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# Asian Premium of Crude Oil

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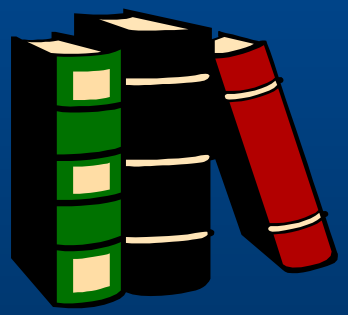


# Crude Oil Pricing Formula

## Pricing Formula by Destination

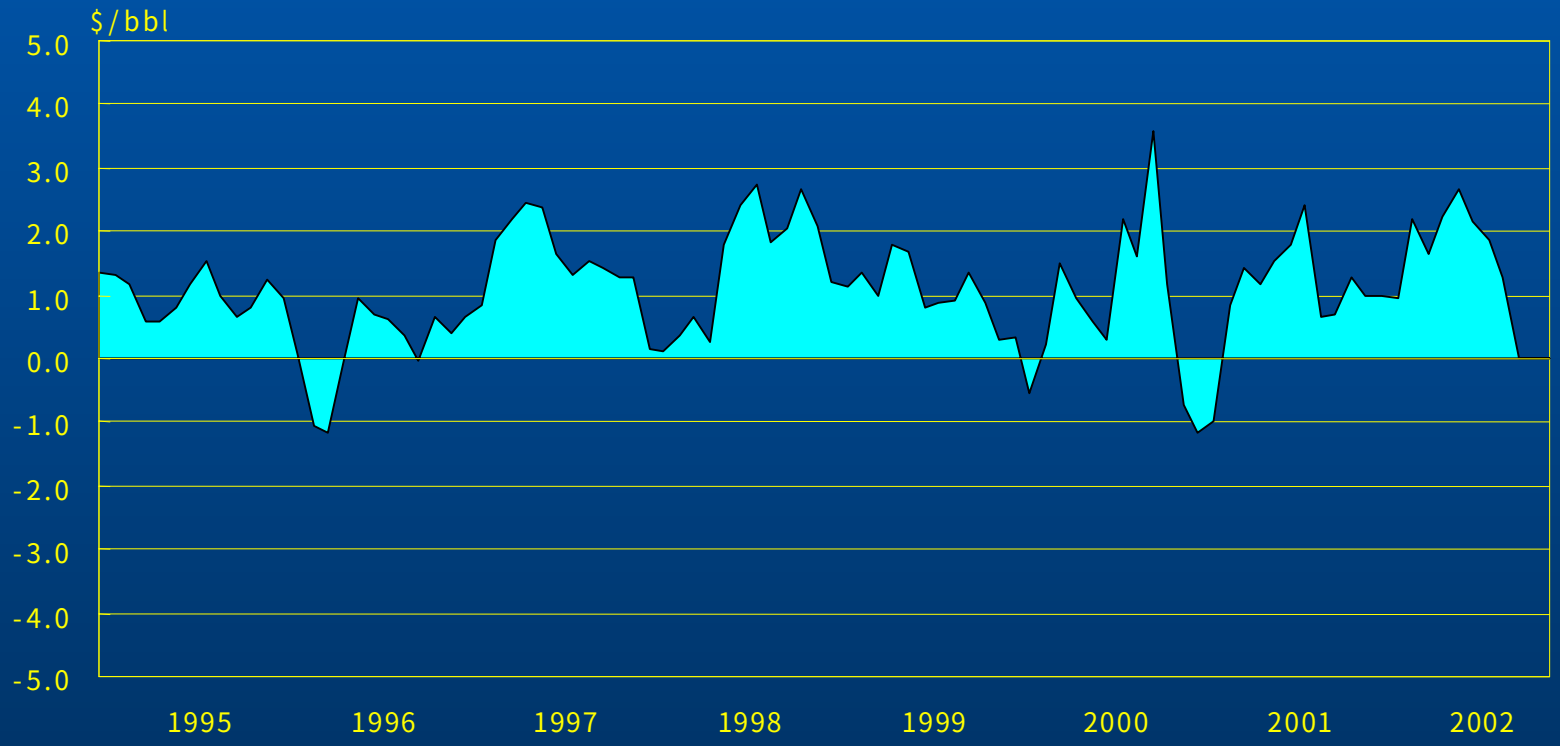
- **Pij = Pmj ± Aij**
  - **P; Crude Price, Pm; Marker Price, A; Adjustment Factor**
    **i; Crude i, j; Destination**

| Destination | Marker Price | Price Timing | Period of Pricing | Point of Sale |
|---|---|---|---|---|
| Europe | Brent (B-wave) | 40 Days after Loading | 5-10 Days | FOB/C&F |
| U.S.A. | WTI | 50 Days after Loading | 5-10 Days | FOB/C&F |
| Asia | Dubai/Oman | Loading Date | 30 Days(Monthly Average) | FOB |

# Price Differential between East and West

## Price Differential of A/L

- To Asia – To Europe



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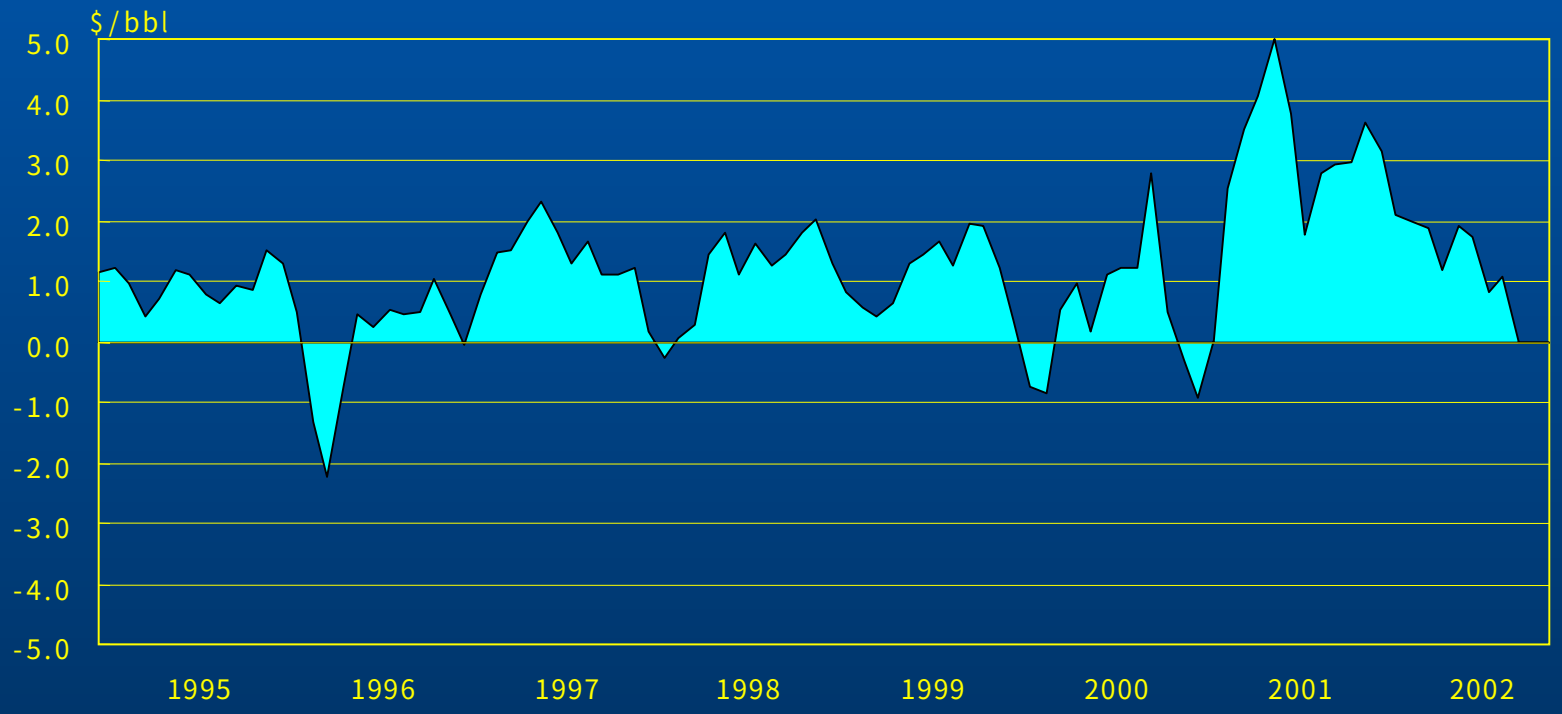
# Price Differential between East and West

