

Chemicals Practice

# Dynamic pricing: Using digital and analytics to take value pricing in the chemical industry to the next level

Rapid, customer-tailored pricing adjustments being made possible by new digital and advanced-analytics capabilities can generate substantial revenue improvement for chemical companies.

*by Arnau Bages-Amat, Jochen Böringer, Yutaro Kakimoto, and Georg Winkler*



**The chemical industry** is fertile territory for dynamic pricing,<sup>1</sup> an approach that deploys digital and advanced-analytics tools to tailor prices<sup>2</sup> on a customer-product-transaction level at a degree of granularity and precision that has not previously been possible. The tools are offering ways to add new potential and effectiveness to value-pricing approaches.

Dynamic pricing works for the entire range of the chemical industry's offering, from highly differentiated specialty chemicals to more commoditized products, helping commercial organizations to identify and charge for the value the products create as well as adjust pricing to the constant shifts in market conditions. In all

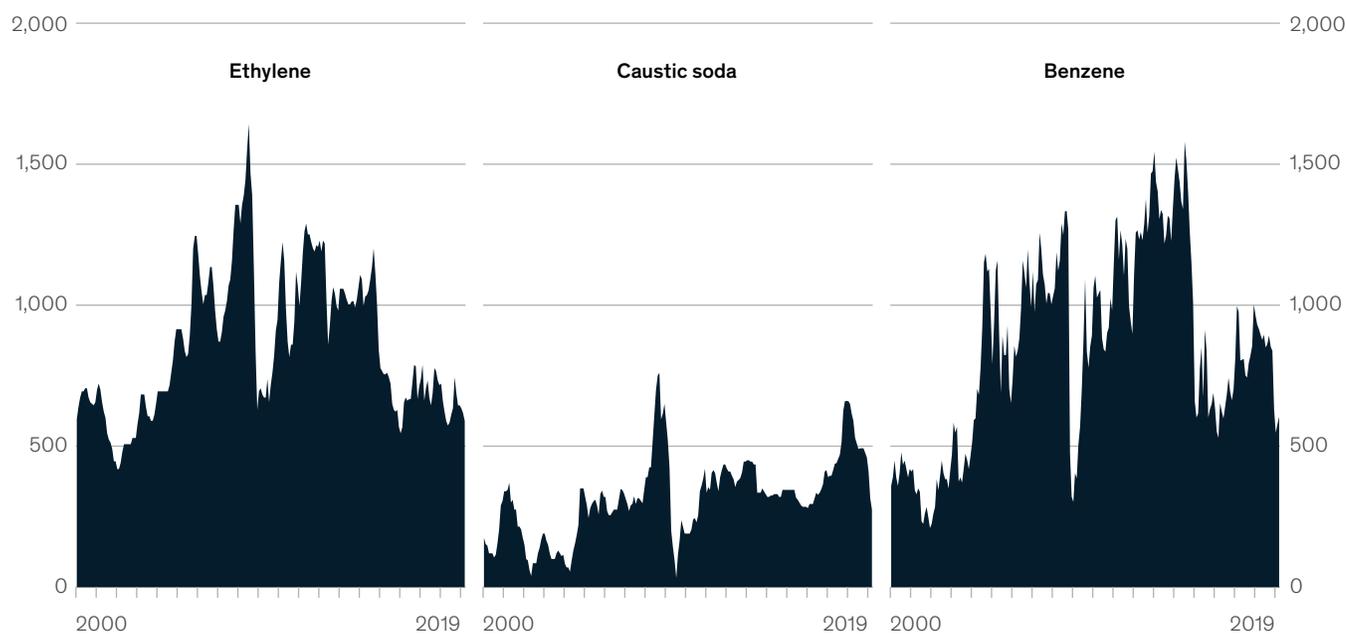
cases, dynamic pricing is drawing on data that are increasingly available in real time. The novel digital and advanced-analytic capabilities bring pricing performance to a whole new level, enabling chemical companies to move far beyond setting prices based only on assessing purchasing volumes and manufacturing costs.

