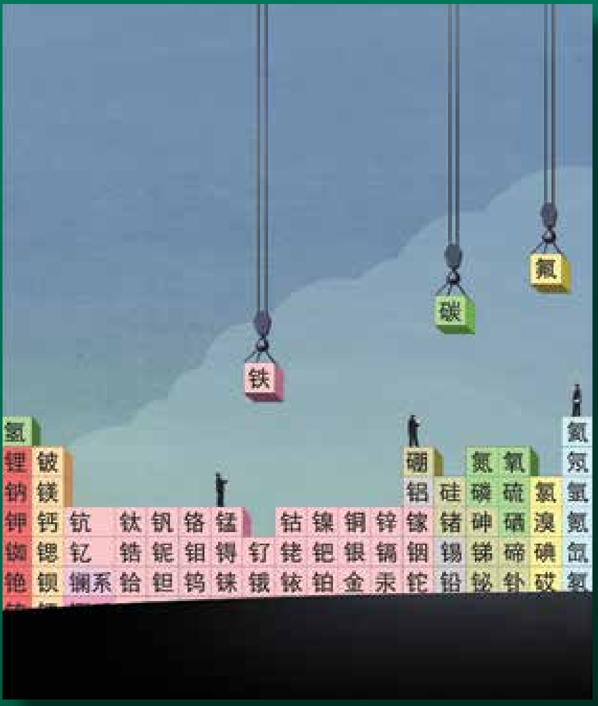
Value Creation in Chemicals 2015

Rethinking the Approach to China and Other Emerging Markets



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Value Creation in Chemicals 2015

RETHINKING THE APPROACH TO CHINA AND OTHER EMERGING MARKETS

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EXECUTIVE SUMMARY

IT WASN'T SO LONG ago that chemical companies were generating some of the highest shareholder returns of any industry. The share gains stemmed in part from demand in emerging markets. As their economies grew and their populations expanded, China, India, and other fast-growing countries needed billions of pounds of adhesives for construction, millions of tons of polymers for manufacturing, and hundreds of millions of tons of fertilizers for agriculture. To be a chemical company headquartered in one of these regions was to be in the midst of a bonanza.

No more. According to The Boston Consulting Group's 2015 Value Creators study, emerging markets have become a negative for chemical companies. Indeed, the performance of chemical businesses—whether they are local companies or parts of multinational corporations—in emerging markets is the main reason why chemical-company returns have slid to the bottom third of all industries.

Still, emerging markets aren't a pox to be avoided—they are an equation to be solved. China in particular may present a seemingly daunting set of problems, but chemical companies must find a way to compete there.

Here's where the chemical industry finds itself as it heads into 2016:

Returns have fallen on a relative basis for four years running.

- The median annual return in the chemical industry was 13% from 2010 through 2014, according to an analysis of the industry's total shareholder returns (TSRs).
- The 13% TSR puts chemicals 20th among 27 industries tracked by BCG. Chemicals have fallen in the TSR rankings every year since 2011, when the industry ranked fourth.
- Emerging-market chemical companies have performed the worst, with a median TSR of 3% over the past five years. Chemical-

company TSRs are better in every other region, and the returns of some outlier companies have been over 40% for five years running.

The biggest challenge for multinational chemical companies is coming up with a strategy for China, which is in the doldrums now but remains a crucial market.

- Overinvestment by the Chinese government, along with the slowdown in the economy, has led to significant overcapacity in China's chemical industry. In addition, intellectual-property issues threaten the ability of multinational corporations (MNCs) to hold on to advantages they otherwise might have in China.

- MNCs have been content to be part of the pack in China. To tap into the growth and innovation that will inevitably re-emerge there, MNCs need to move away from commodity strategies and come up with ideas that set them apart.

The chemical companies with the best TSRs rely on differentiated strategies, not on proprietary manufacturing technology.

- Focused specialty companies have done the best job of making themselves indispensable to customers and have become the industry's best performers, with a median five-year TSR of 21%.

- Base chemicals and basic plastics companies, by contrast, have struggled to produce returns, as has the once high-flying agrochemicals and fertilizers subsector.

The data offers insights into the expansion moves that have the best chances of succeeding.

- Chemical companies that sell a lot of products to customers in electronics and fast-moving consumer goods seem to enjoy profit margins that are higher and less volatile than those of companies that sell to other industry segments.

- Over the long term, a focus on inorganic chemistry seems to yield better TSRs than does a focus on organic chemistry. This may relate to the inherent barriers to developing products using inorganic chemistry.

To improve their results in emerging markets, Western chemical companies must rethink their management approaches, including the way they support expatriate executives.

- Short-term thinking, a lack of understanding of local behaviors, and organizational flaws can undermine a company's success in an emerging market.

- Many MNC executives don't want foreign assignments, which have a high risk of failure. MNCs must find ways to make these jobs more attractive and increase the likelihood that foreign-unit managers will succeed.

FALLING SHAREHOLDER RETURNS IN THE CHEMICAL INDUSTRY

As a group, chemical companies' ability to create value has diminished in recent years, especially relative to other industries. The chemical companies that have shown a capacity to adapt and have strong market positions continue to generate excellent returns, but on the whole investors are finding better returns elsewhere.

The industry's shaky performance is evident in BCG's latest analysis of five-year total shareholder returns (TSRs). The chemical industry's median five-year TSR from 2010 through 2014 slipped seven notches, to 20th place among 27 industries. The industry was fourth in the TSR rankings from 2007 through 2011 but has fallen steadily since then. (See the sidebar "How We Measure Value Creation: The Components of TSR.")

In the most recent period, the decline was rooted in the performance of emerging-market chemical companies, whose me-too strategies have exposed them to price competition and eroded their profitability. North American chemical companies, helped by the shale gas bounty, and European companies, bolstered by higher productivity and operational controls, have done much better, but their gains have not been enough to keep the industry from falling in the TSR rankings.

The median annual TSR of all chemical companies in the latest five-year period was 13%. (See Exhibit 1.) That is 8 percentage points below the TSR that chemicals achieved from 2009 through 2013. However, the top-ten companies in the industry generated a median TSR of 41%, showing the extent to which chemical-company fortunes have diverged and the opportunity still available to businesses with a unique market position and outstanding execution.

Our 2015 analysis included 145 companies, a plurality of them with headquarters in emerging markets. Not all are pure-play chemical companies, but all do the majority of their business in chemicals.

For a company to be included in the analysis, at least 25% of its shares had to be publicly traded, its shares had to be listed for the entire five-year period, and its market valuation as of December 31, 2014 had to be at least $1.5 billion. We used the same criteria for our 10- and 20-year analyses, which included fewer companies because of breakups and portfolio restructurings. (See Exhibit 2.) The 10- and 20-year analyses are useful because they show the performance of long-term capital investments.