## Price Differential of A/L

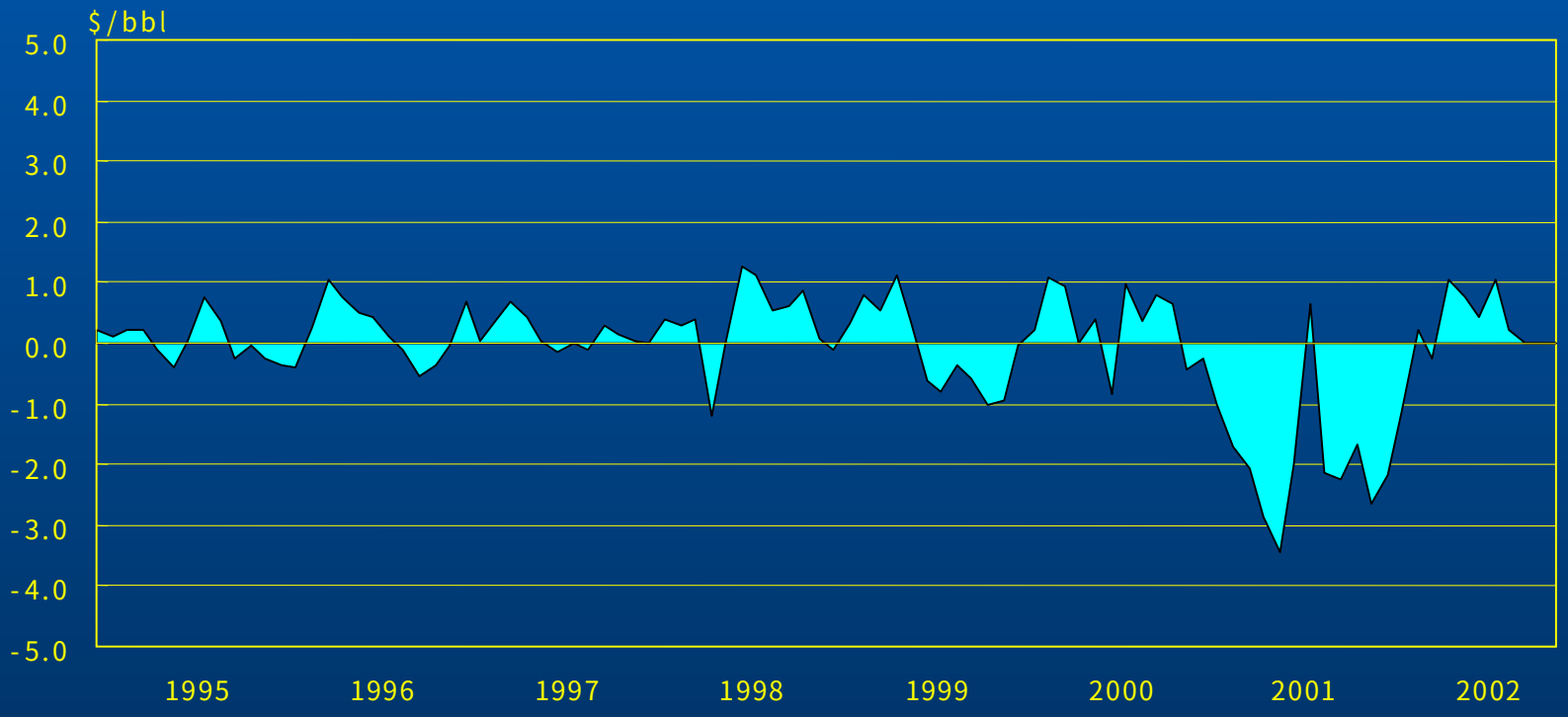
- To Asia – To U.S.



# Price Differential between East and West

## Price Differential of A/L

- To U.S. – To Europe



# Price Differential between East and West

## Price Differential of A/L

- **Relatively Higher by $1.0 -$1.5/B on Average for Asian Market**

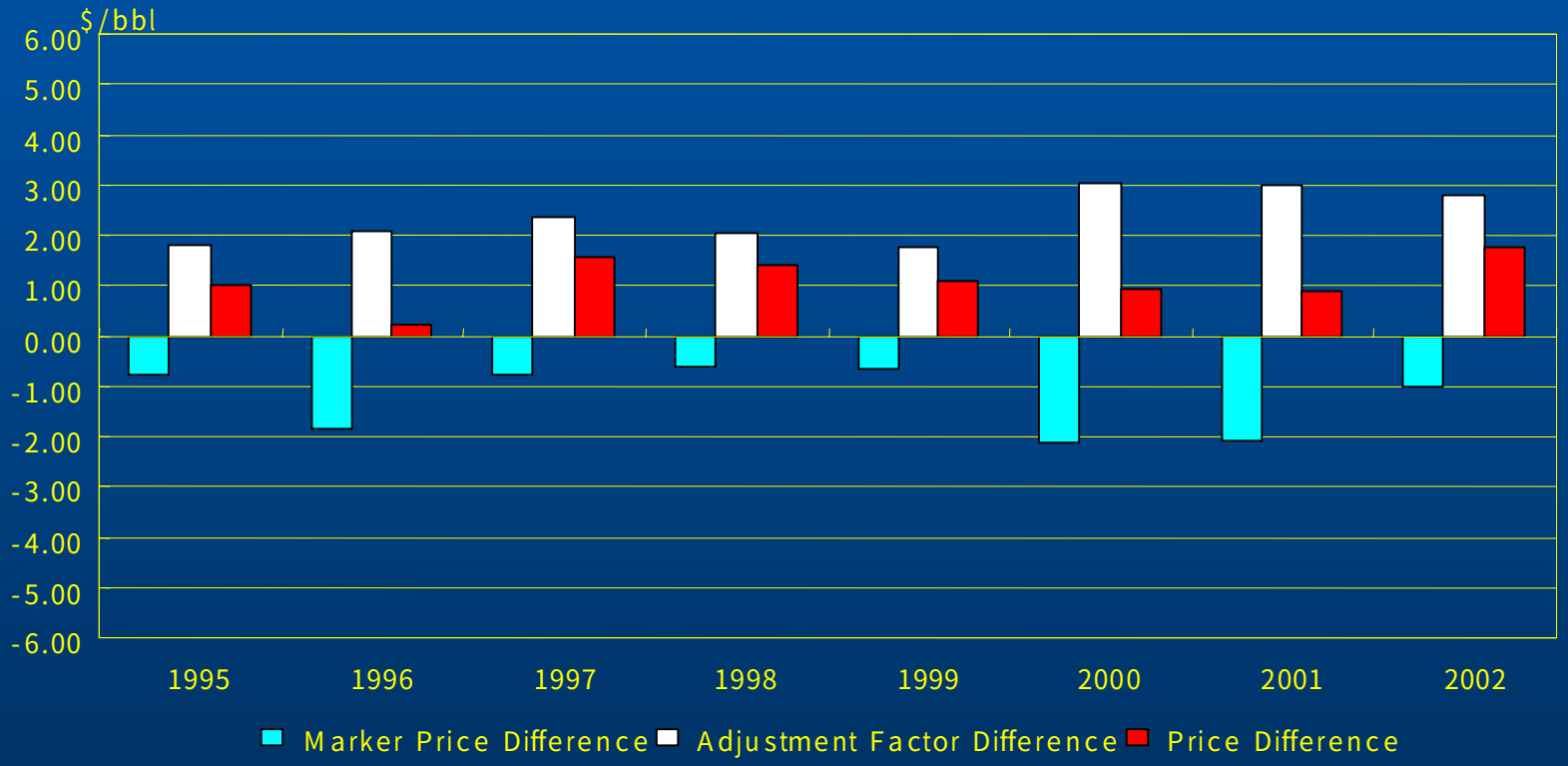
**( $/barrel )**

| | To Asia - To Europe | To Asia - To USA | To USA - To Europe |
|---|---|---|---|
| 1995 | 1.02 | 0.96 | 0.06 |
| 1996 | 0.20 | 0.09 | 0.11 |
| 1997 | 1.58 | 1.36 | 0.22 |
| 1998 | 1.42 | 1.06 | 0.36 |
| 1999 | 1.10 | 1.20 | -0.10 |
| 2000 | 0.93 | 0.58 | 0.35 |
| 2001 | 0.89 | 2.67 | -1.78 |
| 2002 | 1.78 | 1.75 | 0.02 |
| **1995-2002** | **1.11** | **1.21** | **-0.09** |

