PRESENTATION ON
ALASKA GAS PIPELINE PROJECT

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Investment Decision-Making by Oil and Gas Companies

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How Oil and Gas Companies Look At Projects

- Does it offer a strategic fit?
- Does it offer diversification?
- Does it create wealth (NPV >0 at market cost of capital)?
- Treat investment and financing as separate decisions
  - Evaluate project as if it were all equity financed
  - But, take account of ability to create value if special financing is available (e.g. federal loan guarantee)

Financial Criteria

- NPV – Net Present Value
- NPV per BOE (Barrels of Oil Equivalent)
- IRR – Internal Rate of Return
- PI - Profitability Index
- Cash Flow (Undiscounted)

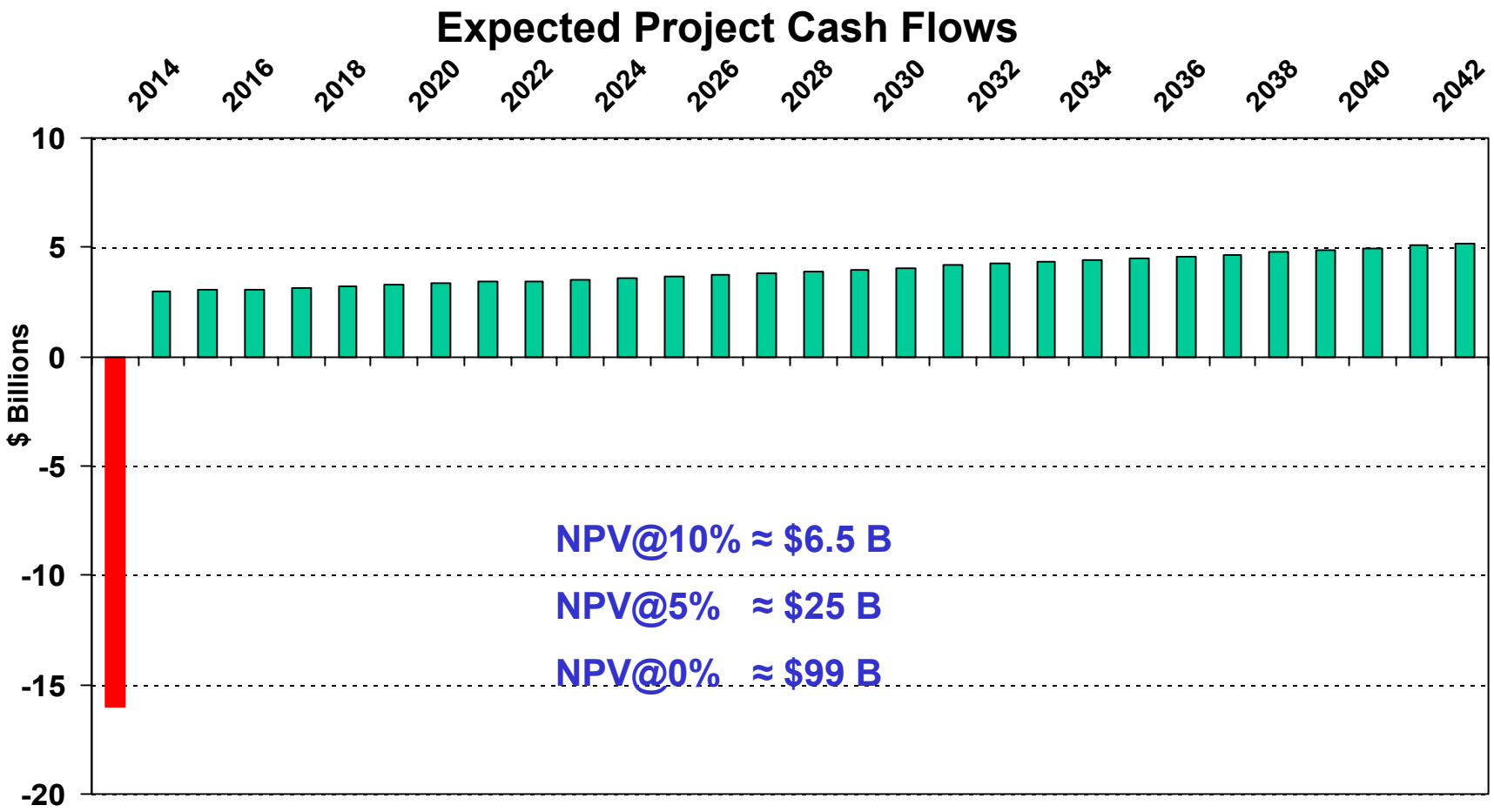
Choice of Discount Rate

- **Discount at risk-adjusted of capital, the expected rate of return that can be realized on similar investments with equivalent risk**
  - **Currently, using 10% for Gasline discount rate**
- **Projects need to be evaluated at the risk-adjusted cost of capital, which may be above the Weighted Average Cost of Capital**
- **What makes a project riskier?**
  - **Uncertainty**
  - **Political risk**
  - **Economic risk**

Financial Criteria
Net Present Value (NPV)

- **Present value of future cash flows including capital investment**
- **A project with a positive NPV is a candidate for acceptance**

Stylized Cash Flow



Financial Criteria
NPV per BOE

- **Measure is highly sensitive to price forecasts**
- **$1.00/BOE typical of gas projects with large infrastructure costs (e.g. LNG)**

Financial Criteria
Internal Rate of Return (IRR)

- The discount rate at which the NPV of a project equals zero.
- All projects with an IRR greater than the risk-adjusted cost of capital should be accepted when there are no capital budget restraints. Choose higher IRR projects when there are capital budget restraints. Although the "market" would fund projects with IRR above cost of capital, project can be postponed.
- IRR of 12-15% currently indicates threshold rate of return without significant risk factors.
- Energy companies are developing alternative projects in 15%-20% range.

Financial Criteria
Profitability Index (PI)

- **PI = [present value of cash inflows/present value of cash outflows] at a given discount rate.**
  PI = [NPV+PV(Investment)]/PV(Investment)
- **Profitability Index captures the present value per dollar of investment - "biggest bang for the buck."**
- **PI > 1 for those projects which have a positive NPV.**
- **Measure is useful to allocate capital if there are capital restraints.**
- **Array projects from high to low and choose projects with highest PI subject to capital constraint.**

- **Note: Some analysts use a different definition of the profitability index:**
  NPV/I = NPV/PV(Investment)
  PI=NPV/I + 1

