLATILITY
  - ▣ EVENT DRIVEN



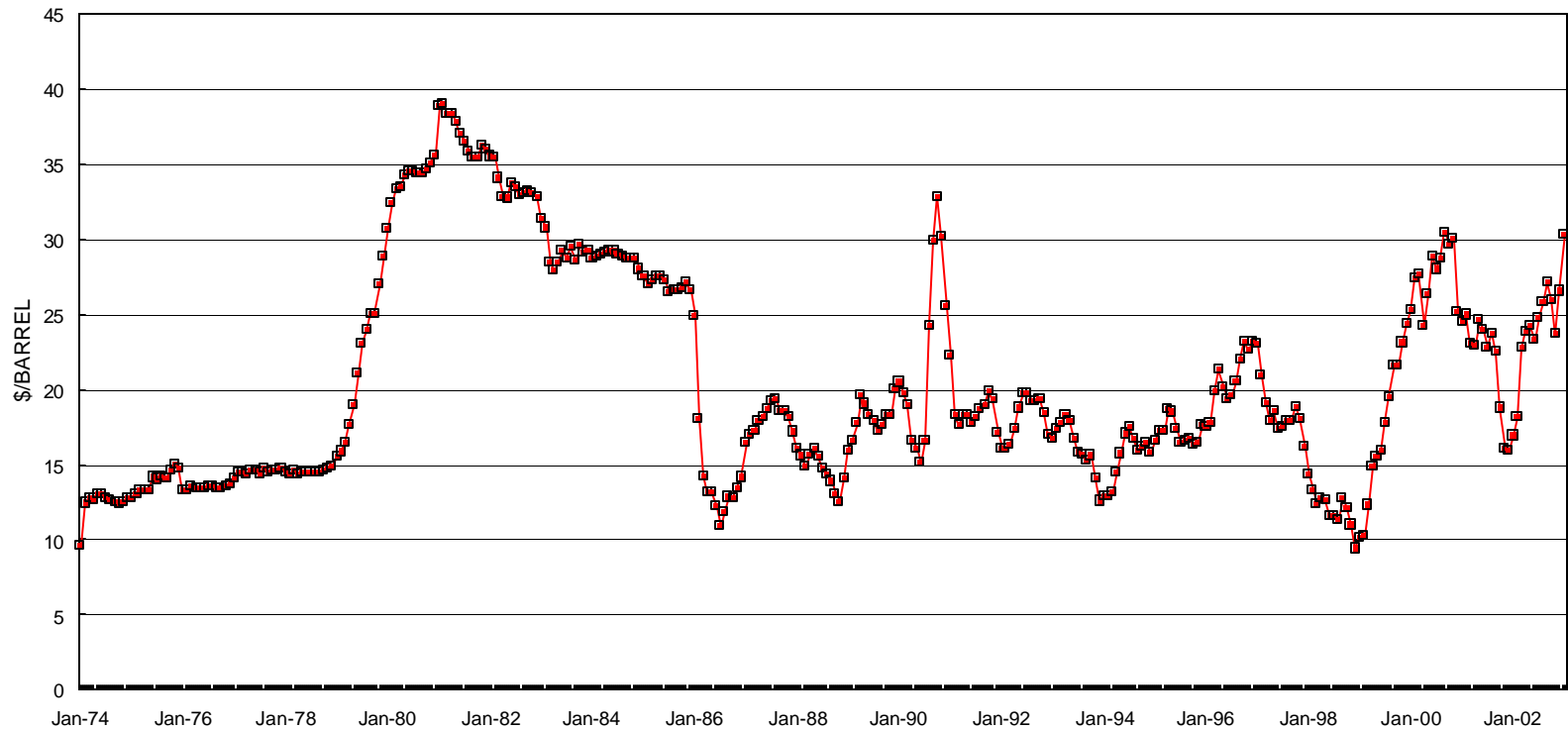
# *“NORMAL” VOLATILITY*

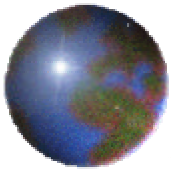
*(Lynch 2002)*

- ✚ VOLATILE, UNCERTAIN DRIVERS
  - ✚ GDP, WEATHER, ETC.
- ✚ POOR DATA
  - ✚ NON-OECD INVENTORIES, OPEC PRODUCTION & EXPORTS
- ✚ JUST IN TIME INVENTORIES
- ✚ HIGH UNCERTAINTY
  - ✚ +/- 2 MB/D MARKET BALANCE AT PRESENT