HOW WE MEASURE VALUE CREATION

The Components of TSR

Total shareholder return (TSR), which accounts for the change in share price and any other effects on shareholders' net wealth in a given period, is the product of multiple factors. Readers of BCG's Value Creators series are likely familiar with our methodology for quantifying the relative contribution of the various components of TSR. (See the exhibit below.)

The methodology uses the combination of revenue (that is, sales) growth and change in margins as an indicator of a company's improvement in fundamental value. It then uses the change in the company's valuation multiple to determine the impact of investor expectations on TSR. Together, those factors determine the change in a company's market capitalization.

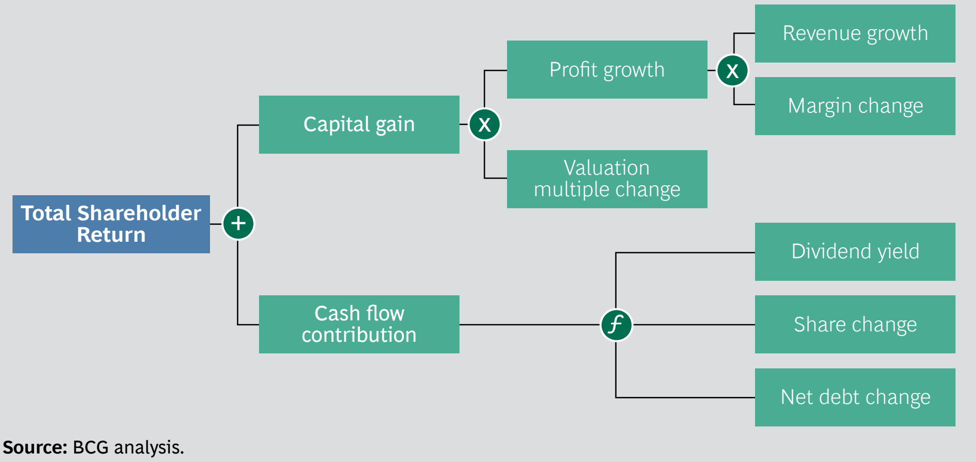
Finally, the methodology also tracks the distribution of free cash flow to investors and debt holders—in the form of dividends, share repurchases, and repayments of debt—in order to determine the contribution of free-cash-flow payouts to a company's TSR.

All those factors interact—sometimes in unexpected ways. A company may increase its earnings per share through an acquisition but create no TSR if the acquisition erodes the company's gross margins. And some forms of cash contribution (for example, dividends) have a more positive impact on a company's valuation multiple than others (for example, share buybacks).

Revenue growth and increases in profit margins have a big impact on a company's fundamental value.

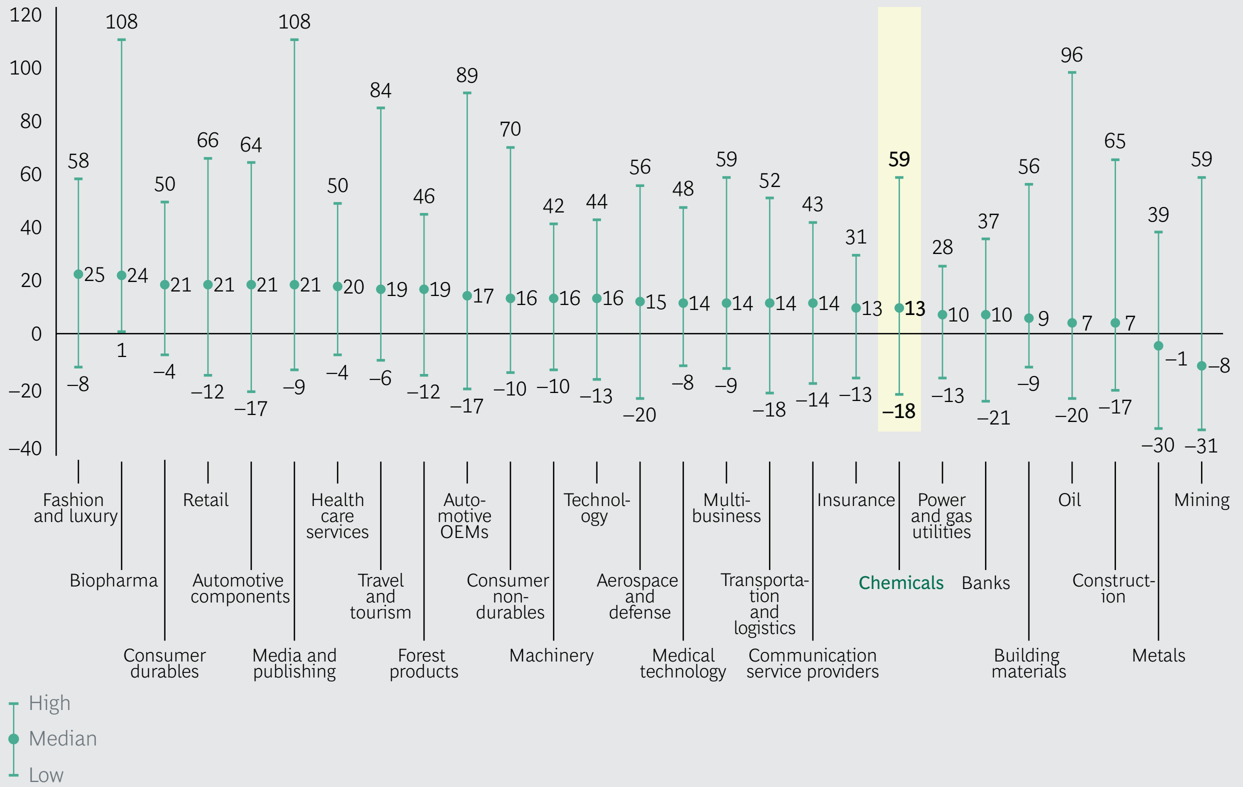
TSR is a useful way to assess value creation, but it is inherently backward looking. As such, it is not a reliable predictor of future returns.