# Price Differential between East and West

## Breakdown of Formula Price Differential

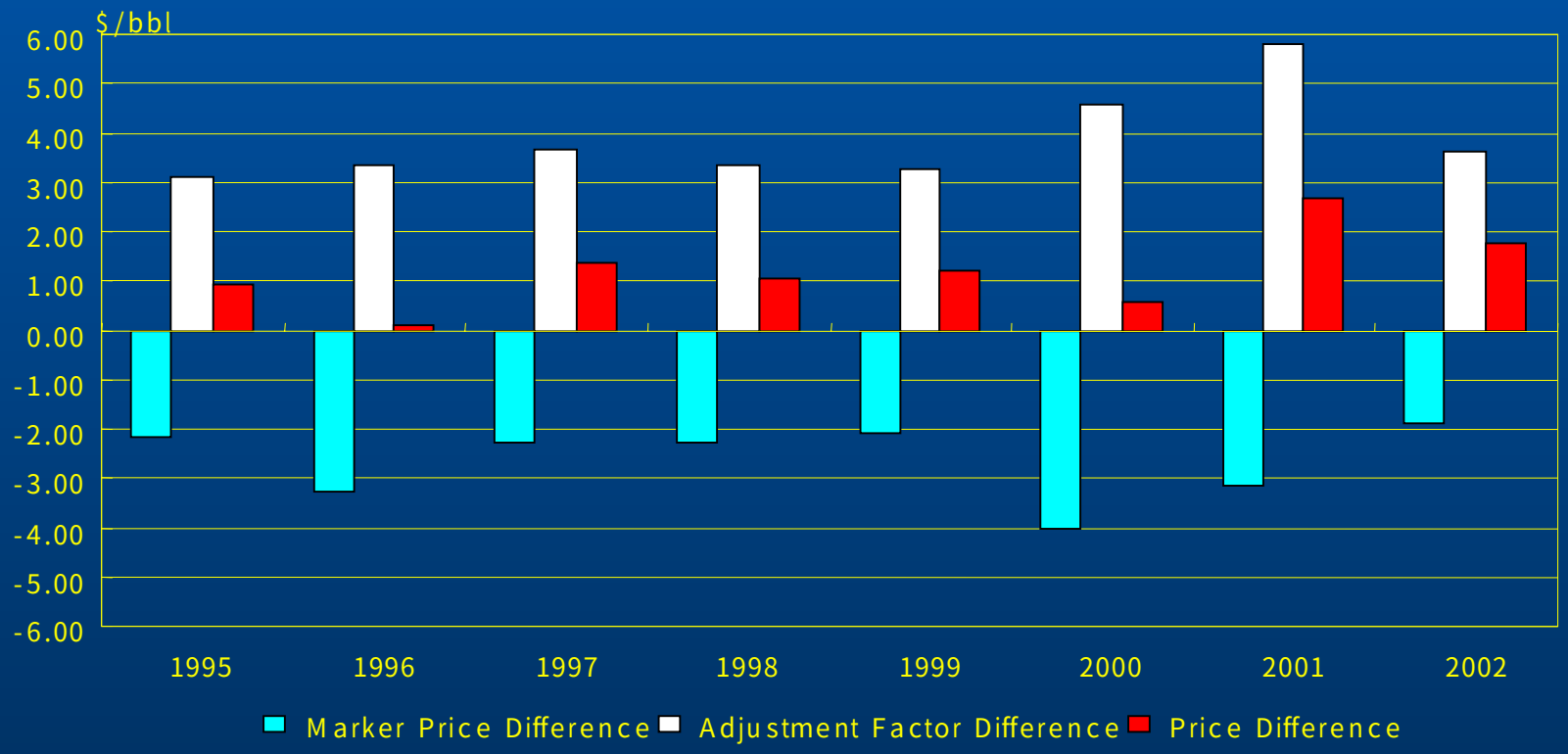
- To Asia – To Europe



# Price Differential between East and West

## Breakdown of Formula Price Differential

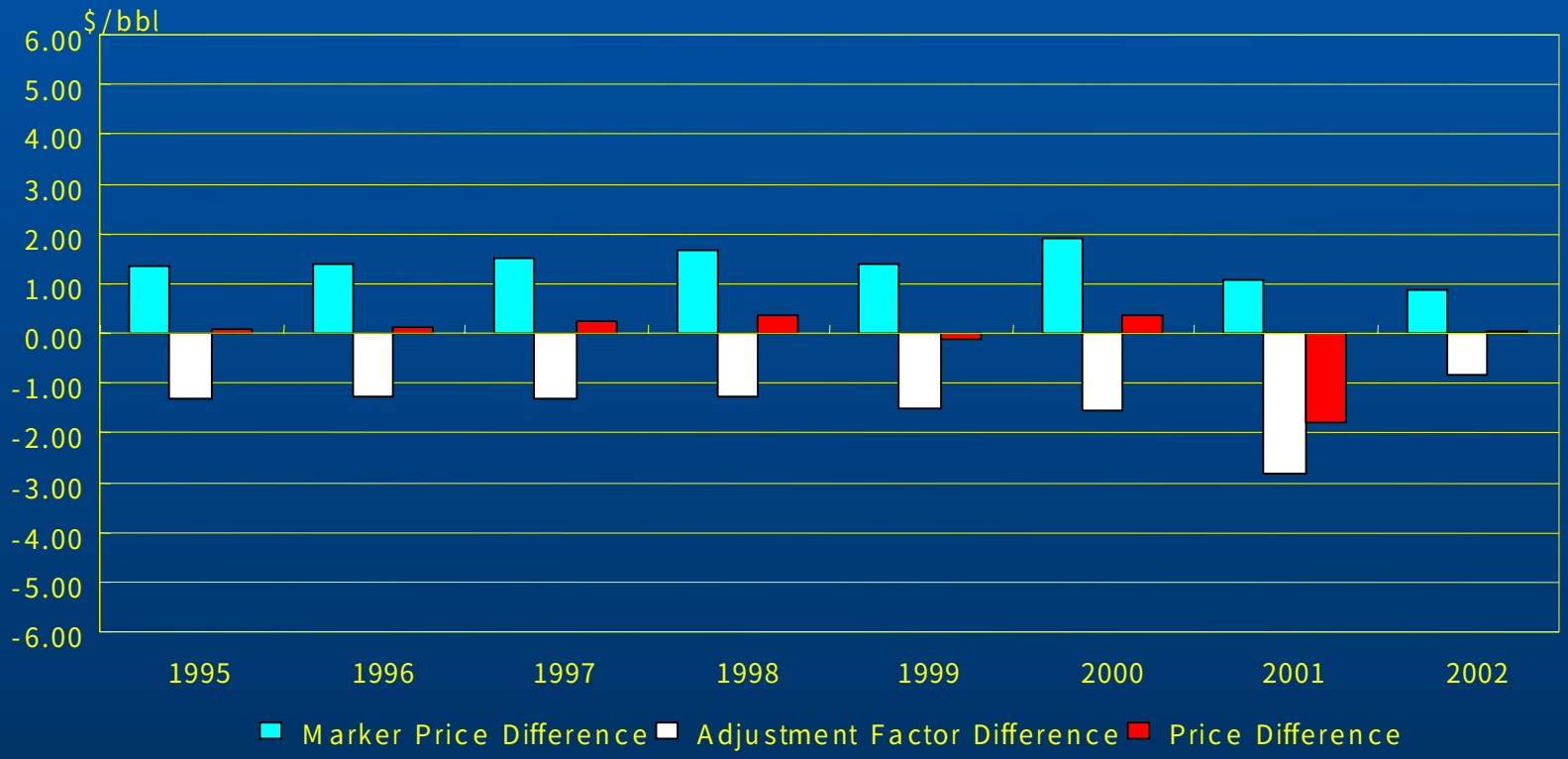
- To Asia – To U.S.