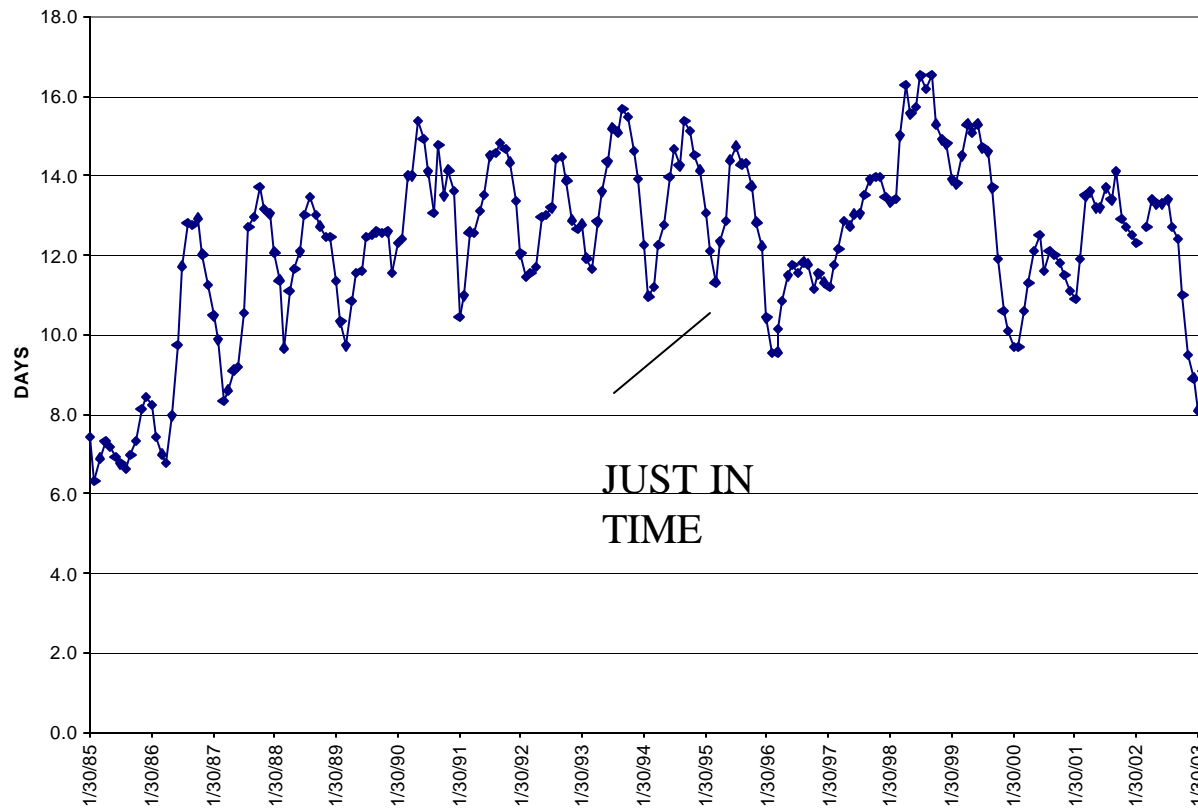
# *PRICE VOLATILITY*



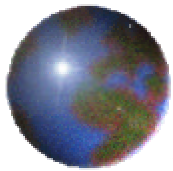


# *USABLE COMMERCIAL INVENTORIES*

## *DAYS OF SUPPLY: EIG*

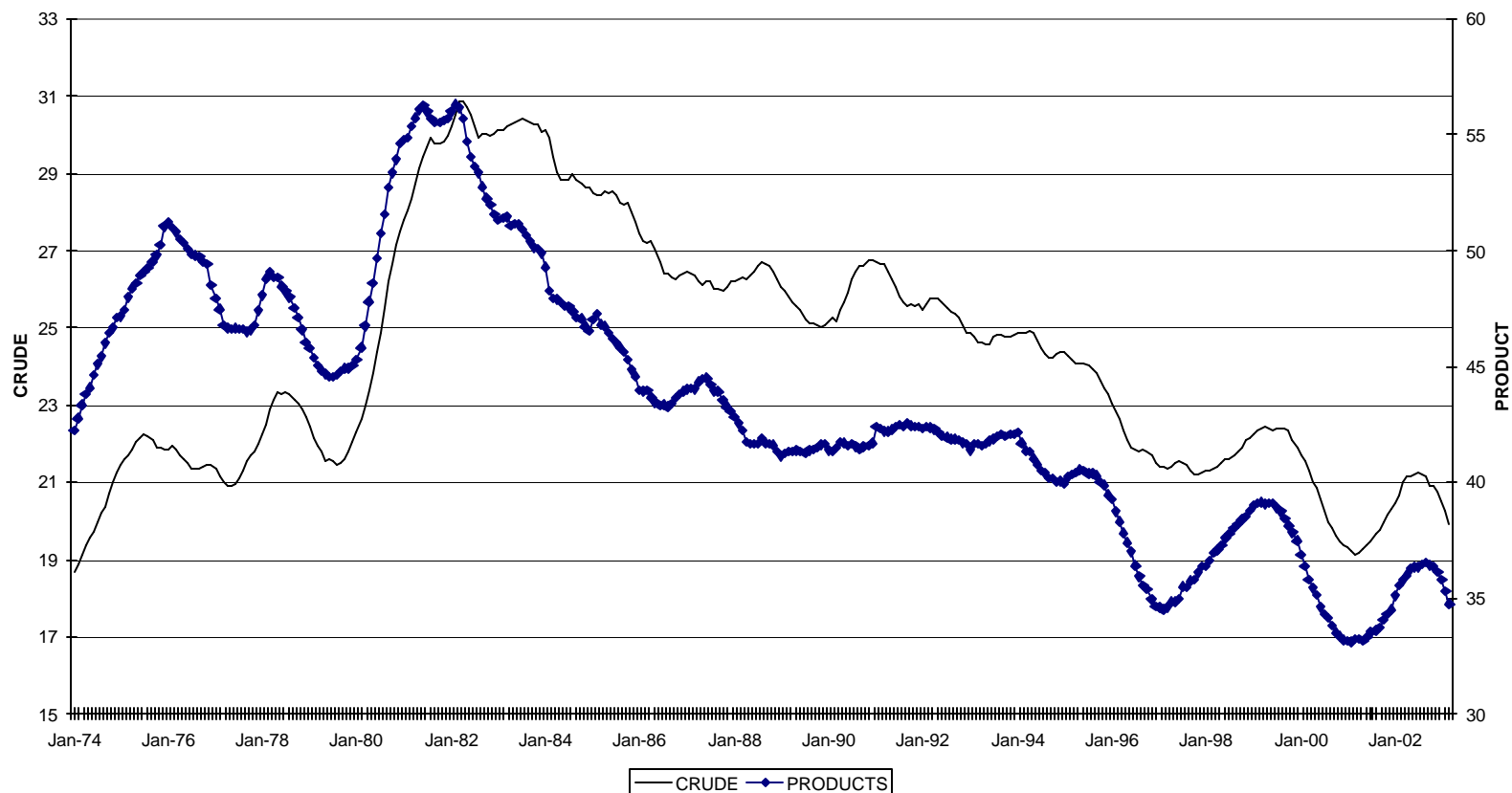