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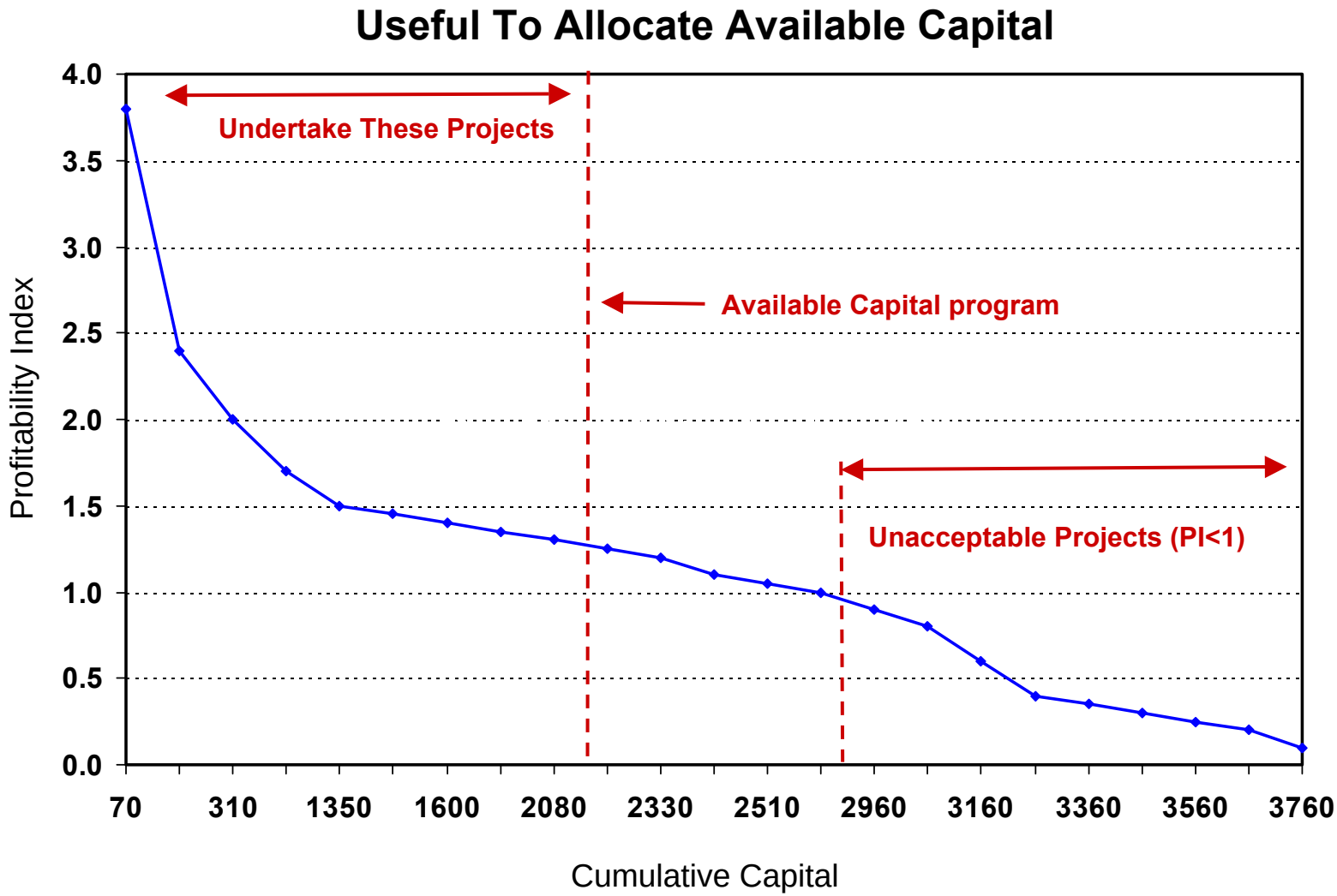
