

# Covering the Economics of Energy

**Prof. Joe Kalt**

**John F. Kennedy School of Government, Harvard University**

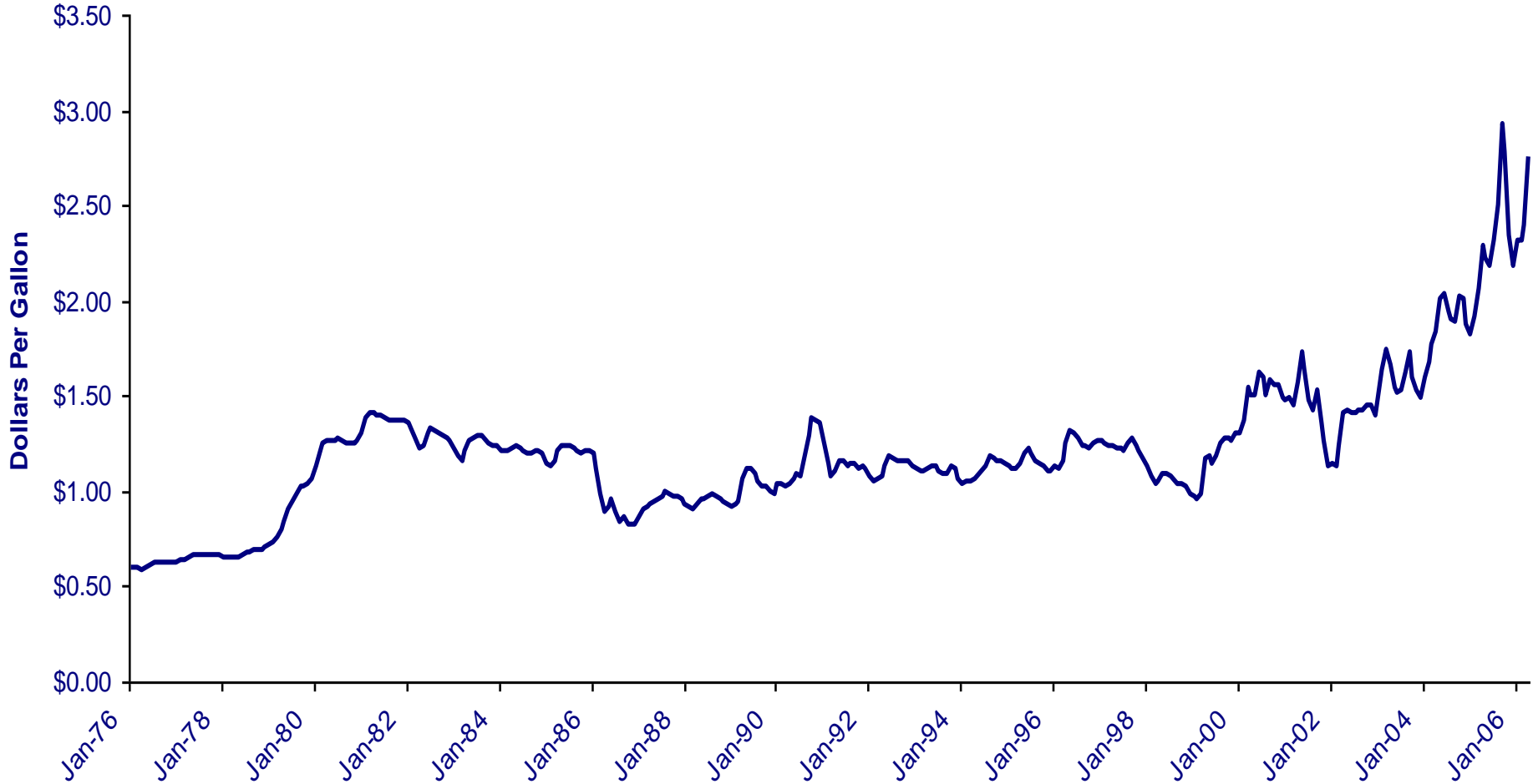
**Eller College of Management, The University of Arizona**