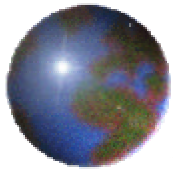




# *US CRUDE INVENTORIES*

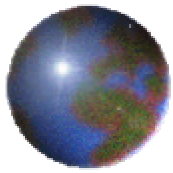
## *JUST NOT IN TIME*



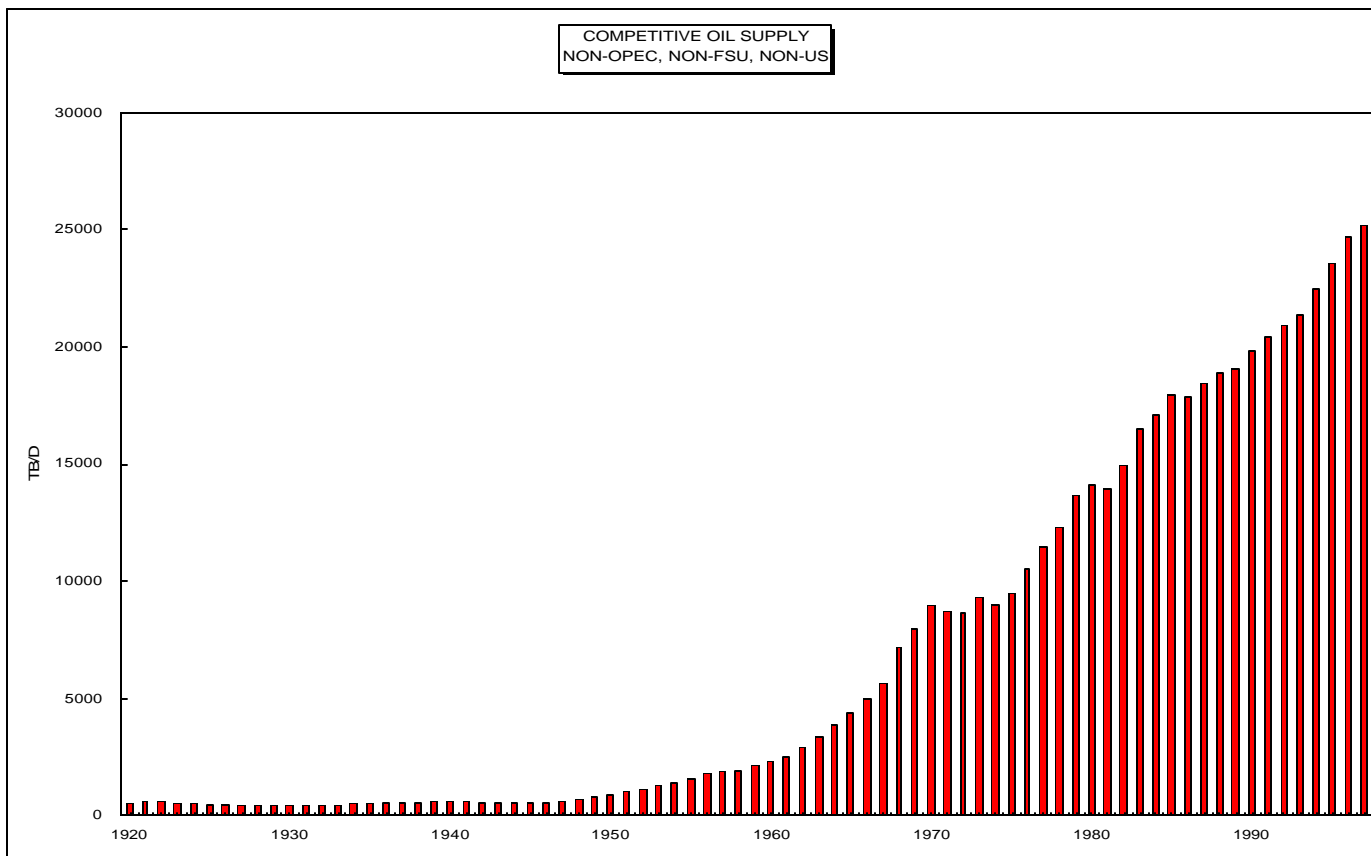


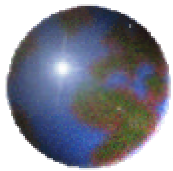
# *STABILIZATION VOLATILITY*

- ✚ NO JDR, TRC TO SOLVE
  - ▣ PKV, JR?
  - ▣ RARELY WORKS WELL, LASTS LONG
    - TIN, COFFEE, COPPER, ETC.
- ✚ INTERNAL POLITICS
  - ▣ GAME THEORY
    - SLOW ENFORCER: TIT FOR TWO TATS
- ✚ EXTERNAL PRESSURE