# Price Differential between East and West

## Breakdown of Formula Price Differential

- **To U.S. – To Europe**



# Price Differential between East and West

## Additional Burden for Energy Procurement

- $2.5 – 3.7billion Crude Oil Import Cost Increase in NEA Countries
  - Middle East Crude Oil Imports; 6.8mb/d(2001)
- Cost Increase of Other Energy Sources
  - LNG Import Prices
  - Coal Import Prices
- Undermining NEA countries' International Competitiveness

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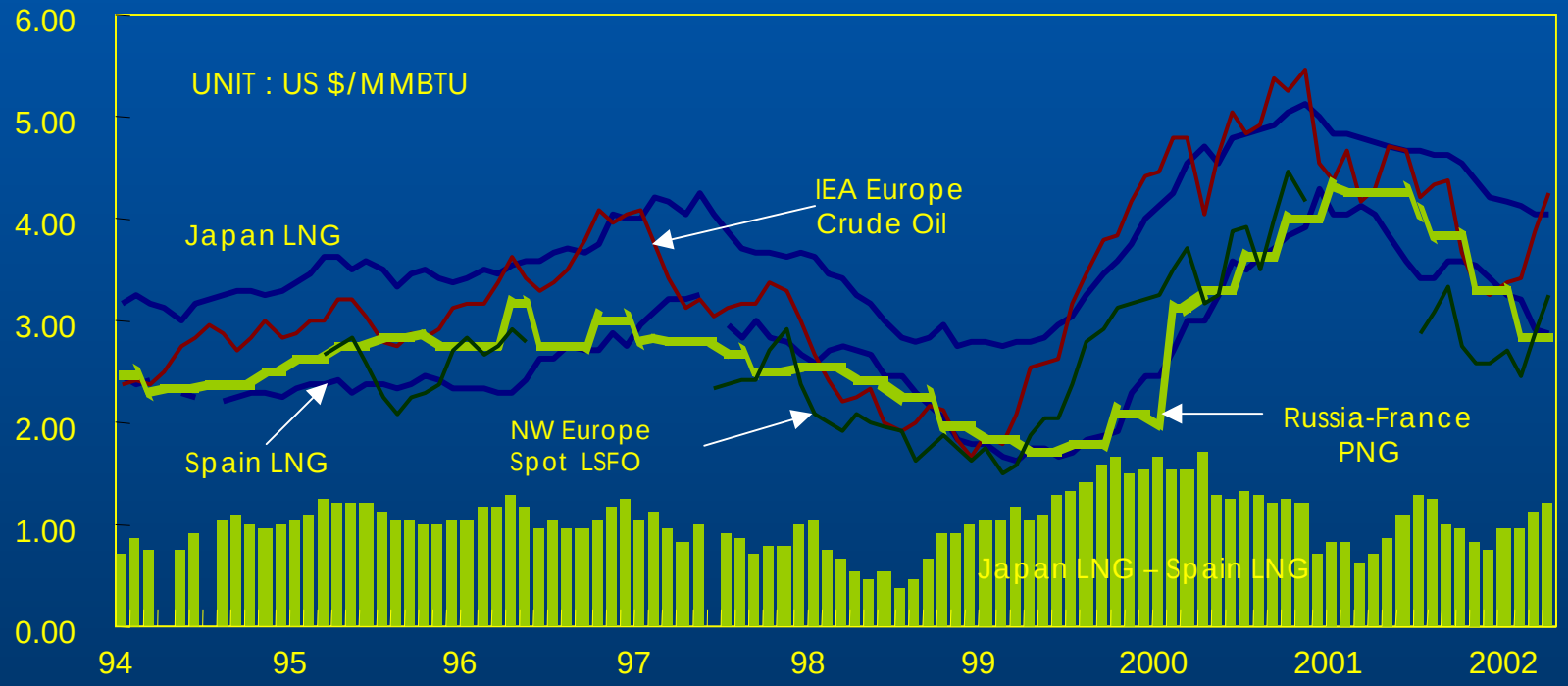
# Price Differential between East and West

## Additional Burden for Energy Procurement

- **Japan's LNG Import Prices $0.5 - $1.5/mmbtu Higher than Spain's**

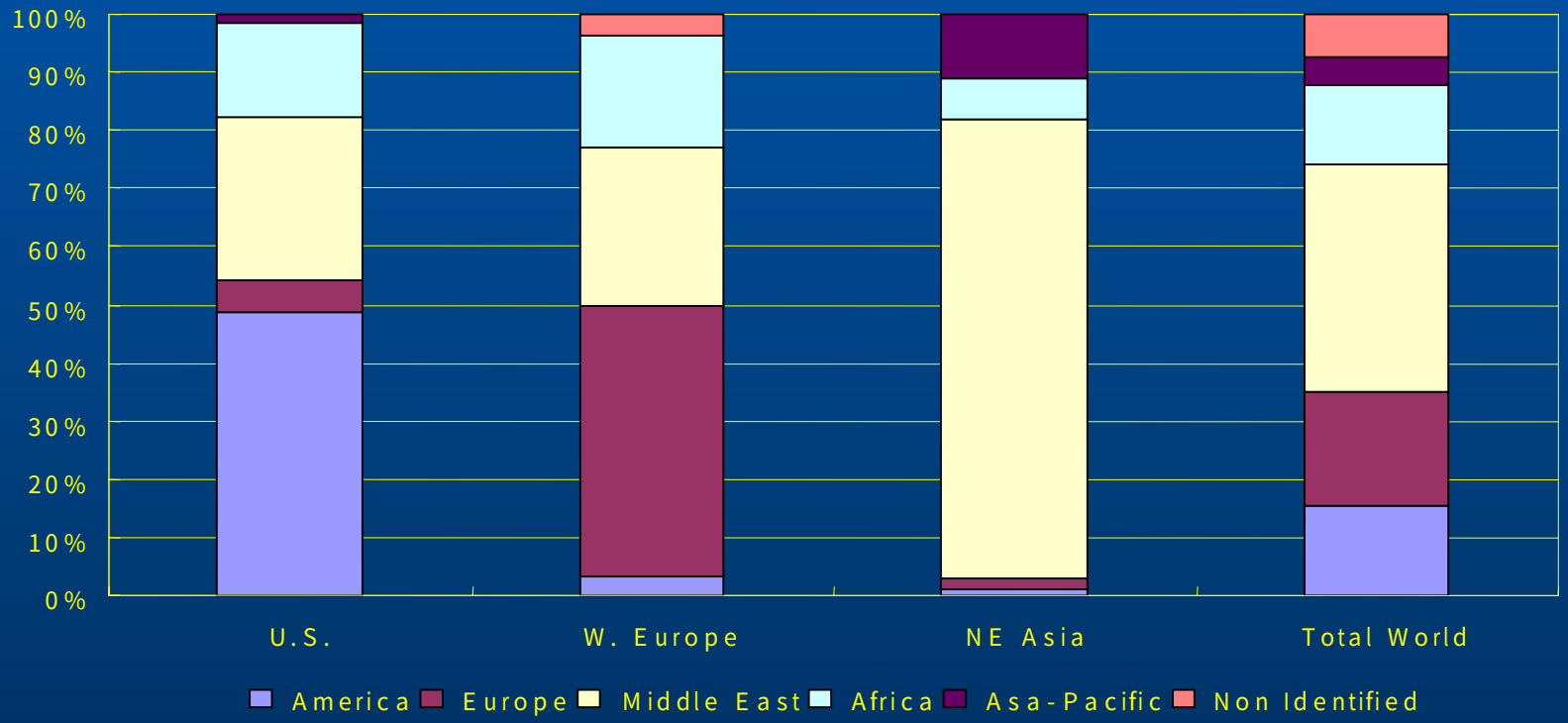



Note: Crude Oil Calorific Value: 5.75 mmbtu/bbl
Source: IEA, Energy Prices & Taxes/ World Gas Intelligence