# Overview of Energy Markets and Policy...

## The Problem That Won't Go Away

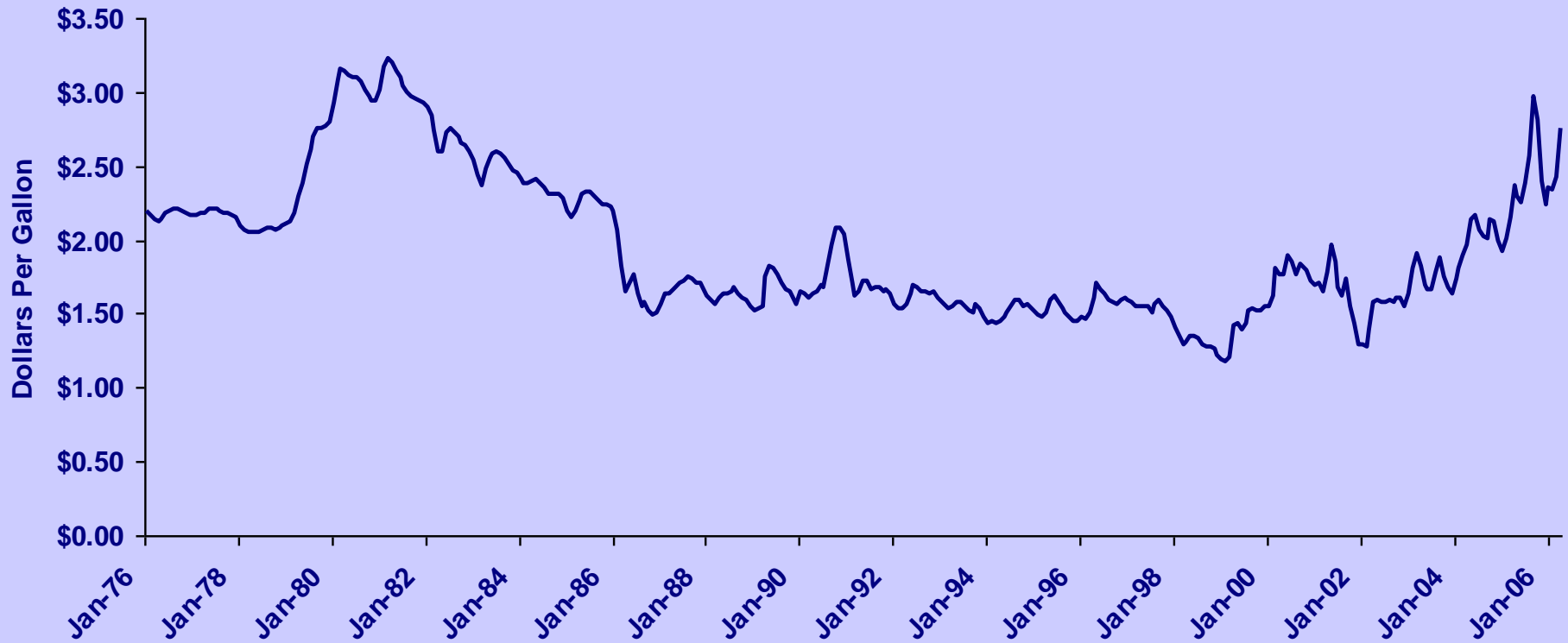
- The Basic Facts
- The Future
- The Policy Issues

# US AVERAGE RETAIL PRICE OF UNLEADED REGULAR GASOLINE (Nominal \$s)



Sources: EIA - Monthly Energy Review, May 2006. Bureau of Labor Statistics.