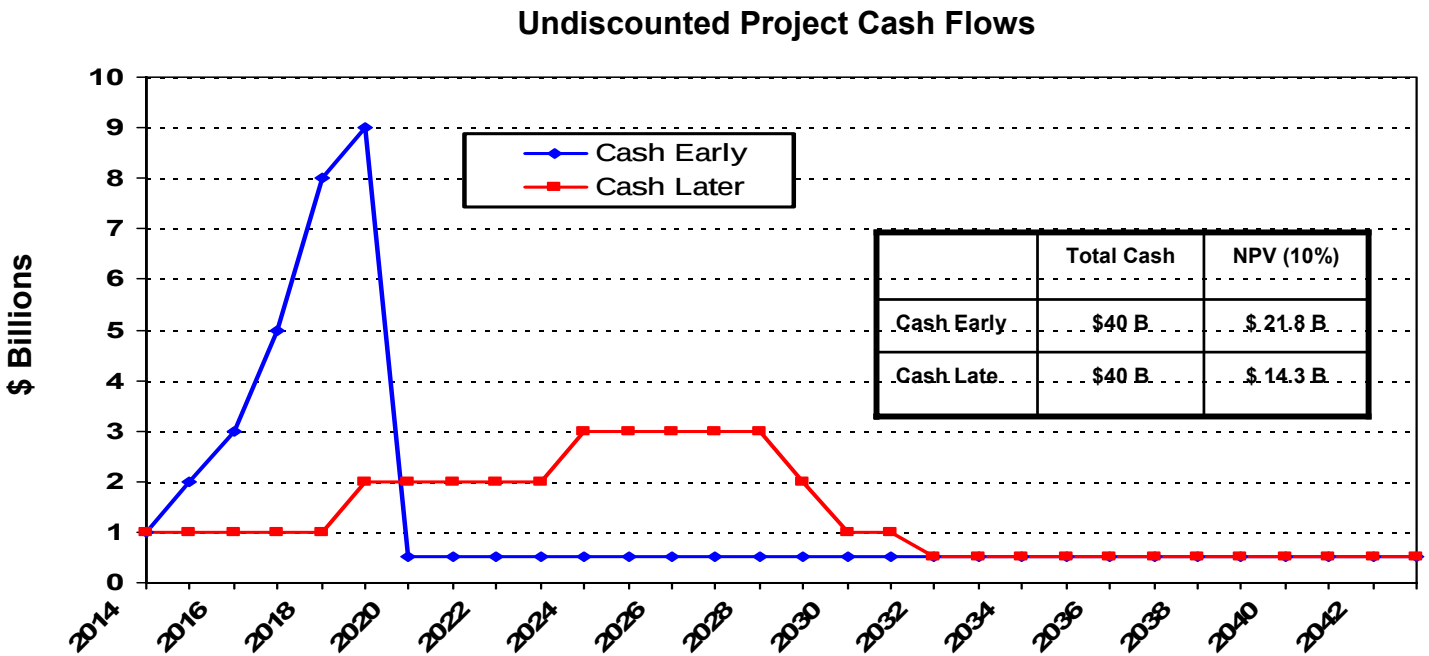
Financial Criteria
Profitability Index (PI)