# Causes of Asian Premium

## Limited Crude Oil Import Sources in Asia

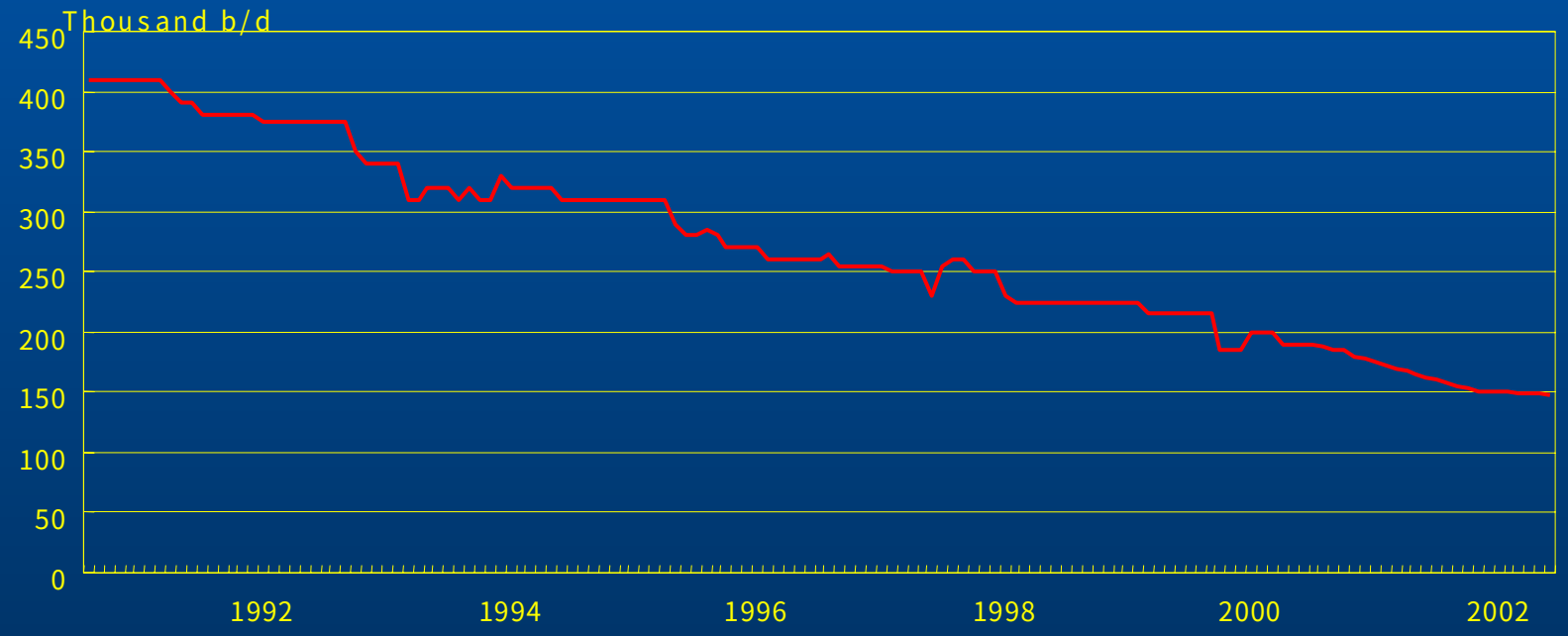
- **Heavy Dependency on Middle East Crude Oil in Asian Market**



# Causes of Asian Premium

## Absence of Representative ME Crude Market

- **Low Liquidity and Transparency in Spot Price Formation of Dubai**
  - **Production Decline in Dubai, Marker Crude for Asia**



# Causes of Asian Premium

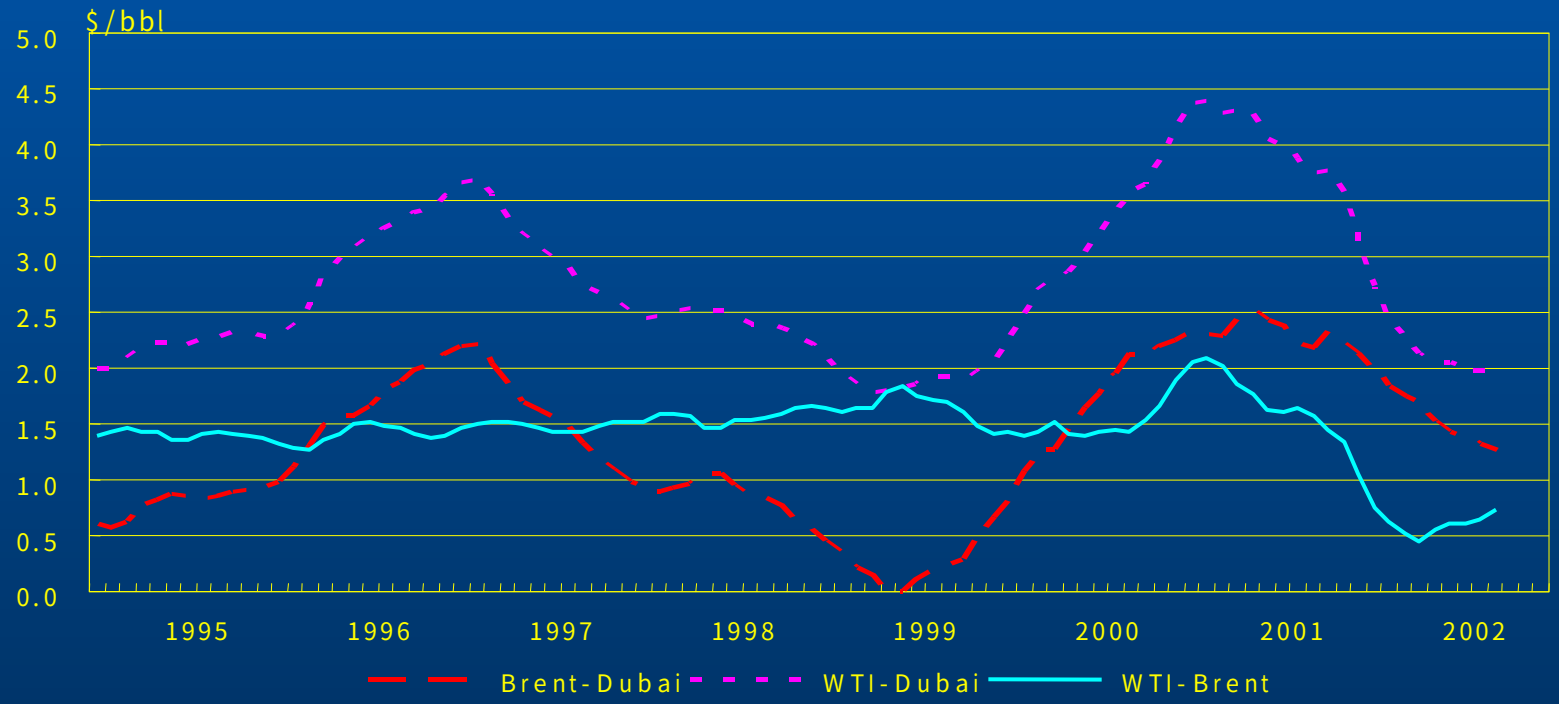
## Inflexible Supply of ME Crude Oil

- Inflexible Supply System imposed by Persian Gulf Producers
  - Destination Restriction
  - Third-Party Trading Control
- Inefficient Arbitrage between East and West due to Inflexible Supply
  - Unresponsive Oil Flow to Shifts in Relative Price of Brent and Dubai
- Discrimination between Eastern and Western Market, Charging Asian Premium

# Review of Pricing Mechanism

## Marker Price Formation

- **Marker Crude Spot Price Differential ; Relatively Unstable Price Formation of Dubai**