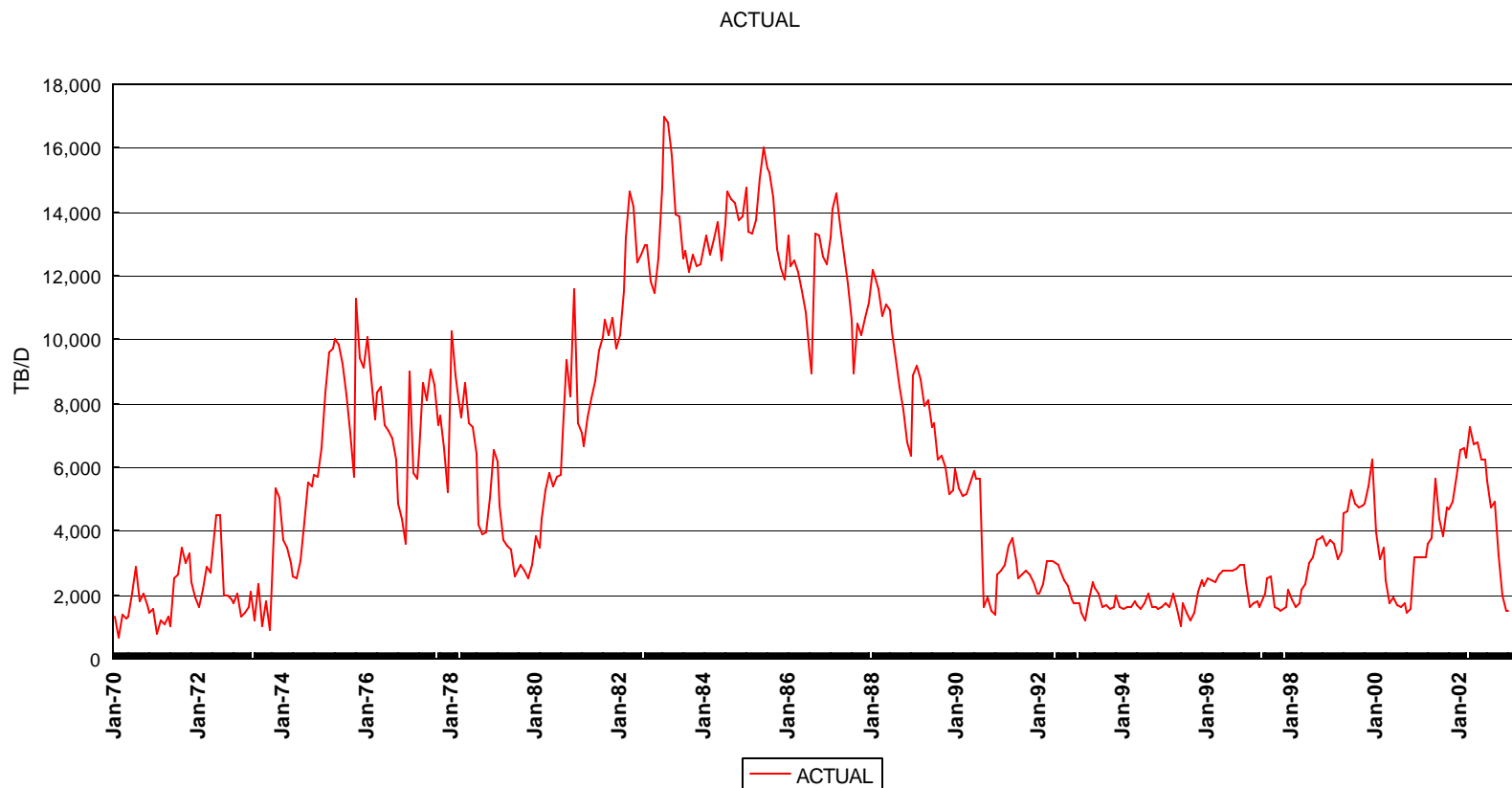


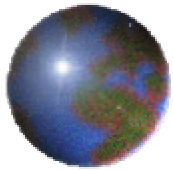
# *EXTRAPOLATE THIS!*





# *OPEC SURPLUS CAPACITY*





# *DISCRETE VOLATILITY: POLITICS AS RANDOM SHOCKS, INHERENTLY UNPREDICTABLE*

✚ BUT SOME ELEMENTS PREDICTABLE