TSR Is the Product of Multiple Factors



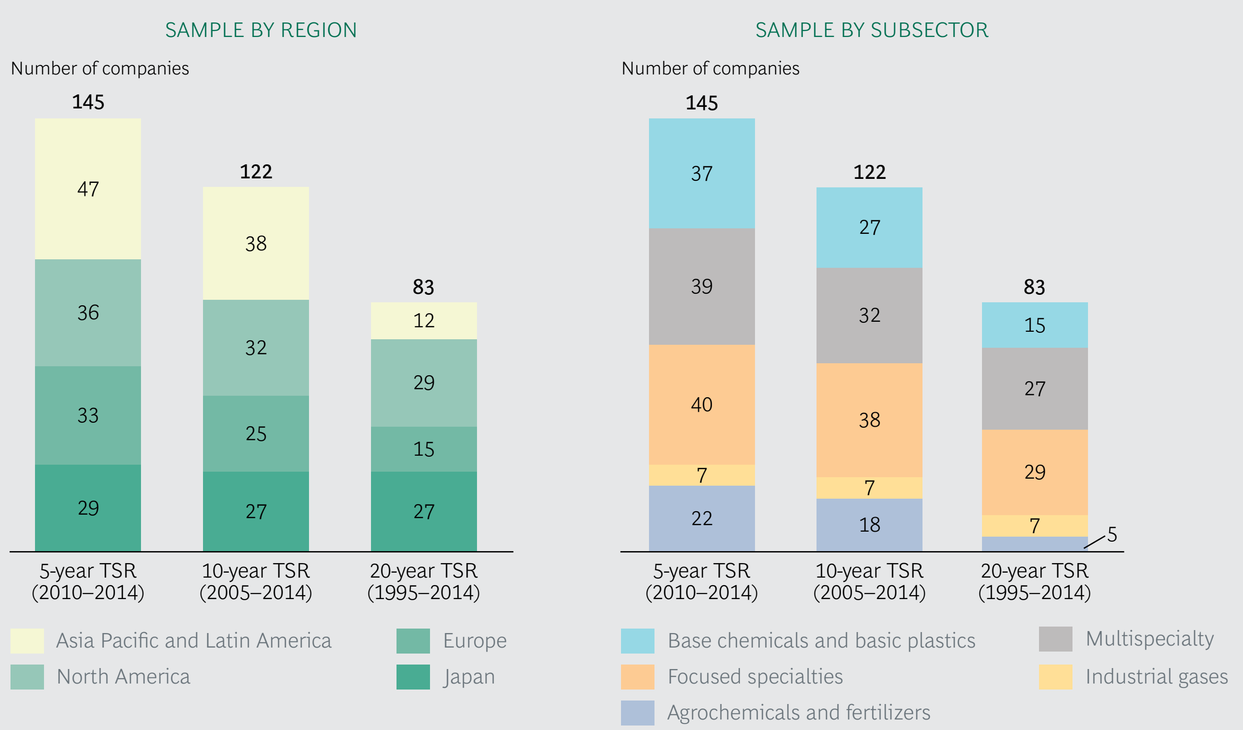
Source: BCG analysis.
Note: Share change refers to the change in the number of shares outstanding, not to the change in share price.

EXHIBIT 1 | Chemical TSRs Are in the Bottom Third of All Industries



Sources: Company reports; S&P Capital IQ; BCG analysis.

EXHIBIT 2 | Who Was in the Study



Sources: S&P Capital IQ; BCG analysis.

SUBSECTORS AND REGIONS IN THE CHEMICAL INDUSTRY

The global chemical industry is highly complex. BCG divides the industry into five subsectors, which account for about 150 segments. Most companies are active in multiple segments. The subsectors are:

- **Base Chemicals and Basic Plastics.** The 37 companies in this subsector generate much of their revenue from cracking products and basic derivatives, such as polyolefins, solvents, and surfactants. Some of the companies are invested in the vinylic chain, and some have another product focus (such as other polymers), but their business models resemble those of petrochemical companies. A few have large specialty chemical businesses.

- **Multispecialty Chemicals.** The 39 companies in this subsector have diverse portfolios and earn a substantial portion of their revenue from specialty chemicals. Compared with companies in the focused specialties subsector, multispecialty chemical companies serve a broader range of industries and have more functional applications. Nearly all dedicate a significant part of their business to so-called semi-specialties or narrow commodities, and some are also active in petrochemicals, agrochemicals, and pharmaceuticals.

- **Focused Specialties.** This subsector consists of 40 companies, mainly in the areas of coatings, adhesives, flavors and fragrances, construction, chemical distribution, and electronic materials. All focus on highly refined chemical products that serve a narrowly defined industry or functional application.

Most chemical companies are active in multiple segments of the industry.

- **Industrial Gases.** This highly consolidated subsector comprises just seven companies. Even those that engage in other businesses (such as Air Products and Chemicals, which also produces specialty chemicals) derive the overwhelming share of their revenues from industrial gases.

- **Agrochemicals and Fertilizers.** Twenty-two companies in our sample generate all or most of their revenues from agrochemicals or fertilizers. This group includes companies with substantial but minority specialty chemical operations. For some in this subsector, mining is an important activity.

CHINA AS A PRIORITY

WHATEVER THE CHALLENGES, MULTINATIONALS MUST BE THERE

In any discussion of the chemical industry's recent performance and future prospects, it makes sense to start with China. At the moment, China is presenting chemical manufacturers with several big challenges. To start, there are simply too many chemical companies chasing the same customers there. That overcapacity has given customers a huge amount of leverage, reducing companies' pricing power and profitability.

The slowdown in China's economy (what the Chinese government has called the "new normal") is another challenge that affects every chemical company. In addition, Western companies face intellectual-property threats in China and have to maneuver around regulatory and trade policies that put them at a disadvantage.

In China, too many chemical companies are chasing the same customers.

In the face of those challenges, Western chemical companies have increased their presence in other geographic regions, including the emerging markets of Southeast Asia, Africa, and Latin America. They aren't abandoning China. But in an approach they might reject as overly timid elsewhere, some have limited themselves to the volume-based strategies that predominate in China. In devoting so much attention to their cost structures, these Western companies are commoditizing themselves and playing a game that local companies often play equally well—or better.

Setting up centers of expertise in China may help MNCs figure out what to do differently. These highly flexible organizations work with business unit managers to identify successful market-development approaches, and, in China, they could provide guidance on how to expand online sales, use new distributors, or set up local R&D clusters. (See the sidebar "Centers of Expertise Help Companies Sell in Emerging Markets.")

However they do it, multinational chemical companies must continue to treat China as a priority. Emerging markets are the future for them, and no country is as important to that future as China. Not to be there is to relinquish scale and to risk being cut off from innovation. Put simply, China is the equation that every multinational chemical company must solve.

CENTERS OF EXPERTISE HELP COMPANIES SELL IN EMERGING MARKETS

With more of their revenues likely to come from emerging markets, chemical companies need to fine-tune their approach to marketing and sales. But the variability among emerging markets and even within a single market (in areas such as the use of digital platforms for sales, the role of traditional large trading houses, and the emergence of new local distributors) makes it challenging to impose hard-and-fast rules.