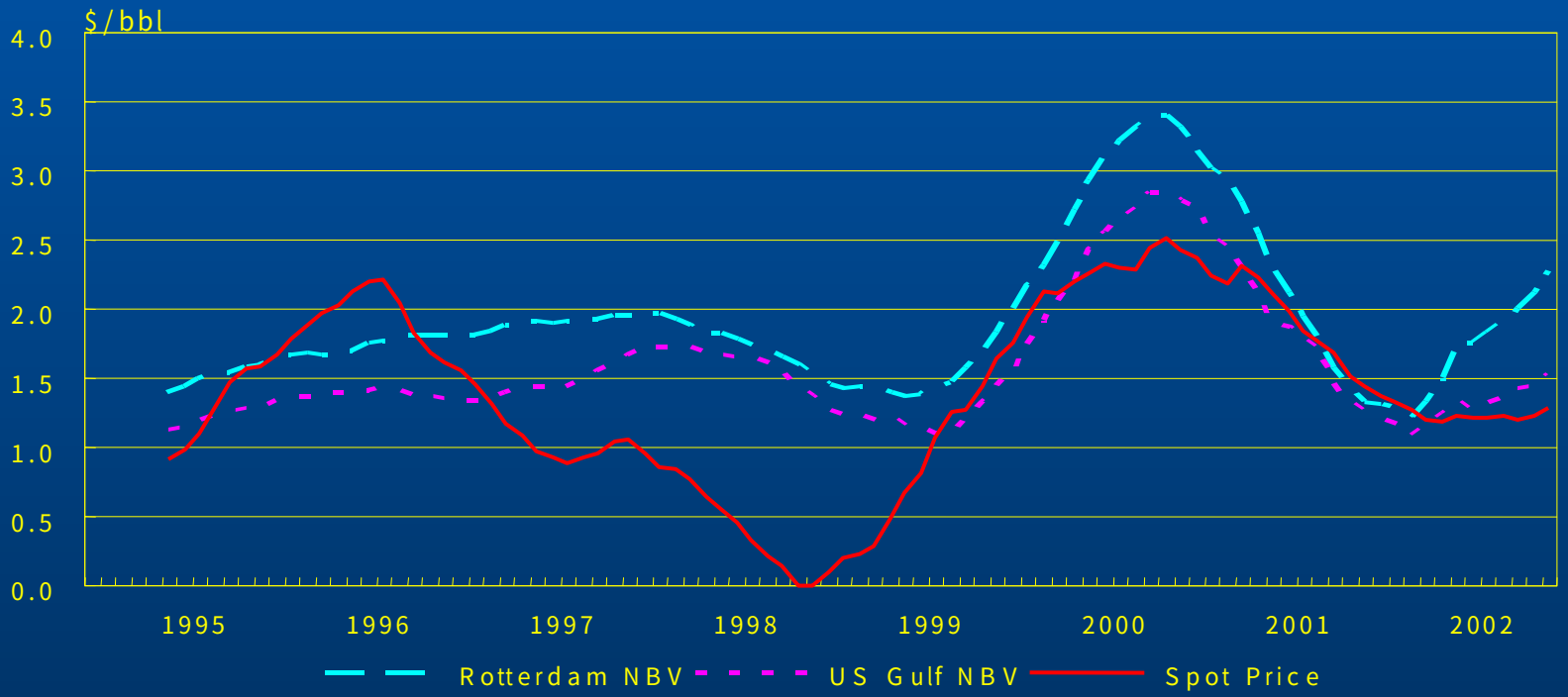



Note: 12 Month Moving Average

# Review of Pricing Mechanism

## Marker Price Formation

- **Brent-Dubai NBV Differential and Its Spot Price Differential ; Unusual Movement of Spot Price Differential during 1996-1998**

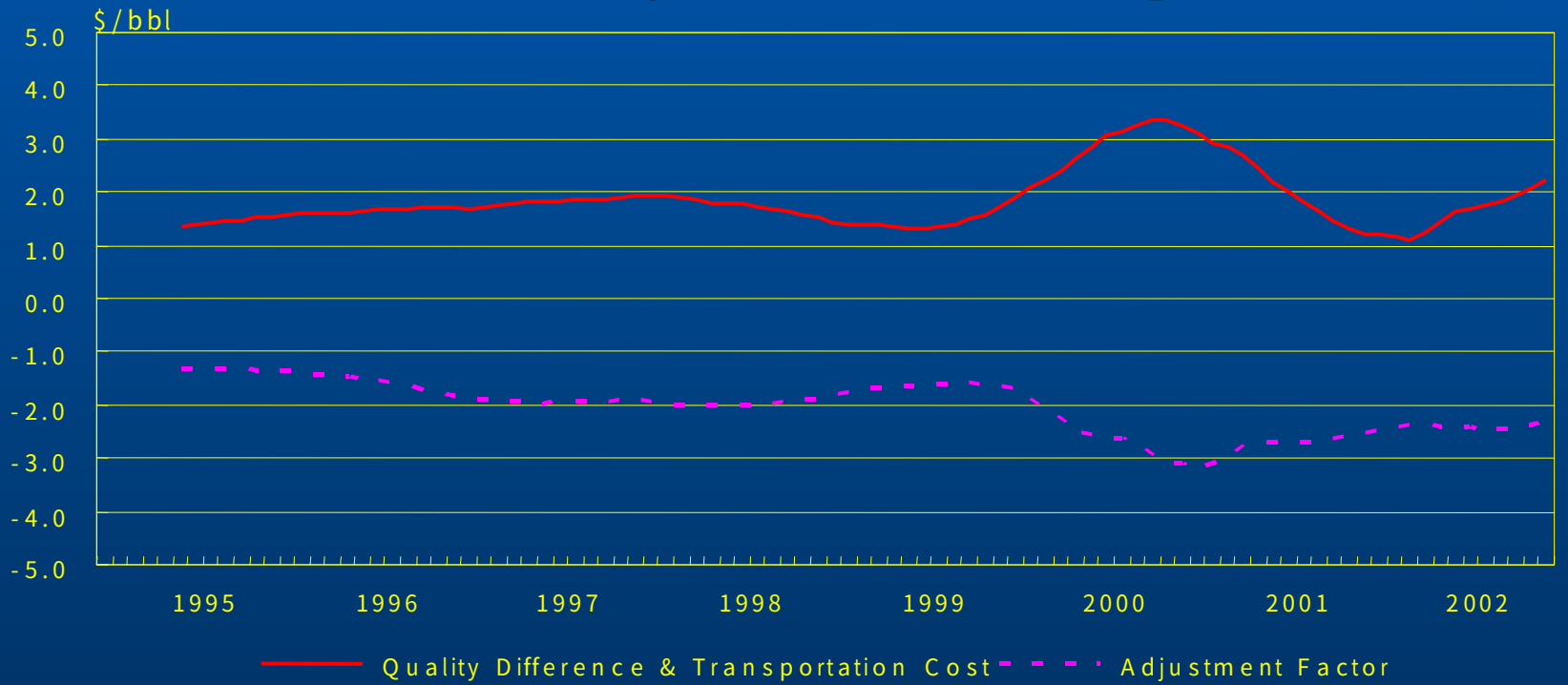



Note: 12 Month Moving Average

# Review of Pricing Mechanism

## Adjustment Factor (Europe)

- A/L Adjustment Factor in European Market Reflecting the Difference of Brent - A/L NBV (Quality Difference and Transportation Costs)