A number of the chemical industry's characteristics make it a good fit for dynamic pricing. Prices for the basic building-block chemicals that underpin the industry are often volatile because of underlying oil prices and shifts in the supply-and-demand balance, and this creates a frequent need to adjust end-product prices to pass raw-material prices through (Exhibit 1). At the same time, the chemical

Exhibit 1

**Building-block chemicals used across the industry have historically exhibited high volatility in their prices.**

Price development,<sup>1</sup> \$ per ton



<sup>1</sup>Ethylene price is contract price, delivered US Gulf Coast. Benzene price is contract price, FOB US Gulf Coast. Caustic-soda price is European spot price, FOB Rotterdam.

Source: IHS Markit Connect

<sup>1</sup> For a discussion of dynamic pricing in B2B industries in general, see Arnau Bages-Amat, Walter Baker, Nicolas Magnette, and Georg Winkler, "What really matters in B2B dynamic pricing," October 2018, McKinsey.com.

<sup>2</sup> As with all matters concerning changes to pricing, it is important to understand and respect the legal parameters governing pricing in the relevant countries and regions where they are being applied.

# To ensure successful implementation and sustainability of dynamic pricing's impact, companies must have the appropriate IT and analytics infrastructure and performance-management capabilities.

industry's production is sold into myriad end-use industries and applications where the value created by one product and the customer's corresponding willingness to pay can vary significantly. In such a world, the arsenal of capabilities that dynamic pricing represents is particularly useful to chemical companies to help their margins.

At the more commoditized end of the product spectrum, this volatility is compounded by the fact that a lot of downstream chemical production is based on building-block intermediate chemicals made by a relatively limited lineup of producers. Outages at these producers cause wide ripple effects on the supply-and-demand balance as customers seek to line up alternative supply, while customers' attempts to switch to substitute products create further ripple effects. Dynamic-pricing approaches' ability to inform price setting based on real-time monitoring of market dynamics helps chemical producers to set their prices at appropriate levels.

At the other end of the spectrum, a large portion of the industry's offering viewed through a value-pricing lens in fact comprises products that are differentiated from those of competitors and create special value for customers. But many chemical companies do not capture the full value

potential here, as it is impossible to calculate that value for tens of thousands of product-customer combinations and across hundreds of thousands of transactions. In these cases, dynamic-pricing solutions can help to scale up value-based pricing for the largest customer-product combinations. Meanwhile, advanced-analytic approaches can help to identify willingness to pay and to estimate a value-based price for the thousands of small and medium-size product-customer combinations.

## **Putting dynamic pricing in place at chemical companies**

Embracing dynamic pricing requires a three-part transformation across the entire commercial organization of the chemical company. First are the changes to the company's pricing tools and the systems it uses, and second, to the pricing organization and process. Third, it requires changes in mind-sets, behaviors, and capabilities from top management down to the frontline sales force.

## **Tools and systems**

To ensure successful implementation and sustainability of dynamic pricing's impact, companies must have the appropriate IT and analytics infrastructure and performance-management capabilities. Making a comprehen-

sive inventory of all the company's customer-account data and pricing data that the analytical tools can go to work on is a first step. The choice of which analytics approach to follow depends on the chemical company's specific situation (Exhibit 2).

Where a chemical company has differentiated products, it can use a value-pricing approach based on mapping customers' buying factors, such as the value the product creates for the customer, how much the customer values supply security from a trusted vendor of a chemical for a key process, and, conversely, the customer's readiness to switch suppliers. The factors are quantified, and the algorithms can then segment customers into groups whose purchases can be priced in a similar way. It has become a well-established practice for chemical companies to adopt a "next-best alternative" (NBA)<sup>3</sup> pricing approach for their largest customer accounts that buy differentiated products—those with unique properties. Advanced analytics is making it possible to extend the NBA approach to hundreds or thousands of customers,

including smaller customers, and use it to inform pricing and gain more margin.