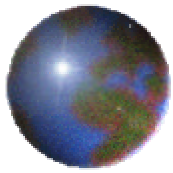
- ✚ SURPLUS CAPACITY

- ✚ INVENTORIES

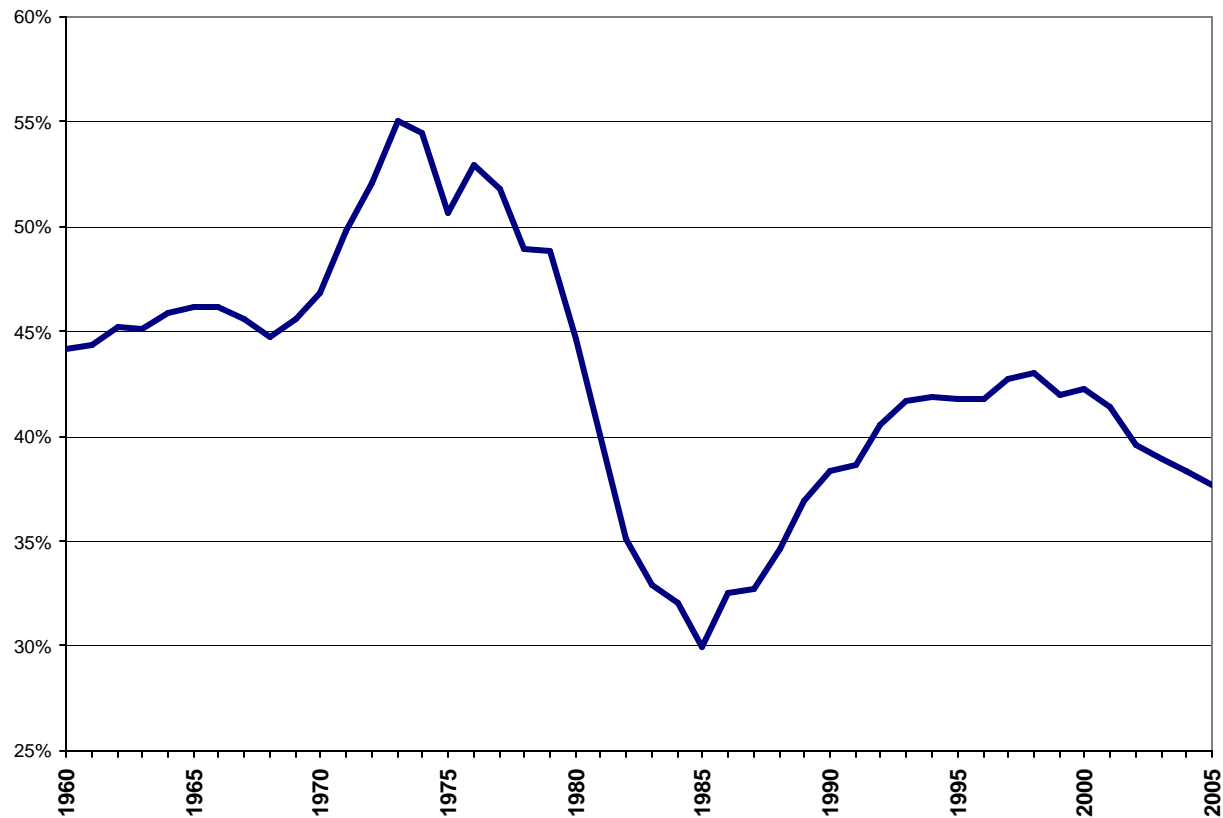
- ✚ DIVERSITY OF SUPPLY

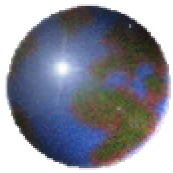
✚ MANY DUMMY VARIABLES

- ✚ PRESIDENT ???