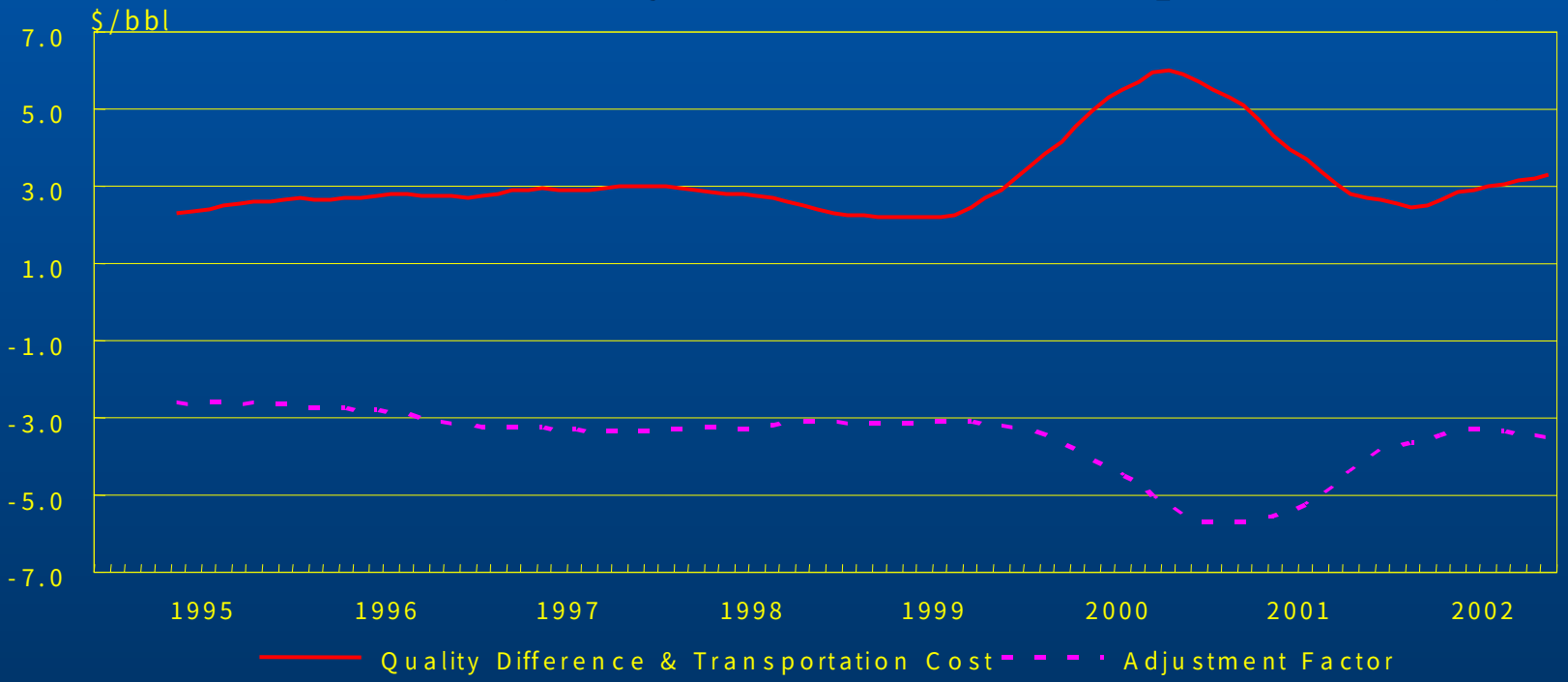



Note: 12 Month Moving Average

# Review of Pricing Mechanism

## Adjustment Factor (U.S.)

- A/L Adjustment Factor in U.S. Market Reflecting the Difference of WTI - A/L NBV (Quality Difference and Transportation Costs)

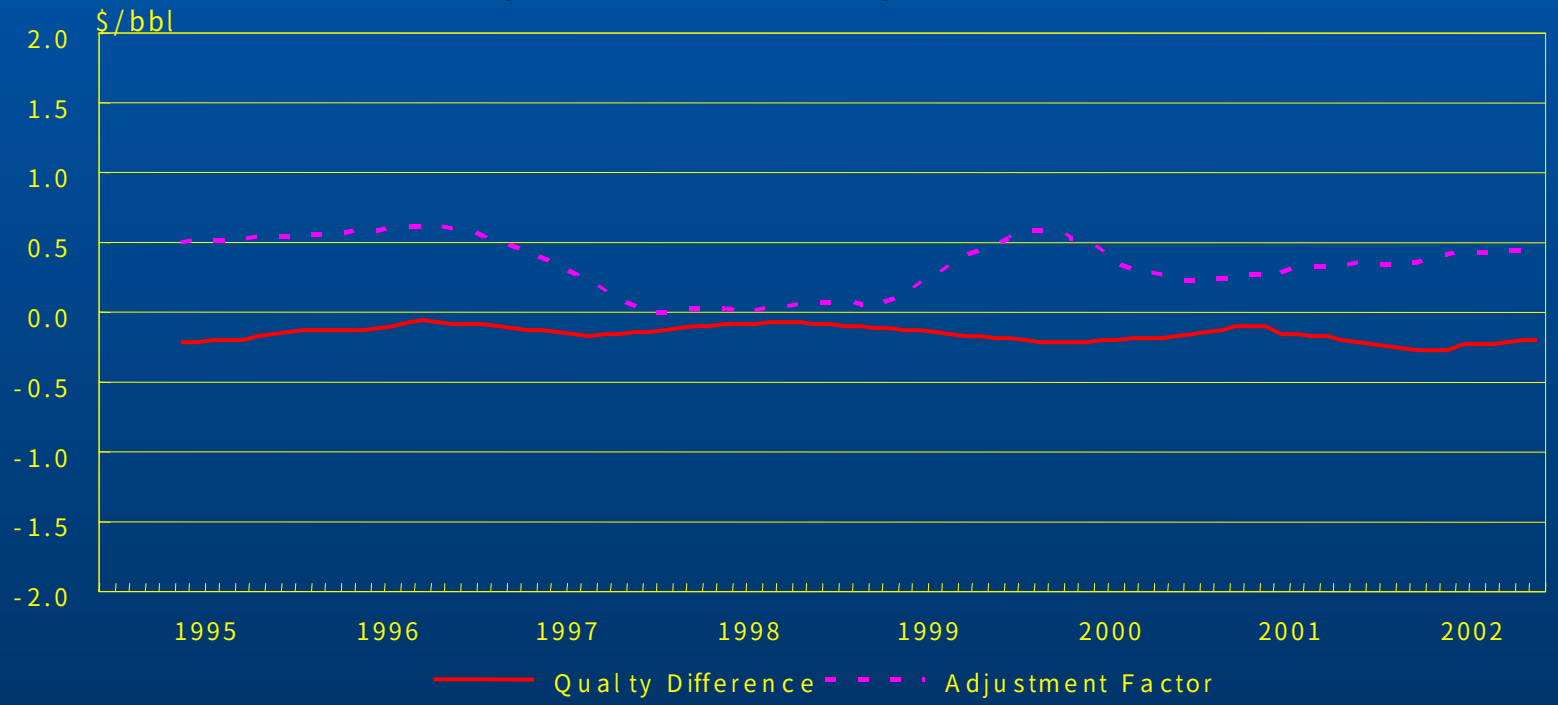



Note: 12 Month Moving Average

# Review of Pricing Mechanism

## Adjustment Factor (Asia)

- A/L Adjustment Factor in Asian Market Reflecting the Difference of Dubai - A/L Quality Difference Only




Note: 12 Month Moving Average

# Proposal for Pricing Change

## Alternative of Marker Crude for Asia

- **Criteria for Marker Crude include Volume, Security of Supply, Diversity of Sellers, Broad Acceptance**

| OMAN | BRENT |
|---|---|
| ? Active Spot Trading<br>? Representing Middle East Crude Oil<br>? High Equity Share by R/D Shell<br>? Expected Production Decline<br>? Difficult to Identify 'Asian Premium' | ? High Liquidity and Transparency<br>? Reflecting European Demand and Supply<br>? Low Sulfur Light Crude Oil<br>? Expected Production Decline<br>? Easy to Identify 'Asian Premium' |