As part of the dynamic-pricing implementation, chemical companies can also bring enhanced market intelligence and greater foresight about downstream market demand and upstream supply to improve their pricing strategies. This is particularly valuable in the chemical industry, given its sensitivity to movements in oil and gas prices and supply-chain interruptions.

Large volumes of information can be gathered and analyzed, from "big picture" elements, such as the crude-oil market, to detailed market information. This latter category can include news about trade flows, competitors' outages or capacity additions, and developments in customer industries, such as regional construction trends and consumer preferences for different types of automobiles. Detailed knowledge of producer cost curves for particular products can also be tapped into: if a competitor's plant has an outage, the impact on

Exhibit 2

## Choosing the analytics approach to follow depends on the characteristics of the business.

### Analytics types

#### Simple:

- Transparent
- Low volumes of data
- Complete and structured data
- Computationally light but less powerful algorithm
- Requires knowledge of model relationships: sequential
- Asynchronous
- Predicts outcomes



#### Advanced:

- Opaque
- Large volumes of data
- Unstructured and incomplete data
- Computationally intensive but more powerful algorithm
- Identifies model based on data: learn
- Real time
- Prescribes actions

<sup>1</sup>K-means is an algorithm used for clustering.

<sup>2</sup>Chi-square automatic interaction detector is a technique used to discover relationship between variables.

Source: McKinsey analysis

<sup>3</sup>NBA pricing is an approach that helps sales teams set a price based on an assessment of the incremental value to the customer that the supplier's product creates in comparison with the customer's next-best-alternative product.

the overall supply-and-demand picture can be evaluated and price-adjustment potential can be carefully evaluated.

The advanced-analytics approaches work with all these strategic and data inputs, and this puts in place the price-management engine (Exhibit 3).

**Changing the organization and process**

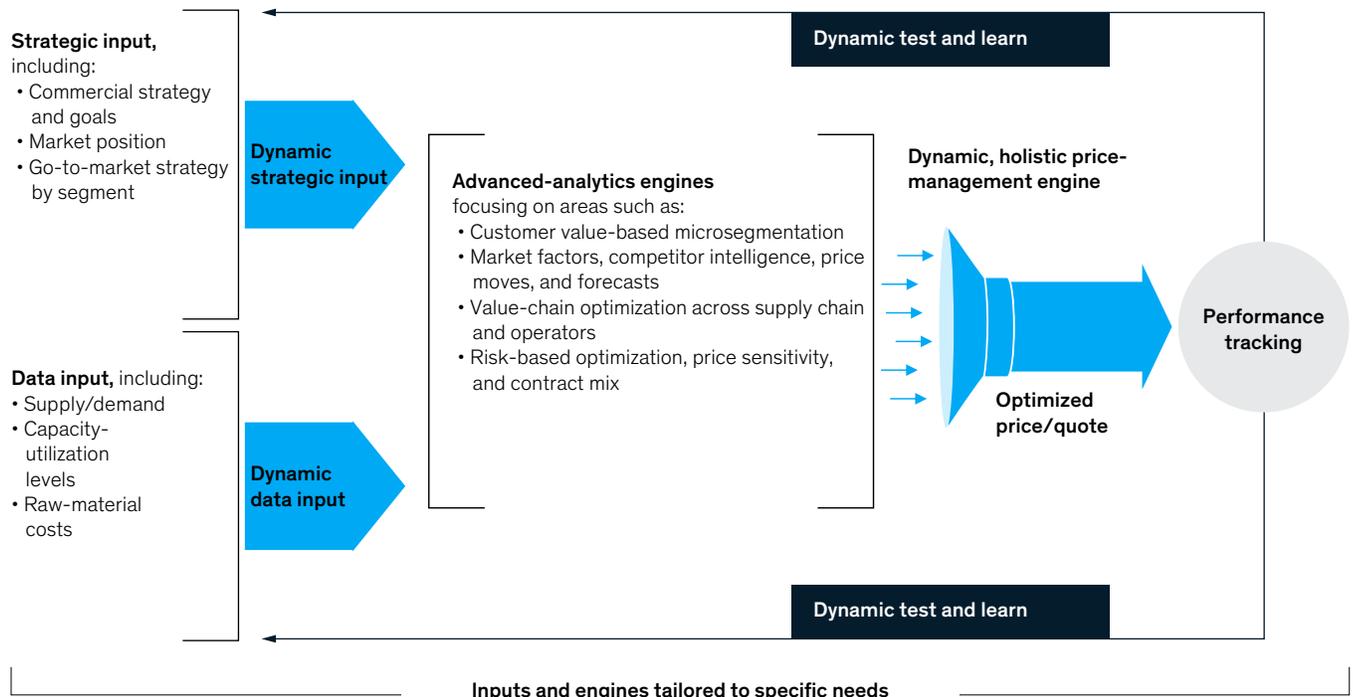
The digital and advanced-analytical skills needed to develop and maintain a dynamic-pricing approach at a chemical company require the establishment of a dedicated pricing unit—whether regional or global will depend on its business profile. This new dedicated unit or office will be the home for the company’s pricing experts, who can guide