# US AVERAGE RETAIL PRICE OF UNLEADED REGULAR GASOLINE (2006 \$s)



Sources: EIA - Monthly Energy Review, May 2006. Bureau of Labor S

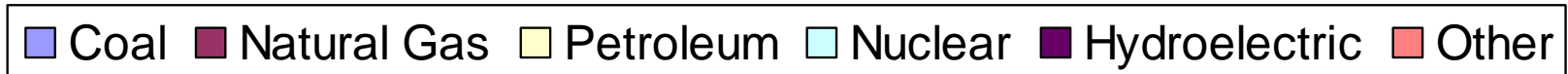
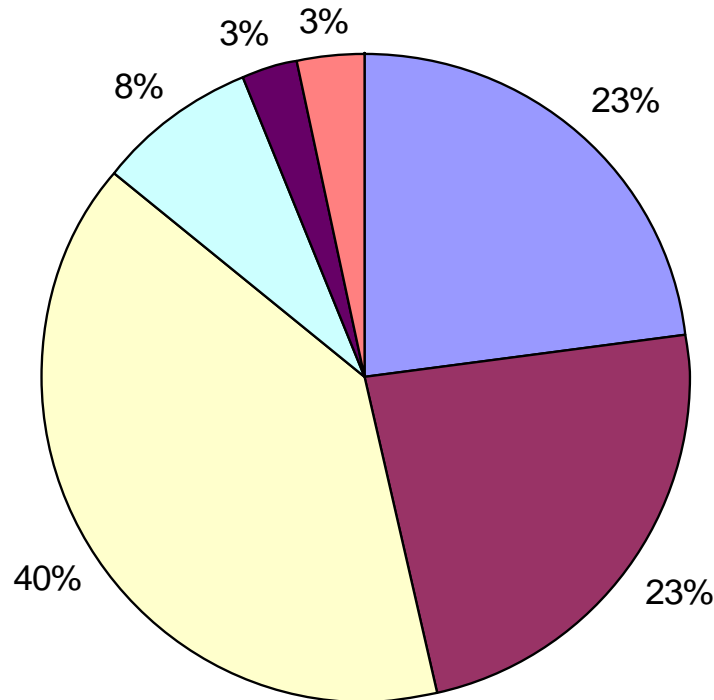
# Basic Facts

## The Setting for a Perpetual Crisis

- A Fossil Fuel Economy – World and U.S.

# A Fossil Fuel Economy

**PERCENTAGE OF US ENERGY CONSUMPTION BY FUEL TYPE  
2003**



Source: EIA, Other includes solar, wind, biomass, and geothermal energy sources.