Financial Criteria
Cash (Undiscounted)

- Not used as key investment metric
- Often used to view size of project in presentations to sovereign governments
- Antithetical to discounted cash flow analysis
  - Suffers from failure to reward cash early
  - E.g. Cash flows below are equivalent, but not in discounted terms



Use of Financial Metrics

- **Comparing Gasline project with other projects in the firm's project portfolio.**
  - **Assuming capital constraints, an oil and gas company would compare alternative independent projects of the same riskiness on the basis of PI (Profitability Index). If an alternative project is riskier, the PI of the riskier project would be discounted at a higher rate to reflect the riskiness of the cash flows.**
- **Comparing a Gasline proposal with another Gasline proposal or with the "Status Quo."**
  - **An oil and gas company would use NPV (Net Present Value).**
    - **Note that the two proposals may not have the same risk. (e.g. fiscal certainty making cash flows less risky)**
    - **As a practical matter, discount rate adjustment may not be considered.**
- **Evaluating the effect of a delay in the Gasline.**
  - **An oil and gas company would use NPV, not IRR (Internal Rate of Return).**
    - **Note: the IRR of a project in which the cash flows are simply delayed will be unchanged.**

Incorporating Risk in the Discount Rate

- If cash flows are risky, they should be adjusted to account for this risk
- As a practical matter, this is not generally done
- Instead, firms may adjust the discount rate to account for risk
  - Somewhat subjective, but guided by analytical work
  - e.g. Ibbotson work indicated the following international costs of capital, based on market data and country credit ratings
    - US ~ 12%
    - Norway ~13%
    - Qatar ~ 21%
    - Venezuela ~ 25%
  - An oil company comparing projects in the US with those in other countries will increase the discount rate to reflect the divergent risks
  - They will also lower the discount rate if there are less risky cash flows from guaranteed purchasers, fiscal certainty, etc.

Potential Constraints

Producers will not use financial metrics exclusively

Producers will address additional issues in their project evaluation

- **Do we have the personnel and skill sets to undertake the project?**
- **Will Management be able to focus on managing the project?**
  - **Is the project so complex that it will distract Management's attention from other projects?**
  - **Does the project size offer economies of scale?**
- **Is the project discretionary?**
- **What is the effect of a delay on project economics?**
  - **Will a delay allow us to undertake other projects in a more timely manner?**
    - **Do we risk losing the project or a more attractive project if we delay?**
  - **Do we have contractual obligations that impact timing?**
- **Does the project offer improved diversification?**
  - **Business Line**
  - **Regionally**
- **Do we have a competitive advantage in this project?**

Producer View of Future Gas Prices

- Producers have been "burned" by their forecasts of high gas prices in the past
  - e.g. Gas Bubble of 1990s
- Producers will test their projects against a price path that is below their "Most Likely" view
  - They use the "official price view" as a speed limit to signal aggressiveness
  - By "high-grading," they will have a suite of projects resilient to price risk
  - Their price view lags the current market price by as much as 5-7 years as prices rise, and by 2 years as prices fall. Current view might be: $24-26 oil (~$4-4.25 gas)
- Producers will also "stress" test their projects
- The consequences of error are not symmetrical
  - If a producer underestimates the future path of prices, they will not undertake high risk projects and their returns will skyrocket (the current situation relative to a few years ago)
  - If a producer overestimates the future path of prices, they will be scorned by Wall Street and investors (their position in the late 1990s)
  - They will "miss" opportunities, but these misses will not be fully "penalized" by the market