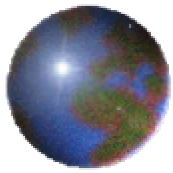
# *THE REAL DANGER: OPEC MARKET SHARE*



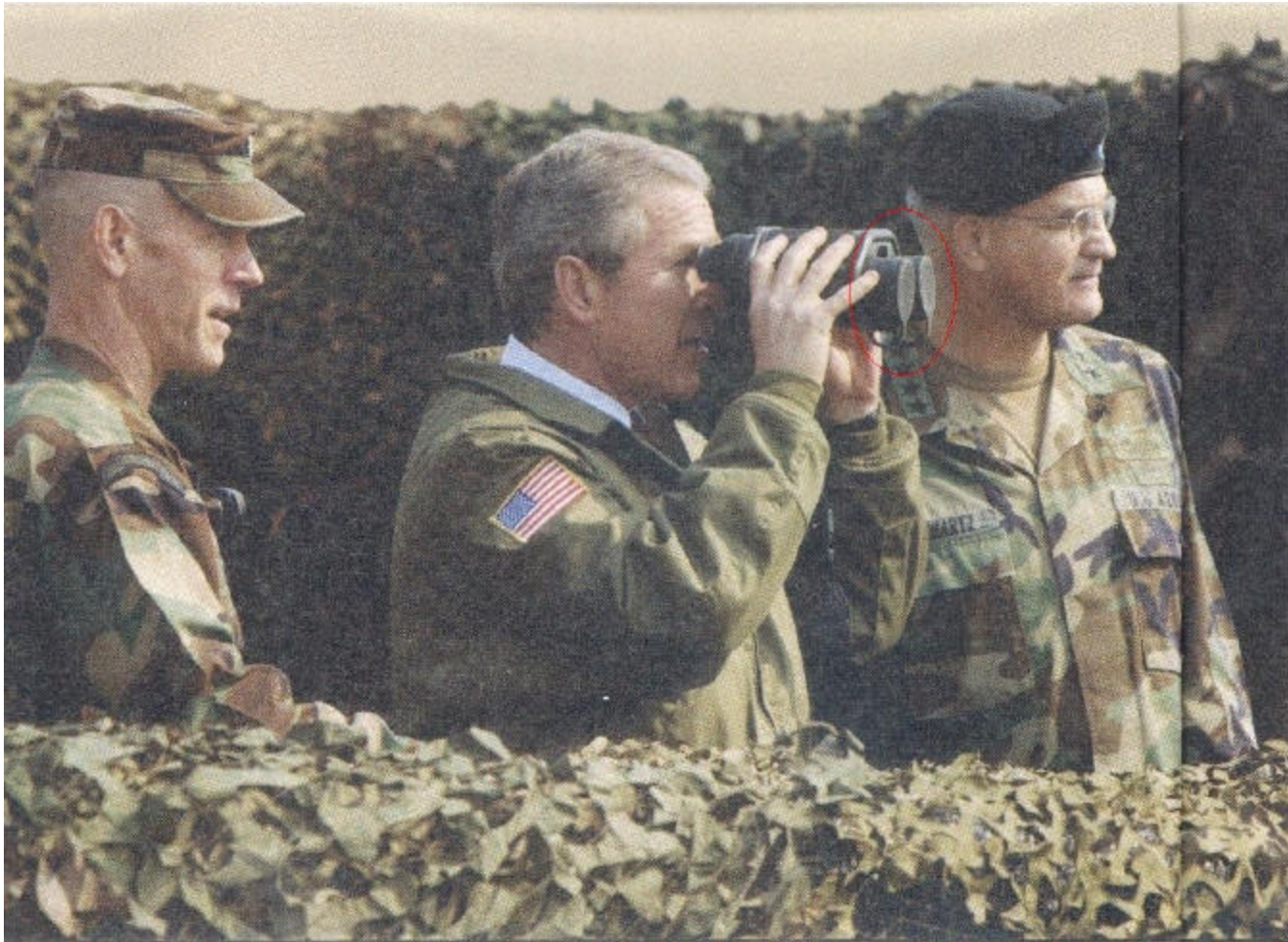


*YOU'RE IN GOOD HANDS...*

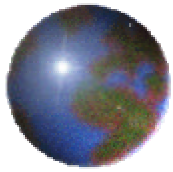




*...TO THE RESCUE!*







# *NEW VOLATILITY: NORMAL VOLATILITY PLUS*

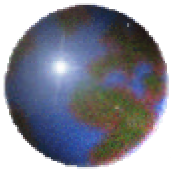
## ✚ POST-1995 MARKET CHANGE

### ✚ PRESSURES DOWN:

- HIGH NON-OPEC
- IRAQ, (VENEZUELA) INCREASES
- INTERNAL ECONOMIC PRESSURES IN REST OF OPEC

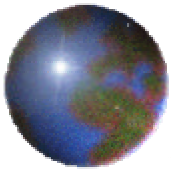
### ✚ PRESSURES UP:

- LOW INVENTORIES
- LOW SURPLUS CAPACITY
- POLITICAL DISRUPTIONS INCREASING



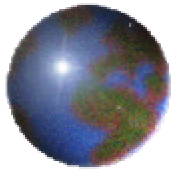
# *THE PERFECT STORM...*

- ✚ CYCLES NOT OFFSETTING
  - ▣ PARTLY INDEPENDENT
  - ▣ SOMETIMES ADDITIVE
  - ▣ SOMETIMES SERIALY RELATED
- ✚ PRICE COLLAPSE CAN **CAUSE** TIGHT MARKET AND DISRUPTION IN OIL EXPORTING NATIONS
  - ▣ SEE 1998-2003