# Basic Facts

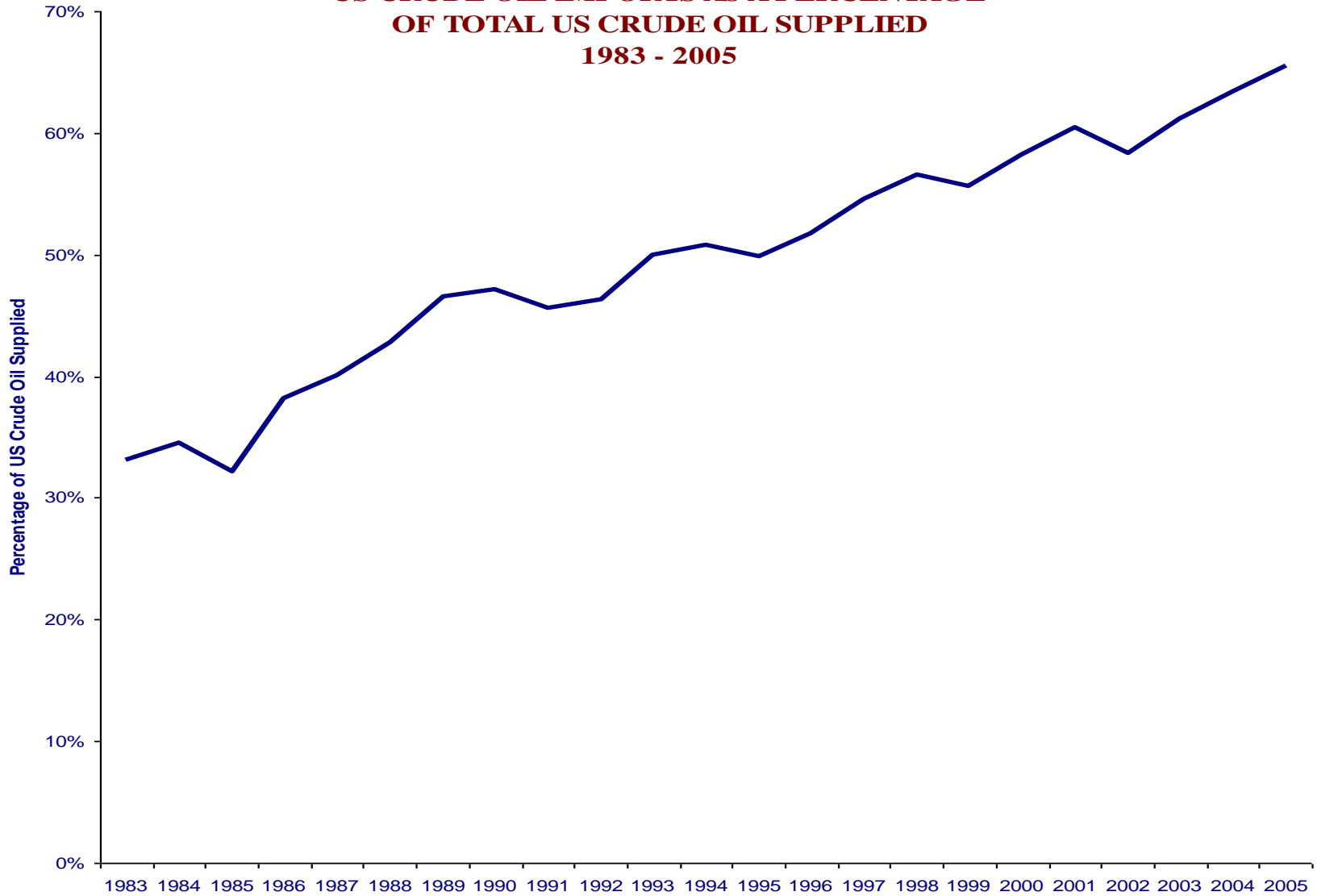
## The Setting for a Perpetual Crisis

- A Fossil Fuel Economy – World and U.S.
- U.S. – A Large Net Importer of Energy

# U.S. – A Large Net Importer of Energy

- U.S. Imports ~30% of its Energy
- Especially OIL!
  - U.S. Oil Production: Stagnant
  - 1970: 1/3 of Oil Used Is Imported
  - Today: 1/2 of Oil Used Is Imported

**US CRUDE OIL IMPORTS AS A PERCENTAGE  
OF TOTAL US CRUDE OIL SUPPLIED  
1983 - 2005**



# U.S. – A Large Net Importer of Energy

- U.S. Imports ~30% of its Energy
- Especially OIL!
  - U.S. Oil Production: Stagnant
  - 1970: 1/3 of Oil Used Is Imported
  - Today: 1/2 of Oil Used Is Imported
- Still a Net Importer Despite More Production at Home
  - U.S. Coal Production: +80% since 1970
  - U.S. Natural Gas Production: +45% since 1970
  - U.S. Hydropower, Wind Power, Renewables: All Up Sharply
  - U.S. Nuclear Power: +300% since 1970

# Basic Facts

## The Setting for a Perpetual Crisis

- A Fossil Fuel Economy – World and U.S.
- U.S. – A Large Net Importer of Energy
- Massive Conservation since 1970...

# Massive Conservation since 1970...

- Energy per \$ of U.S. GDP now at ~55% of 1970 level
- Without conservation since '70, U.S. would use 75% more energy today than it does

## ...But Still Growing Demand for Energy

- U.S GDP: +140% since 1970
- U.S. Energy Use: +30-35%

# Basic Facts

## The Setting for a Perpetual Crisis

- A Fossil Fuel Economy – World and U.S.
- U.S. – A Large Net Importer of Energy
- Massive Conservation since 1970...
- ...But Still Growing Demand for Energy
- Economic Growth Taking Hold – China, India...

# Economic Growth Taking Hold

- China, India, and beyond
- Since 1980, in developing world income up 40-45%
- 2 billion people have modern energy conveniences
- 2 billion people lack any modern energy conveniences
- 2 billion people have intermittent energy conveniences

**Poor, Growing Economies Demand Liquid Fuels  
...That Means OIL**

# Basic Facts

## The Setting for a Perpetual Crisis

- A Fossil Fuel Economy – World and U.S.
- U.S. – A Large Net Importer of Energy
- Massive Conservation since 1970...
- ...But Still Growing Demand for Energy
- Economic Growth Taking Hold – China, India...
- Poor, Growing Economies Demand Liquid Fuels
- Oil Increasingly Concentrated in the Middle East

