



FEEDSTOCK, PETROCHEMICAL AND POLYMER COST, PRICE AND MARGIN FORECASTS THROUGH 2017 (AND 2030) – AUGUST 2011 EDITION

- Globally Linked U.S. Gulf Coast Forecasts
- Internally Consistent Models and Data
- Four Energy-Economic Scenarios

Key Questions Addressed by Probe's Price Forecasting Study:

How much longer will high petrochemical margins last? Will those margins be set in the U.S. or other countries? Which countries for which petrochemicals?

When will the next margin peak occur? Will all chemicals and polymers share equally, with the same timing?

Is North America regaining its petrochemical competitive advantage because of the falling dollar and shale gas? What will happen when other countries have shale gas?

Has North America lost its competitive position in propylene and BTX? Why are BTX prices so volatile? What is the role of gasoline regulation?

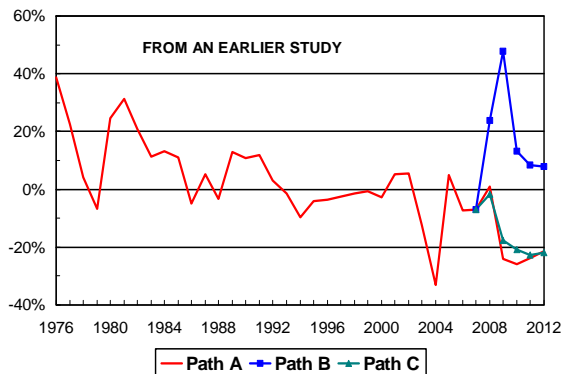
Which is the stronger determinant of chemical and polymer prices – feedstock costs or demand? How high will feedstock costs go before they cycle down again?

Are oil and gas becoming permanently scarce, or is the energy industry just in another cycle? Will oil and gas always be priced so differently?

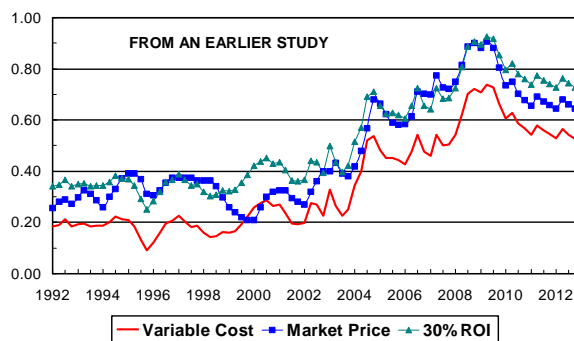
What determines chemical margins? The economy? Feedstock costs? The strongest producer? The weakest one? The industry's capital investment behavior?

Will lighter ethylene feedstocks worldwide continue to disrupt the supply of by-products like propylene and butadiene? What will happen to acetone produced as a by-product of phenol?

ROI ADVANTAGE OF PROPANE OVER NAPHTHA
(ROI PERCENTAGE POINT DIFFERENCE IN MAKING ETHYLENE)



ECONOMICS OF PHENOL BY CUMENE OXIDATION
PATH A (DOLLARS PER POUND)





The Probe Approach: Global, Strategic, Consistent, Eclectic

Petrochemical and polymer pricing remains as volatile as ever. Supply is very long right now, as the economy sinks, oil prices collapse and buyers shed inventory. Chemical prices will stabilize soon and then remain generally soft -- but for how long? Prices could turn around in a heartbeat, given their sensitivity to plant outages, oil prices and geopolitical events. How will these forces resolve themselves in the future, and what are the implications for petrochemical pricing and margins?

Probe's latest edition of **Feedstock, Petrochemical and Polymer Price and Margin Forecasts** answers these questions clearly and concisely. To find the answers, Probe has developed the perfect hybrid approach: powerful industry modeling, tempered by two decades of advising and forecasting in the chemical and energy industries. Probe's insights will help you, whether you are deciding about a capacity expansion, purchasing contract or marketing plan.

This is how the Probe approach differs from more traditional analyses:

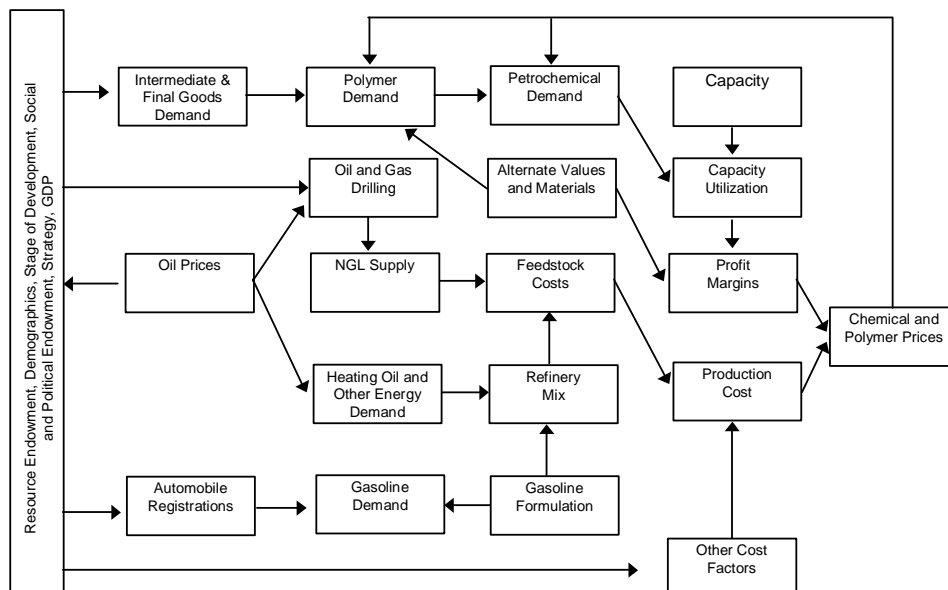
It is Global. Probe made its mark with its extensive global assessments of the world chemical industry. We understand the underlying fundamentals of global economics and trading patterns for chemicals like methanol, styrene and polyethylene, and know how to simplify analyses so you can see the big picture -- one you can act on -- instead of page after page of superfluous detail.

It is Strategic. Decisions to build an ethylene unit or sign a long-term contract take years to play out. Companies must live with their mistakes well into the future, so they need a strategic analysis that does not just use past trends and conventional wisdom to forecast volumes, prices or margins. Companies that do not look further and deeper during a time of structural change are asking for trouble.

It is Consistent. When you trace back the logic of many studies, they are simply not consistent. With scores of interacting variables, only a comprehensive economic model can separate cause from effect and balance competing forces. Probe's world chemical, energy and general economic model includes all external factors and sectoral interactions. Our forecasts consider a range of possible environmental regulations, energy policies, and economic scenarios.

It is Eclectic. Economic models that are not tempered by experience and common sense can be misleading. Probe never falls into that trap. Probe has been forecasting energy and petrochemical markets for three decades, and the authors of this study have many years of experience in the field. We bring an eclectic mixture of skills and insights to this report that is not easily duplicated by other consultants or planning staffs.

PROBE FEEDSTOCK/CHEMICAL/POLYMER PRICING LOGIC





**FEEDSTOCK, PETROCHEMICAL AND POLYMER
COST, PRICE AND MARGIN FORECASTS**
(FOUR ENERGY-ECONOMIC SCENARIOS, U.S. GULF COAST PRICING)

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OVERVIEW (PDF FILE, ABOUT 45 PAGES)

Major Trends/External Factors
GDP Scenarios
Crude Oil Price Scenarios
Inflation Scenarios
Forecast Rationale and Methodology
Summary of Forecasts
Forecast Graphs

**FOUR EXCEL FILES WITH SCENARIOS
(PATHS A, B, C AND MOST LIKELY)**

Assumptions and Refinery Prices

Unemployment Rate
Labor Cost, Chemicals
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Price Index (PPI) for All Commodities
Price Index (PPI) for Chemicals
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LDPE
LLDPE
Polypropylene
Polystyrene
Polyvinyl Chloride
PET Bottle Resin

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ABOUT PROBE

Probe Economics LLC has provided chemical industry forecasting and consulting services since 1976. Probe combines state-of-the-art industry models with many years of industry experience. Our professionals have held senior operating, staff or teaching positions in industry, government, academia and consulting. For more information, visit our website, at www.probeeconomics.com. Key personnel working on this study include:

John E. Johnson has analyzed world energy, feedstock, and petrochemical markets for more than 30 years. Before joining Probe, he served Union Carbide as Manager of Hydrocarbon Supply Planning, and held various policy and engineering positions. John received an M.S. in Chemical Engineering from University of Wisconsin, and was a guest researcher at Oak Ridge National Laboratories.

Frederick M. Peterson has 30 years of experience with chemical industry forecasting, strategic analyses and consulting. Prior to serving on the staffs of the President's Council of Economic Advisers and Council on Environmental Quality, he was a sales representative with Stauffer Chemical. He received a B.S. in Chemical Engineering at Berkeley, earned a Ph.D. in Economics at Princeton, and taught at University of Maryland.

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_____ Four Excel™ files and Adobe (pdf) file, August 2011, **Feedstock, Petrochemical and Polymer Price and Margin Forecasts through 2017** (\$2,200 for company-wide license)

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_____ Excerpts from Excel and pdf reports of just the following chemicals:

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