# *THINK DEFENSIVELY*

- ⊕ BE PREPARED TO BE UNPREPARED
  - ⊞ DON'T TRUST THE ANALYSTS
  - ⊞ THE IMPOSSIBLE KEEPS HAPPENING
  - ⊞ BLAH, BLAH, BLAH
- ⊕ KNOWLEDGE OF HISTORY
- ⊕ KNOWLEDGE OF ECONOMICS



# *COPING FOR PRODUCERS (1)*

## ✚ DEEP POCKETS

- SIZE HELPS

- LOW DEBT

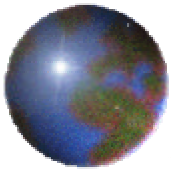
- "AVOID HIGH CASH" T. Boone Pickens

## ✚ DIVERSIFY PORTOFOLIO

- UPSTREAM/DOWNSTREAM

- DIFFERENT TIMING FOR CASH FLOWS

- DÉJÀ VU? 1970S STRATEGY



# *COPING FOR PRODUCERS (2)*

## ✚ FLEXIBILITY

### ✚ BEWARE FIXED CONTRACTS

- SALES, RIG LEASES, ETC.

### ✚ INCREMENTAL INVESTMENTS OVER GREENFIELD

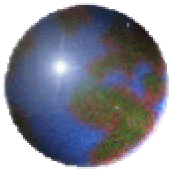
- TAR SANDS, CBM, ETC.

## ✚ HEDGE?

### ✚ BUT WHEN IS A HEDGE SPECULATION?

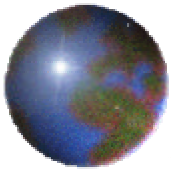
## ✚ OPTIONS

### ✚ IF YOU TRUST FINANCE PROFESSORS



## *COPING (3)*

- ✚ MINIMIZE CAPITAL TO OPERATING COSTS RATIO
  - ▣ ALL ELSE EQUAL (LOW COSTS BEST)
  - ▣ TAR SANDS VS. DEEPWATER
- ✚ HAVE GOVT ABSORB RISK
- ✚ MONETIZE ASSETS
  - ▣ ENRON, BP



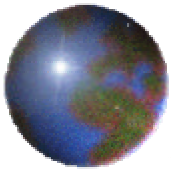
# *COPING FOR CONSUMERS (1)*

## ✚ COST PASS THROUGH IS BEST

- ✚ FUEL ADJUSTMENT CLAUSE
- ✚ DEPENDS ON COMPETITION
  - PETER'S UGLY BABY

## ✚ FLEXIBILITY

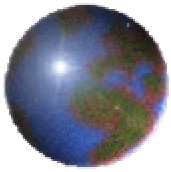
- ✚ VARY CONTRACT TERMS
  - INDICES, EXPIRATION
- ✚ FUEL-SWITCHING
  - VIRTUAL, FINANCIAL OR PHYSICAL



# *COPING FOR CONSUMERS (2)*

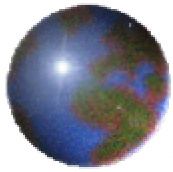
- ✚ GO UPSTREAM
- ✚ HEDGE (SEE ABOVE)





## *IF PESSIMISTS ARE RIGHT:*

- ⊕ PRICES WILL BE VOLATILE, MOSTLY A LOT HIGHER
- ⊕ INCREASE UPSTREAM EXPENDITURES
  - ⊞ BORROW AND HOARD
    - BUY RESERVES
    - HIRE ENGINEERS
    - SIGN LONG-TERM RIG CONTRACTS
  - ⊞ ACCEPT MORE POLITICAL RISK
- ⊕ DECREASE UPSTREAM EXPENDITURES
  - ⊞ GIVE UP TO OPEC
- ⊕ INVEST IN HIGH-COST ALTERNATIVES
  - ⊞ ALTERNATIVE FUELS (GTL, SHALE)



## *IF I'M RIGHT:*

- ✚ PRICES WILL BE VOLATILE, HIGHER AND LOWER
- ✚ HEDGE, DON'T HOARD:
  - ▣ SHORT-TERM CONTRACTS (BUY LOW)
- ✚ DEEP POCKETS
  - ▣ DON'T GET CAUGHT WITH HIGH DEBT
- ✚ AVOID HIGH COSTS, LOOK AT FIXED/VARIABLE RATIO
- ✚ OPPORTUNITIES FROM THOSE WHO DON'T