Creating a center of expertise can be a wise move. Whereas centers of excellence disseminate best practices, centers of expertise take a more flexible approach, assembling internal company experts to serve in an advisory role and to help foster innovation. They are a better fit in emerging markets, where customers are still figuring out what they want and how much they are willing to pay.

In a market such as China, it isn't unusual for managers at a chemical company to have different approaches to selecting distributors, segmenting customers, and planning accounts. A good center of expertise works with managers across business units to learn what they're doing and to see what's working. It uses these interactions to develop evidence-based policies that can sharply improve their companies' marketing tactics and prospects of success.

WHAT'S DRIVING PERFORMANCE IN CHEMICALS?

DIFFERENTIATION SUPPLANTS MEGATRENDS

A FEW YEARS AGO, A chemical company's most reliable route to stock price appreciation was having a sizable position in emerging markets or in the agrochemicals and fertilizers subsector. Those were the clear megatrends, associated with the highest TSRs. Increased competition in emerging markets and the changes in China, in particular, have altered the dynamics. Chemical companies can still earn a high TSR in emerging markets if they have a unique offering and a differentiated business model. But simply being there is no longer enough.

This is evident in the five-year TSR data. Chemical companies in emerging markets (limited to Asia and Latin America for the purpose of the TSR findings) had the lowest lows and the most losers of any region, with a median TSR of 3%. By contrast, the median TSRs of chemical companies in North America, Europe, and Japan were 21%, 14%, and 11%, respectively. (See Exhibit 3.)

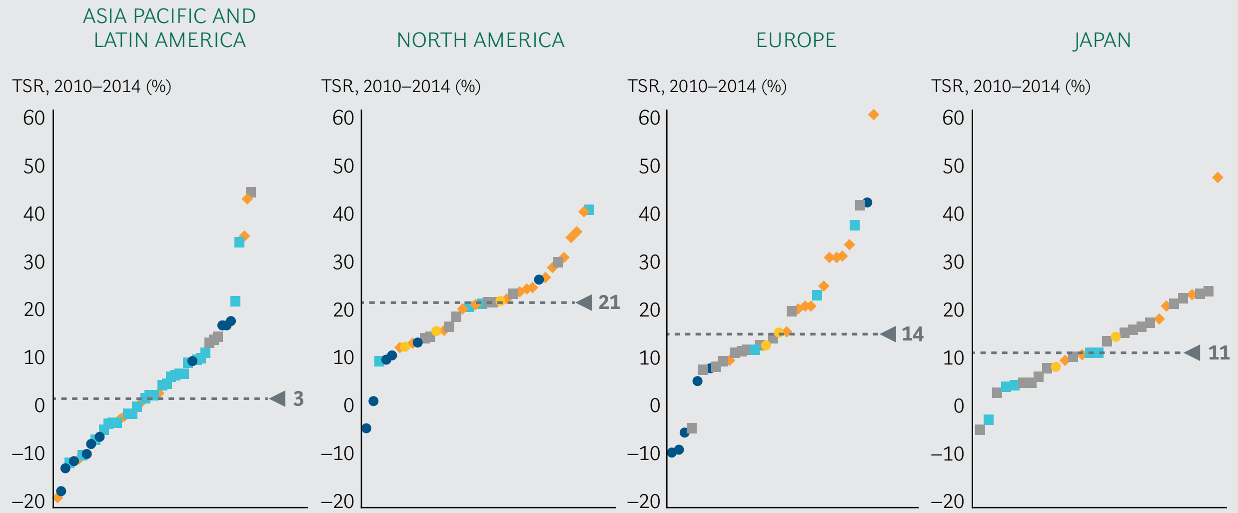
In terms of subsector performance, the chemical companies now doing best are the ones in focused specialties, especially those with differentiated business models. The UK company Croda International has earned excellent annual returns (30% in the latest five-year period) by focusing on high-performance specialty additives and selling directly to customers instead of using distributors. Likewise, the US plastics producer PolyOne (which has a five-year TSR of 40%) has set itself apart by making products to individual customers' specifications and industry-grade products. By doing both, PolyOne has increased its market share.

> Simply being in emerging markets is no longer enough. Companies need a unique offering and a differentiated business model.

Croda and PolyOne illustrate what has in recent years become a crucial success factor for chemical companies: proximity to customers. (Digital technology may provide even better ways for companies to serve customers; see the sidebar "Overhyped in the Past, Digital Technology Is Poised to Make a Difference.")

Another, related success factor is the ability to manage a large technical sales force. A third success factor, which is harder to measure but enormously valuable, is talent management, including recruitment. Chemical companies that manufacture products to customer specifications need salespeople whom

Exhibit 3 | TSRs in North America Are the Highest by Far



	Asia Pacific and Latin America	North America	Europe	Japan
Min	–18	–4	–9	–5
Max	43	40	59	46
Median ◀	3	21	14	11
Mean	5	20	17	13
Total # of companies	47	36	33	29

■ Base chemicals and basic plastics ■ Multispecialty ● Industrial gases
◆ Focused specialties ● Agrochemicals and fertilizers

Sources: S&P Capital IQ; BCG analysis.

customers trust with their confidential information. The US company Balchem understands this. It rotates staff infrequently, knowing that food-industry customers need to be able to trust what Balchem managers tell them about the ingredients the company provides. Partly as a result of its close relationships with customers, Balchem has been able to maintain an average EBITDA margin of 22% for the past 17 years and has a 20-year TSR of 25%—the best long-term TSR in the industry.

The TSR results call into question the old strategy of steering capital toward plants and proprietary technology.

By contrast, companies in base chemicals and basic plastics have struggled, turning in the second lowest median five-year TSR after companies in the agrochemicals and fertilizers subsector. (See Exhibit 4.) The returns in the base chemicals and basic plastics subsector were dragged down by overinvestment and overcapacity in emerging markets, and by the economic slowdown in China. The subsector is doing better in the US because of the shale gas revolution. However, most of the shale gas benefit has been captured by petrochemical divisions of integrated oil companies, which aren't included in our study.

The latest TSR results call into question the chemical company strategy—accepted for years—of steering capital expenditures toward plants and proprietary technology in emerging markets. A return-on-net-assets analysis demonstrates that the long-term investments that have worked best have been in focused specialties. This has been especially true in emerging markets. (See Exhibit 5.)

Focused specialties have three advantages over multispecialties in emerging markets. First, companies in focused specialties tend

OVERHYPED IN THE PAST, DIGITAL TECHNOLOGY IS POISED TO MAKE A DIFFERENCE

When chemical-company executives express skepticism about the transformative impact of digital technology, it's understandable. Buzzwords like "e-commerce" and "dot-com" have been bandied about for years, and the underlying concepts haven't had much impact on the chemical industry.