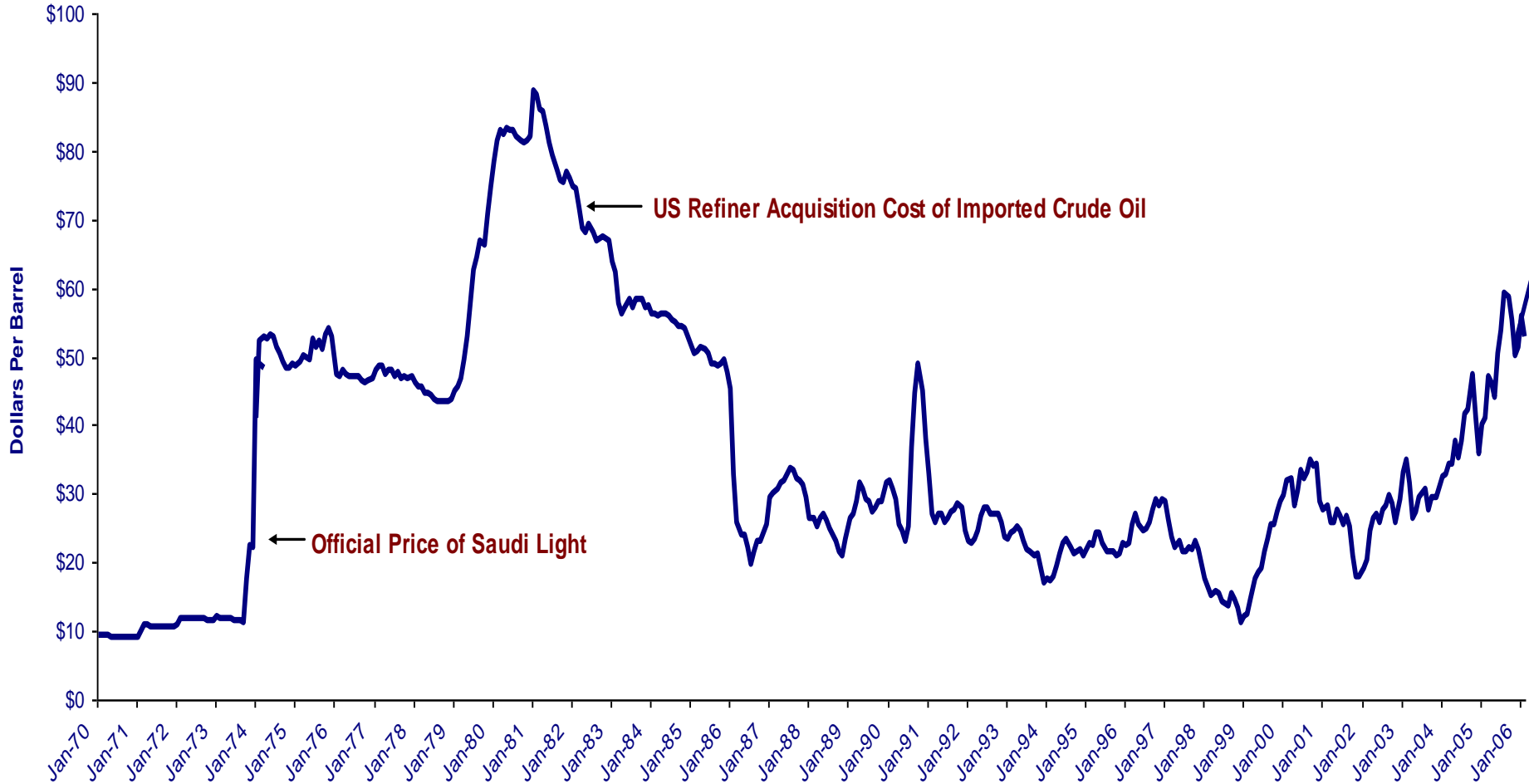
# The Future

## The Problem That Won't Go Away

- Growth in the Developed World
  - How much more conservation?
- Growth in the Developing World
  - + 2 billion people in 30 years
- World Energy Use: +50-60% in Next 25 Years
- Oil Output: +50% in Next 25 Years
- Middle East Share of World Oil Output
  - Now: ~30%
  - 2030: ~40%

# INTERNATIONAL CRUDE OIL PRICES

(2006 \$s)



Source: EIA, Annual Oil Market Chronology.

# So, What Do We Do About It?

## The Policy Issues

- Supply, Demand and Prices
- Can Technology Rescue Us?
- Less or More World Conflict?
- Wither U.S. Policy?