the overall pricing strategy and particular pricing initiatives and advise the sales organization on the use of the new tools. The pricing experts will include experienced sales professionals from within the company and new roles such as data scientists.

The pricing unit needs to institute clear pricing processes that start with market intelligence and market-price projections and end with granular dynamic-pricing recommendations, actions, and execution monitoring. The pricing experts also need to incorporate structures for pricing-performance management that track the essential metrics on progress in meeting price targets, margins, and growth.

Exhibit 3

**The dynamic pricing model brings together commercial strategy, data, and advanced analytics to create the new price-management engine.**



The chemical companies most successful with dynamic pricing keep a healthy balance between the insights from analytics and those from the sales force's expertise, with each team learning from the other to enhance the overall understanding of the market and customers to get the best results. "I didn't know this factor was so relevant to these customers" is the kind of new insight we have heard frequently from the sales team when they see the data. In turn, if analytics are generated that are out of sync with the reality of the marketplace, the sales force can quickly point this out. All of this underlines that digital and analytics cannot and will not replace the sales representatives but will be able to support the frontline salespeople in making faster and more fact-based decisions.

#### **Managing the human element in dynamic pricing**

Successful implementation of dynamic pricing requires change across the entire organization, from top management down to the frontline sales force. Top management needs to understand and champion the use of analytics. Sales management needs to learn how to use the new insights to better steer their sales reps and hold them accountable, and the frontline sales force needs to learn how to use the new capabilities.

Much of the chemical industry's business is built around long-term repeat orders, since its products typically feed in to manufacturing processes as part of an extended value chain. The sales force is therefore often in a long-term relationship with its clients, fostering a close and friendly liaison, and the new world that dynamic pricing makes possible may feel like a considerable departure from this.

Successful implementers of dynamic pricing work hard on providing intensive support to the frontline sales force so as to build trust in the new approaches and understanding of how to use the new analytics-based systems. As with all introductions of new tools and approaches, the key to success is to work on making sure that the sales force experiences the benefits of the new innovations.

The most effective companies approach the challenge of changing mind-sets and behaviors by organizing a series of training sessions across all levels of the organization, designing and deploying different formats, content, and types of interventions for each level. This can include, but is not limited to, sessions for top management on how to be effective change leaders.

For commercial-line management, this can include one-on-one coaching to help every person address individual development needs, such as how to give feedback, how to address difficult topics, and how to find the right balance between supervision and micromanagement.