# Proposal for Pricing Change

## Pricing Based on Brent (Alternative Marker)

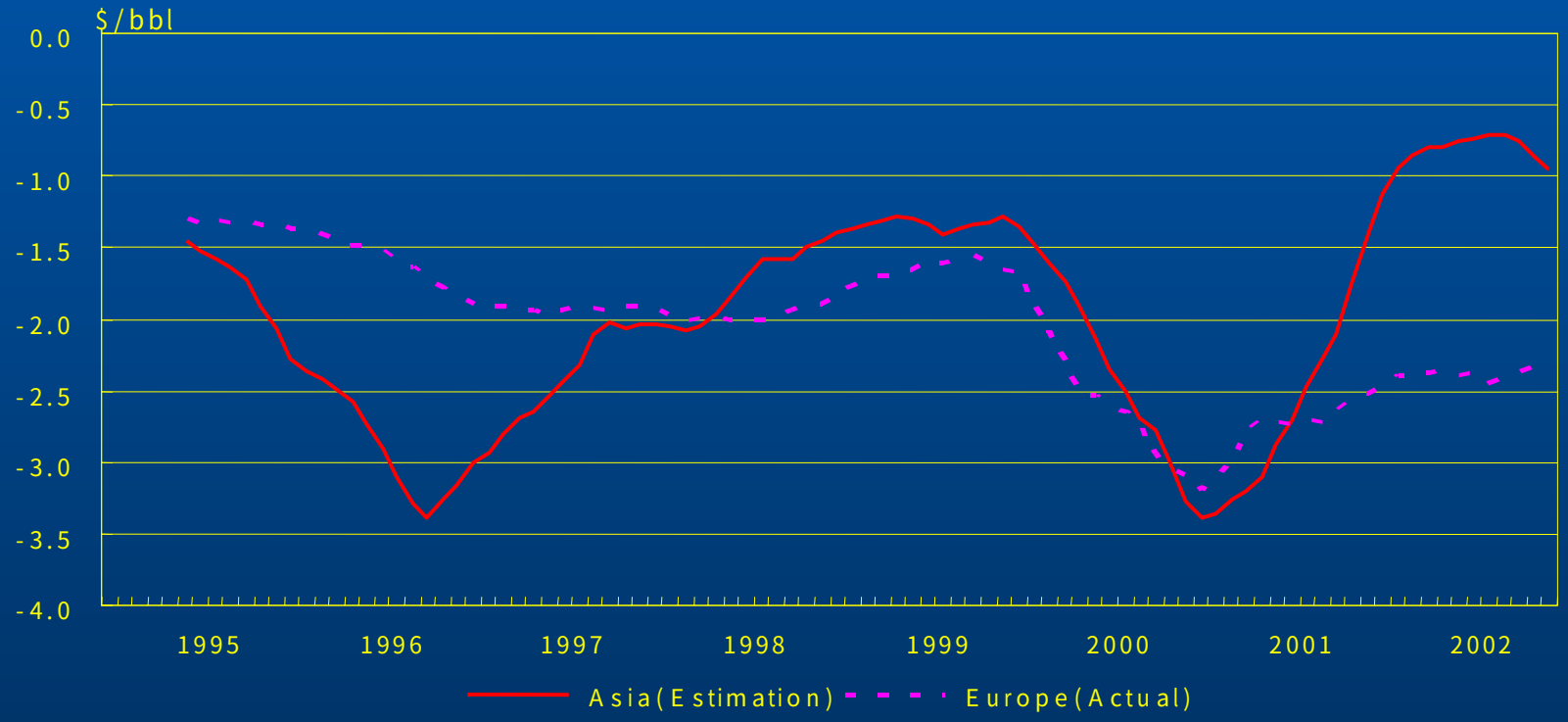
- **Marker Price**
  - **IPE Brent (B-wave)**

- **Adjustment Factor**
  - **Quality Difference Compared with Brent at Asian Market (Singapore)**
  - **Transportation Cost from Middle East to Northeast Asia**

# Proposal for Pricing Change

## Pricing Based on Brent (Alternative Marker)

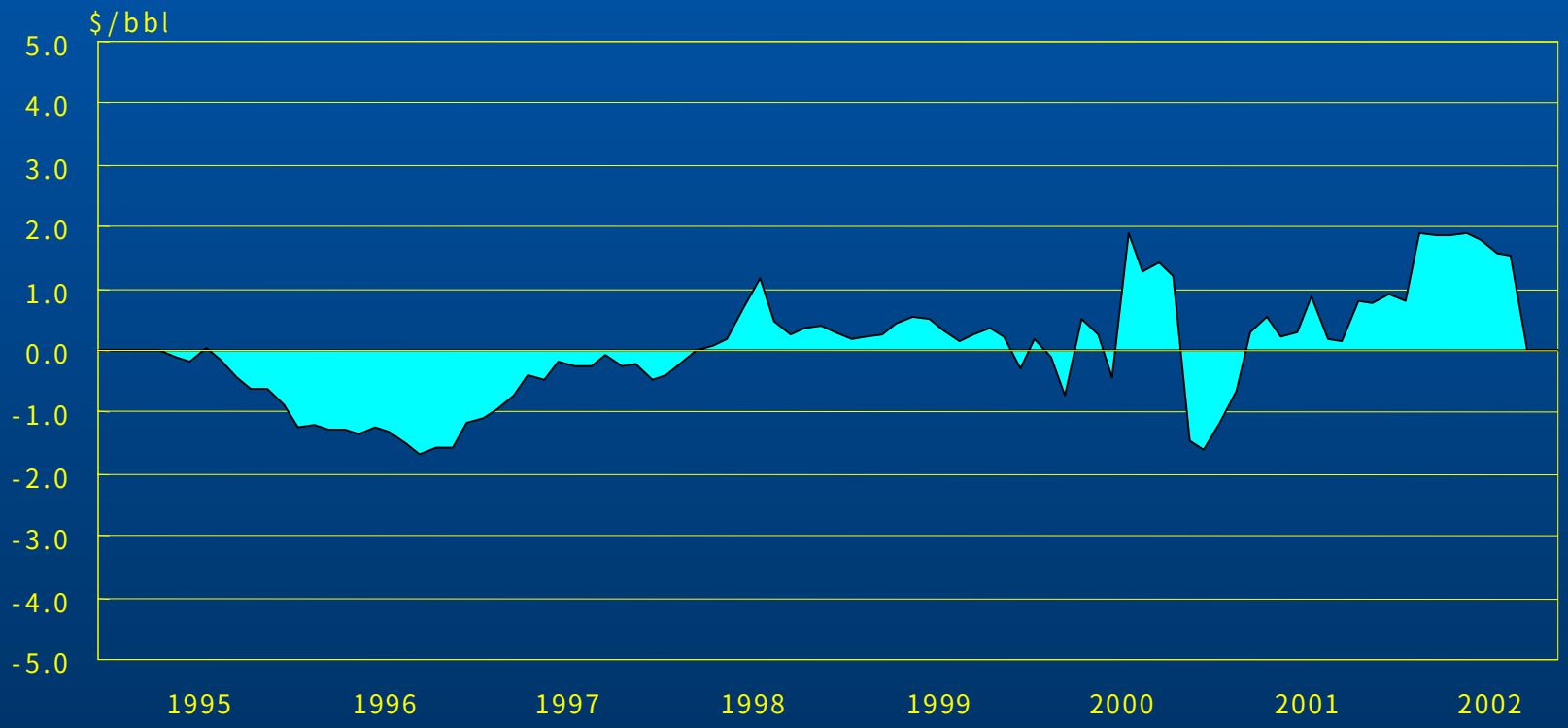
- **Estimation of A/L Adjustment Factor at Asian Market**



# Proposal for Pricing Change

## Simulation by Pricing Change

- **Price Differential of A/L between Asia–Bound and Europe-Bound**



# Long-term Counter Measures

## Strengthening Asian Oil Product Market

- Activating International Oil Product Trading to Curb Price Discrimination
  - Linkage of Asian Market and Europe/ U.S. Market
  - Linkage of Crude Oil Market and Oil Product Market

- Introducing Spot Markets and Futures Market in NEA Region
  - Deregulation of NEA countries' Domestic Market
  - Joint Investigation for Oil Product FTA among NEA Countries

- Reduction of Oil Product Import Tariffs in NEA Countries

# Long-term Counter Measures

## Expanding Oil Stockpile in NEA Region

- Lack of Independent Storage Facilities in Asian Region
  - Singapore: 16.4million barrels
  - ARA: 49.6million barrels
  - U.S. Gulf: 65.3million barrels
- Expansion of Crude Oil Stock by Increasing Government Facilities
- Joint Stockpile with Crude Oil Producing Countries

# Long-term Counter Measures

## Reducing Middle East Oil Dependency

- Crude Oil Procurement from Potential Supply Area
  - East Siberia and Far East Russia
  - Central Asia and Caspian Sea
  - Chinese Offshore

- Cooperation on E & P Activities among NEA countries
  - Concentrated Investment for the Strategic Area