But as sensors and processing power have become far less expensive, and wireless connectivity ubiquitous, the long-promised step change may finally be here.

New technologies related to the Internet of Things will have many applications in the supply chains and manufacturing plants of chemical companies—for instance, in the tracing and tracking of production batches. And data analytics can help companies set prices and simulate new kinds of chemical synthesis.

Internet-connected devices can also increase companies' agility and responsiveness to customers—and thus their chances of success.

Exhibit 4 | The Big Returns Are in Focused Specialties

TSR PERFORMANCE, 2010–2014

Subsector	ASIA PACIFIC AND LATIN AMERICA	NORTH AMERICA	EUROPE	JAPAN	Total market capitalization ($billions) and TSR (%)
Base chemicals and basic plastics	3	21	23	4	284 | 6
Multispecialty	14	20	11	14	393 | 14
Focused specialties	0	24	25	19	332 | 21
Industrial gases	NA	15	14	11	163 | 14
Agrochemicals and fertilizers	–7	10	0	NA	233 | 3
Total market capitalization ($billions) and TSR (%)	321 | 3	553 | 21	375 | 14	157 | 11	1,406 | 13

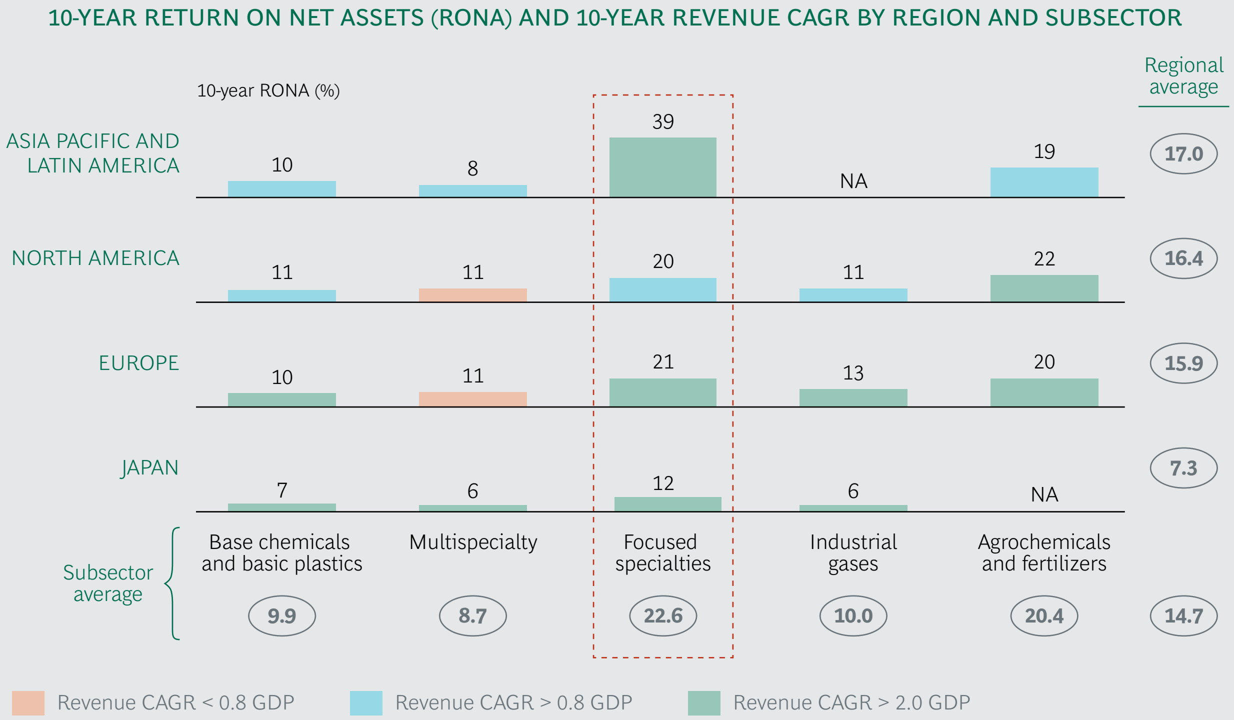
5-year TSR

< 0% | 0%–10% | 10%–20% | 20%–30%

TSR median | Circle size represents market capitalization

Sources: S&P Capital IQ; BCG analysis.
Note: Percentages are statistical medians; NA = no companies are in the subsector.

EXHIBIT 5 | Long-Term Investments and Returns by Subsector



Sources: S&P Capital IQ; BCG analysis.
Note: n = 135 companies; comparison is to nominal GDP of home country; CAGR = compound annual growth rate; NA = no companies are in the subsector.

to have more manufacturing sites. This puts them in a better position to invest gradually in their manufacturing assets and to respond to short-term changes in market conditions, and it lets them be faster and more economically efficient in distribution.

Second, focused specialties have an easier time protecting their intellectual property in emerging markets. Whereas multispecialties' advantage is often tied to proprietary large-scale manufacturing processes, focused specialties' edge is generally rooted in their customization skill and in their ability to make formula changes quickly. Those sources of advantage are not as easily threatened by job-hopping, which has become more prevalent in emerging markets, leading to concerns that workers may be sharing proprietary knowledge with their new employers.

Third, focused specialties' relative lack of heavily capitalized manufacturing assets lets companies in this subsector think beyond global product concepts, with their all-or-nothing return characteristics, and instead differentiate their offerings to meet local market needs and regulatory standards.

These advantages have allowed focused specialty companies to grab a disproportionate share of the industry's returns. Indeed, these companies have occupied half of the top-ten TSR slots over the past 5, 10, and 20 years. (See Exhibit 6.)