For the field sales force, this can include training in learning sessions followed by supervised out-in-the-field sales calls. An example of a technique that can be learned: some successful salespeople make a point of liaising with the technical departments of their customers so that they learn the specification details of their products that are particularly valued by the customer organizations and differentiate their products. This way, they can tell the purchasing departments why their products are highly valued and irreplaceable when it comes time to discuss price increases.

Such approaches have been shown to achieve the learning needed for successful deployment of dynamic pricing within several months. Pacing the change is also important, however: we have observed that successful companies do not expect to transform time-honored ways of doing business in a matter of weeks but instead take a measured approach and set targets for how much they want to achieve over the period of a year.

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Using the capabilities brought by advanced analytics and digital, chemical companies can move their pricing forward to a new level of effectiveness and increase their profitability (see sidebar, "How

## How chemical companies are increasing revenues by using dynamic pricing

**Specialty- and commodity-chemical** makers that have embraced dynamic pricing have seen a significant and rapid boost to their revenues.

A specialties company based in Asia faced an all-too-familiar challenge in the chemical industry: a sudden margin squeeze because of drastic raw-material-cost increases caused by supplier outages. This caused havoc to its existing pricing approach, which was basically cost-plus but with extensive differences in prices among regions. The company implemented a new approach that differentiated prices across regions, customer segments, and channels, backed up by launch of new pricing tools, extensive training of the sales force, and value-pricing pitches for more differentiated products. Within nine months, the new approach lifted the company's return on sales by more than two percentage points.

A US specialty-chemical company adopted dynamic pricing after it recognized that it was failing to capture substantial value from its product offering. It had a steady base of ongoing contracts that made up the bulk of

its business, but its existing approach was to hold to the pricing agreed upon when it started supplying. The company started using analytics to guide the amount of price increase it sought from each customer based on the value created by its products and degree of likelihood the customer would move to another supplier. In one year, the company was able to raise its return on sales by three percentage points.

A global specialties company faced another set of headaches: after a period of growth by acquisitions, it confronted a tangle of different pricing systems and infrastructure. Pricing practices for the tens of thousands of products and customers lacked consistency across industry segments, countries, and even different parts of the same customer's organization, including anomalies such as smaller customers paying lower prices than large ones. Using advanced analytics, the company employed algorithms and machine learning to implement a better-structured system that included features such as appropriate premiums for differentiated products, levels of discount for large and long-term

customers, and capabilities to track and ensure pass-through of raw-material-cost increases. Over the period of a year, the company achieved a three-percentage-point increase in its return on sales.

For a petrochemical producer with worldwide production and sales, the embrace of dynamic pricing was aimed at revamping its entire pricing strategy, which had previously just reacted to raw-material-price movements or market tightness. The company embarked on three pricing approaches: value-based pricing for its most differentiated products, proactively managing pricing and contracts for its commodity products based on data analytics covering supply-and-demand balances and raw-materials-price moves, and a combination of both for the grades in between. An intensive training program involving hundreds of people helped sales teams become comfortable with using the new insights—including how to build the case for price increases and rehearsing for meetings with their customers' senior management. Within nine months, the company achieved a 10 percent higher return-on-sales level.

chemical companies are increasing revenues by using dynamic pricing"). But the benefits that accrue can be wider. We have observed that those companies that truly embrace dynamic pricing and that build the new capabilities to make it work rapidly see the value they are creating through these analytics-based approaches. Encouraged by this success, these companies keep on scaling up their capabilities, continue to learn and move further ahead, and next start to link up their efforts in the pricing domain with a broader digital strategy.

### Antitrust/pricing disclaimer

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**Arnau Bages-Amat** is a partner in McKinsey's Tokyo office, **Jochen Böringer** is a partner in the Düsseldorf office, **Yutaro Kakimoto** is a partner in the Kansai office, and **Georg Winkler** is a senior partner in the Berlin office.

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