Strong Incentives for Conservative Investment Strategy

Conservative Investment Strategy Dominates In Capital Restrained World

	Gas Prices High	*Gas Prices Low*
Aggressive Investment Strategy	**High ROCE**	**Low ROCE**
Conservative Investment Strategy	**Very High ROCE**	**Moderate ROCE**

ROCE = Return on Capital Employed

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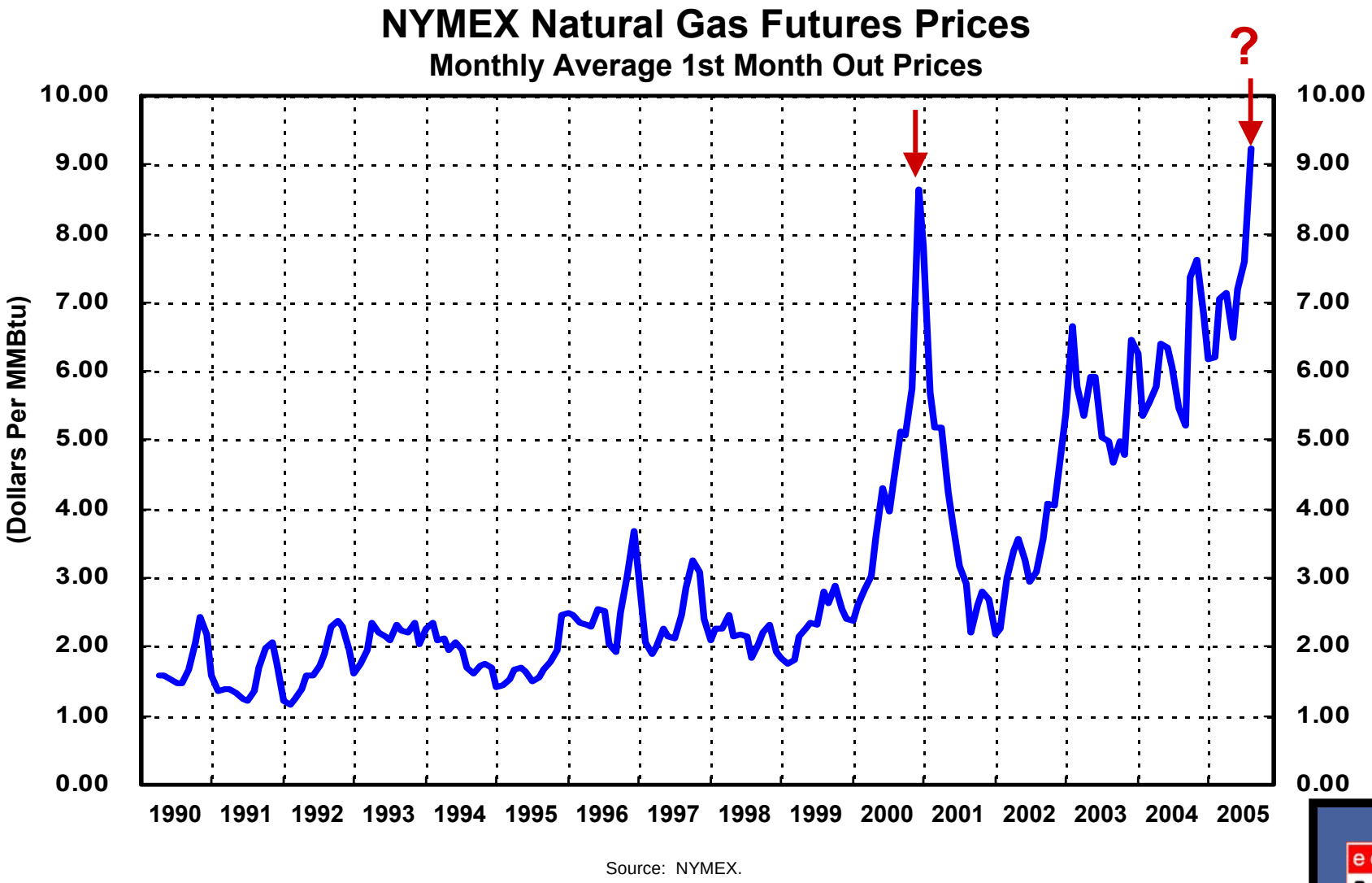
Past Natural Gas Bubbles



Source: NYMEX.