EXHIBIT 6 | Focused Specialties Have the Highest TSRs

RANK	5-YEAR TSR (2010–2014)			10-YEAR TSR (2005–2014)			20-YEAR TSR (1995–2014)		
1	Hexpol	Sweden	Focus	Pidilite Industries	India	Focus	Balchem	United States	Focus
2	Nippon Paint	Japan	Focus	Asian Paints	India	Focus	Ecolab	United States	Focus
3	Pengxin International Mining	China	Multi	Mexichem	Mexico	Base	Potash	Canada	Agro
4	Pidilite Industries	India	Focus	Pengxin International Mining	China	Multi	Sherwin-Williams	United States	Focus
5	Grupa Azoty	Poland	Agro	Anhui Huaxing Chemical Industry	China	Agro	Sigma-Aldrich	United States	Focus
6	Elementis	United Kingdom	Multi	Croda	United Kingdom	Focus	Praxair	United States	Gas
7	Westlake Chemical	United States	Base	Elementis	United Kingdom	Multi	BASF	Germany	Multi
8	PolyOne	United States	Focus	Balchem	United States	Focus	K+S	Germany	Agro
9	Synthos	Poland	Base	Nippon Paint	Japan	Focus	Kingboard Chemical Holdings	China	Focus
10	Sherwin-Williams	United States	Focus	Synthos	Poland	Base	Kumho Petrochemical	South Korea	Base

Sources: S&P Capital IQ; BCG analysis.
Note: Base = base chemicals and basic plastics; Focus = focused specialties; Agro = agrochemicals and fertilizers; Multi = multispecialty chemicals; Gas = industrial gases. The sample from which the best performers were selected included 145 companies from 2010 through 2014, 122 companies from 2005 through 2014, and 83 companies from 1995 through 2014.

THE CHEMICAL INDUSTRY'S TSR "STARS"

OUTSIDE OF EMERGING MARKETS, many chemical companies are flourishing. In fact, when only the top tier is considered, chemical companies have had some of the best five-year returns of any industry. The median TSR among the top-ten chemical companies was 41%, sixth among the 27 industries analyzed. (See Exhibit 7.)

Outside of emerging markets, many chemical companies are flourishing.

For the most part, the ten top-performing companies fit the pattern of differentiating themselves through something other than proprietary manufacturing technology. For example, Sweden-based Hexpol, which has a five-year TSR of 59%—the best in the industry—has set itself apart by developing custom-grade compounds, including in flame-retardant rubber. The company's strategy is more dependent on capabilities than on capital investments. The number two performer, Japan's Nippon Paint (five-year TSR: 46%), has succeeded by training local craftsmen in the markets where it operates—a model that would be difficult to copy. Pidilite Industries (five-year TSR: 42%), one of two emerging-market companies in the list of top-ten performers, has become one of the most successful adhesives manufacturers in India through a superior understanding of local needs and an astute use of Indian media channels. Elementis, in the UK (five-year TSR: 41%), has distinguished itself with a range of high-quality functional additives and customized formulas that are crucial to the performance of coatings and other chemical systems. And finally, the US paint company Sherwin-Williams (five-year TSR: 36%) has more than 3,700 paint stores in the United States alone—a high-service commercial network that would be almost impossible to replicate.

Their unique positions have allowed these companies (all but one of them in the focused specialties subsector) to shield themselves from competition in a way that companies more dependent on scale or proprietary manufacturing technology cannot. That has helped them grow faster or earn higher profits than others in the market—attributes that have contributed to their TSRs. (See Exhibit 8.) In their flexibility, their ability to act locally, their differentiated product offerings, and their strong business models, these companies exhibit the qualities that have become the key to success in chemicals.

Exhibit 7 | The Top Chemical Companies Rank Sixth in TSR

	Value creation	Fundamental value		Valuation multiple	Cash flow contribution		
	TSR[1] (%)	Sales growth[2] (%)	Margin change[3] (%)	Multiple change[4] (%)	Dividend contribution (%)	Change in shares outstanding (%)	Change in leverage[5] (%)
Biopharma	51	36	7	21	0	–6	0
Retail	48	12	7	22	3	0	0
Automotive components	45	15	8	6	2	0	7
Media and publishing	43	22	6	14	1	–1	1
Fashion and luxury	43	11	6	18	1	0	0
Chemicals	**41**	**13**	**8**	**16**	**3**	**0**	**3**
Travel and tourism	39	11	11	3	1	–1	9
Consumer durables	39	12	8	14	4	–1	3
Medical technology	38	11	6	18	2	0	0
Health care services	37	15	1	13	3	0	1
Oil	36	19	5	9	6	–4	3
Multibusiness	35	11	2	16	3	0	8
Construction	35	16	12	4	3	–2	–1
Technology	34	23	7	5	2	–1	–1
Communication service providers	34	8	–1	11	4	0	7
Transportation and logistics	34	14	–1	12	2	–1	4
Forest products	34	10	5	6	3	–1	7
Automotive OEMs	34	15	19	3	2	–1	2
Aerospace and defense	32	12	4	13	3	–1	2
Consumer nondurables	31	10	5	13	1	0	1
Machinery	30	14	6	10	2	0	2
Building materials	28	14	5	10	2	–3	5
Banks	24	23	–3	3	2	–1	
Metals	23	15	7	–3	2	0	2
Power and gas utilities	22	6	5	3	4	–4	8
Insurance	22	8		9	6	0	
Mining	10	16	1	–4	3	–1	–1

Sources: S&P Capital IQ; BCG analysis.
Note: Disaggregation is shown in percentage points of five-year median annual TSR; value levers (sales growth, margin change, and so on) also reflect statistical medians.
[1]Five-year median annual TSR (2010–2014) for weighted average of respective sample.
[2]Equity growth for banks and insurance companies.
[3]ROE change for banks, not available for insurance companies.
[4]P/E multiple for banks, P/B multiple for insurance companies.
[5]Not available for banks and insurance companies.

EXHIBIT 8 | Breaking Down the TSRs of the Ten Best Performers

Rank	Company	Location	TSR 2010–2014 (%)	Market value[2] ($billions)	TSR Disaggregation[1]: Sales growth (%)	Margin change (%)	Multiple change[3] (%)	Dividend contribution (%)	Change in shares outstanding (%)	Change in leverage (%)
1	Hexpol	Sweden	59	3.2	**28**	8	16	6	–5	6
2	Nippon Paint	Japan	46	9.4	6	11	**27**	2	–4	5
3	Pengxin International Mining	China	43	2.6	**80**	NA	NA	0	–11	0
4	Pidilite Industries	India	42	4.4	18	–4	25	1	0	2
5	Grupo Azoty	Poland	41	1.8	**52**	11	–5	8	–17	–8
6	Elementis	United Kingdom	41	1.9	6	**20**	2	4	–1	9
7	Westlake Chemical	United States	40	8.1	14	**31**	–10	3	0	3
8	PolyOne	United States	40	3.4	13	6	15	1	0	4
9	Synthos	Poland	37	1.5	12	–3	**19**	8	0	1
10	Sherwin-Williams	United States	36	25.3	9	2	20	2	3	0

Sources: S&P Capital IQ; BCG analysis.
[1]Contribution of each factor shown in percentage points of five-year average annual TSR; differences in TSR totals are due to rounding.
[2]As of December 31, 2014.
[3]Change in EBITDA multiple.

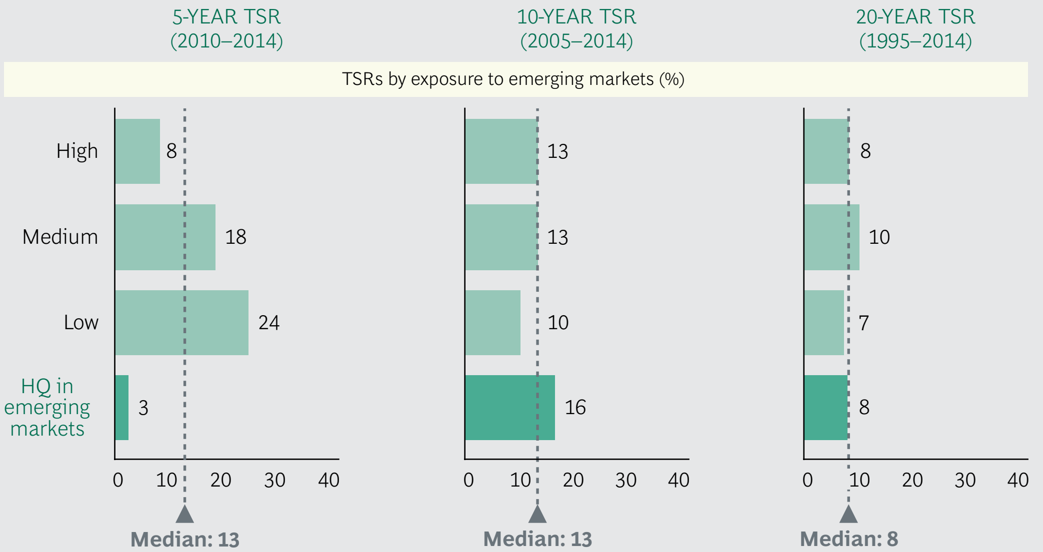
ASSESSING THE CHEMICAL PORTFOLIO

Since the financial crisis of 2008–2009, the word "resiliency" has become common in chemical-company boardrooms. The quest for resiliency has led some large companies in the industry to pay dearly to gain access to a market or a group of customers (such as the new middle class in emerging economies) that they believed would be a stable revenue source for years to come. But how do different portfolio holdings—and strategic moves—actually affect value creation in chemicals? The answer, it turns out, is not always obvious.

The Value of Being in Emerging Markets

In the latest five-year period, it was far better for a chemical company not to have a large presence in emerging markets. (See Exhibit 9.) That finding is heavily skewed by the returns of the 47 companies in our analysis that

Exhibit 9 | TSRs Vary with Emerging-Market Exposure



Sources: Company reports; S&P Capital IQ; BCG analysis.
Note: Companies with more than 40% of their sales in emerging markets are considered to have high exposure; less than 20% is considered low exposure.

are headquartered in emerging markets. But those markets—Asia, in particular (Brazil, Russia, and India are to some extent exceptions)—have also proved difficult for Western companies.

The big problem is China, where a fragmented supply base and overcapacity have forced chemical companies to negotiate on prices and accept lower profitability. But some Western companies have exacerbated the challenges in China by being uncharacteristically passive. In other emerging markets, European and North American companies use a variety of tactics to protect themselves from price pressure, including local technical service, differentiated product offerings, loyal and technically skilled sales forces, and direct relationships with customers' technical staffs. Western companies are far less likely to make such adaptations in China, especially if they are there as a joint-venture partner with a local company.

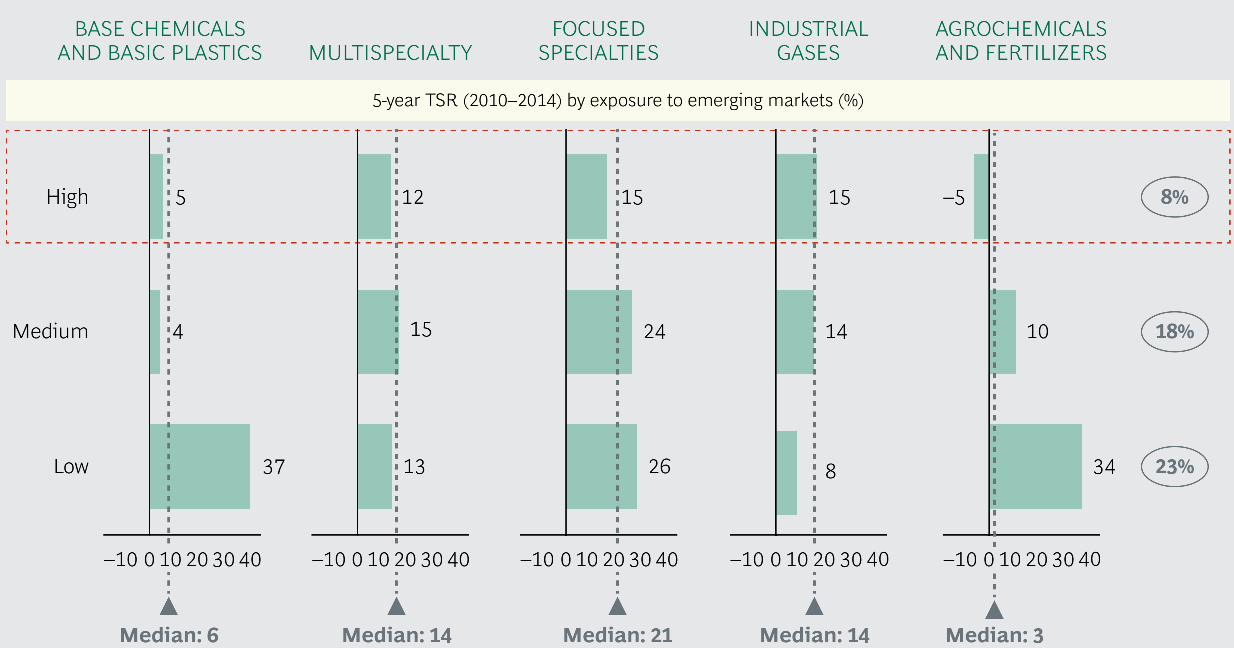
The Value of a Subsector Focus

The fierce economic headwinds of 2008–2009 worked to the advantage of focused specialty companies in emerging markets. In China, the massive government-initiated stimulus program led to overcapacity in the chemical industry and further increased the challenges for multinational chemical companies. As the MNCs downsized, often on a very large scale, Chinese chemical executives and other workers moved to local companies, most of which produced commodity products. That created an opening for companies with differentiated product and service concepts. Indeed, among companies doing a high percentage of their business in emerging markets, the focused specialty subsector outperformed most other subsectors in the latest five-year period. (See Exhibit 10.)

The Value of Diversifying out of a Home Market

Emerging-market chemical companies that try to expand beyond their home regions—for instance, outside Asia for a Chinese company or outside Latin America for a Brazilian company—have generally had a hard time. That may not be a big surprise. In their home markets, many emerging-market chemical companies enjoy favorable treatment in terms of market access and government poli-

Exhibit 10 | Subsector Performance and Emerging-Market Exposure



Sources: Company reports; S&P Capital IQ; BCG analysis.
Note: Companies with more than 40% of their sales in emerging markets are considered to have high exposure; less than 20% is considered low exposure. Percentages in circles are averages.

cies. If they enter an overseas market and grow rapidly, those companies typically attract sophisticated local competitors that may be able to out-recruit them and gradually turn the tide in their own favor.

The data about foreign expansion for companies in other regions is less clear. (See Exhibit 11.) But even if some of the biggest returns in Europe and Japan have recently gone to companies that do most of their business at home, few of their executives would take that as a reason to retrench. Instead, they would see the need to come up with better approaches in overseas markets.

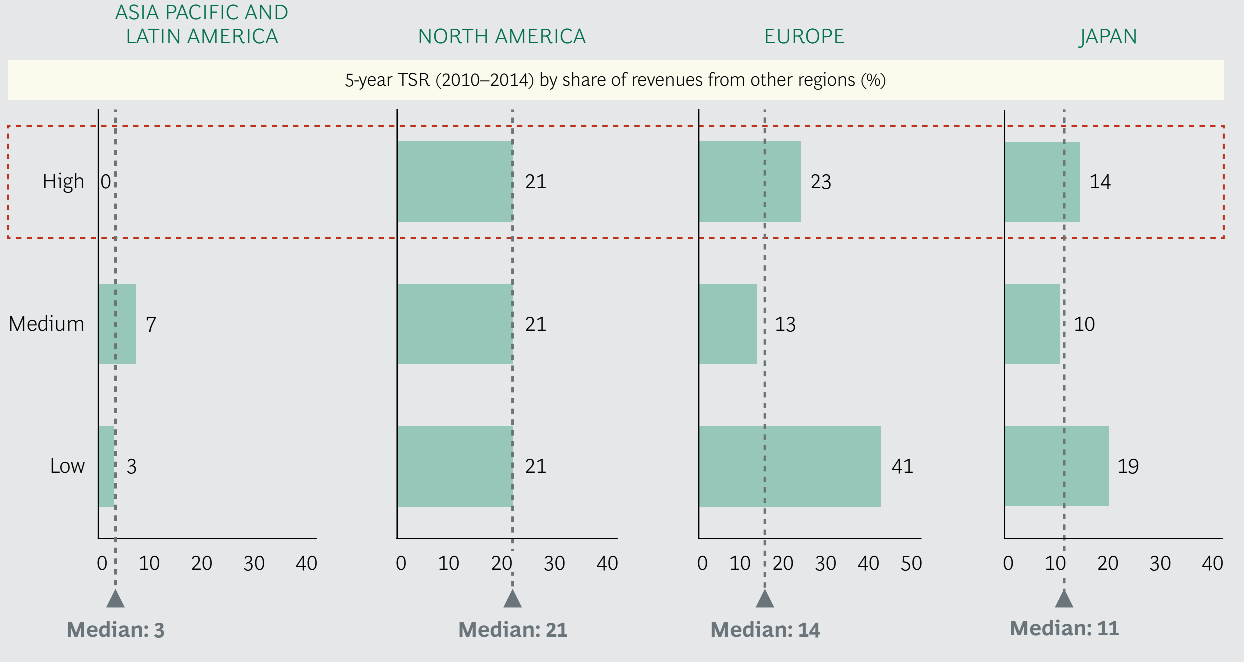
For chemical companies with foreign business units (which includes most of the companies in this study), one big challenge is finding leadership for those units. Managers in Europe and North America generally don't volunteer for positions in emerging markets, where there is often not a lot of support when things go wrong. By contrast, managers at Chinese and other Asian chemical companies are much more likely to seek out leadership roles in foreign units. In the long run, as those companies become more advanced in how they do business, the greater appetite among their managers for foreign assignments may be an advantage.

The Value of Targeting Industries and Customers

One common route to resiliency has been to focus on customer types and industries that are seen as providing a buffer. This strategy became especially popular among multispecialty companies, which thought they could sell other products in their portfolio to industries with which they were already doing business.

BCG's analysis shows that for the most part these "industrial strategies" haven't led to higher or more-stable profits. In some cases, the economics underlying a customer segment are disrupted—as happens when the homebuilding market weakens, causing construction companies to reduce their spending and thus hurting suppliers. Similar disruptions have hit other big industries—such as oil and pharmaceuticals—likewise hurting the multispecialty chemical companies that are too reliant on them.

Exhibit 11 | TSRs When Companies Enter New Regions



Sources: Company reports; S&P Capital IQ; BCG analysis.
Note: Companies that generate at least 60% of their sales outside their home region are considered to have a high international share; below 40% is considered low.

Fast-moving consumer goods and electronics have been more profitable than other kinds of customers. (See Exhibit 12.) Still, we think it's smarter for chemical companies to approach their targeting at a higher level. That means not focusing too much on customer types or OEM technology themes, such as electric vehicles or photovoltaic systems, but instead identifying a broad range of opportunities emerging from end-customer needs.

A slightly different way of using customer segmentation, which may have a more reliable impact on profitability, is to match customers to business models (and service levels) according to the customers' needs and price sensitivities. That approach can increase the profitability of individual customer accounts, boosting margins at companies with the necessary discipline and planning capabilities. (See the sidebar "Matching Business Models to Customers.")

The Value of Specializing in Organic Rather Than Inorganic Chemistry

In recent years, chemical companies that derive the bulk of their revenues from inorganic chemical processes have been at a disadvantage. However, the poor five-year TSRs associated with inorganic chemistry are almost entirely due to fertilizer companies' fall from favor. In the long run, companies versed in inorganic chemistry—which requires as much art, so to speak, as science—have fared quite well. (See Exhibit 13.) They may have a bright future in emerging markets, since the experience required to make products with just the right specifications acts as a barrier to entry. A company cannot simply buy technology related to inorganic methods or do a licensing deal, as might be possible with polymers in organic chemistry.

EXHIBIT 12 | Two Customer Types Are Associated with Higher Profits

Sources: S&P Capital IQ; BCG analysis.
Note: Only multispecialty and focused specialties companies are shown (n = 79).

MATCHING BUSINESS MODELS TO CUSTOMERS

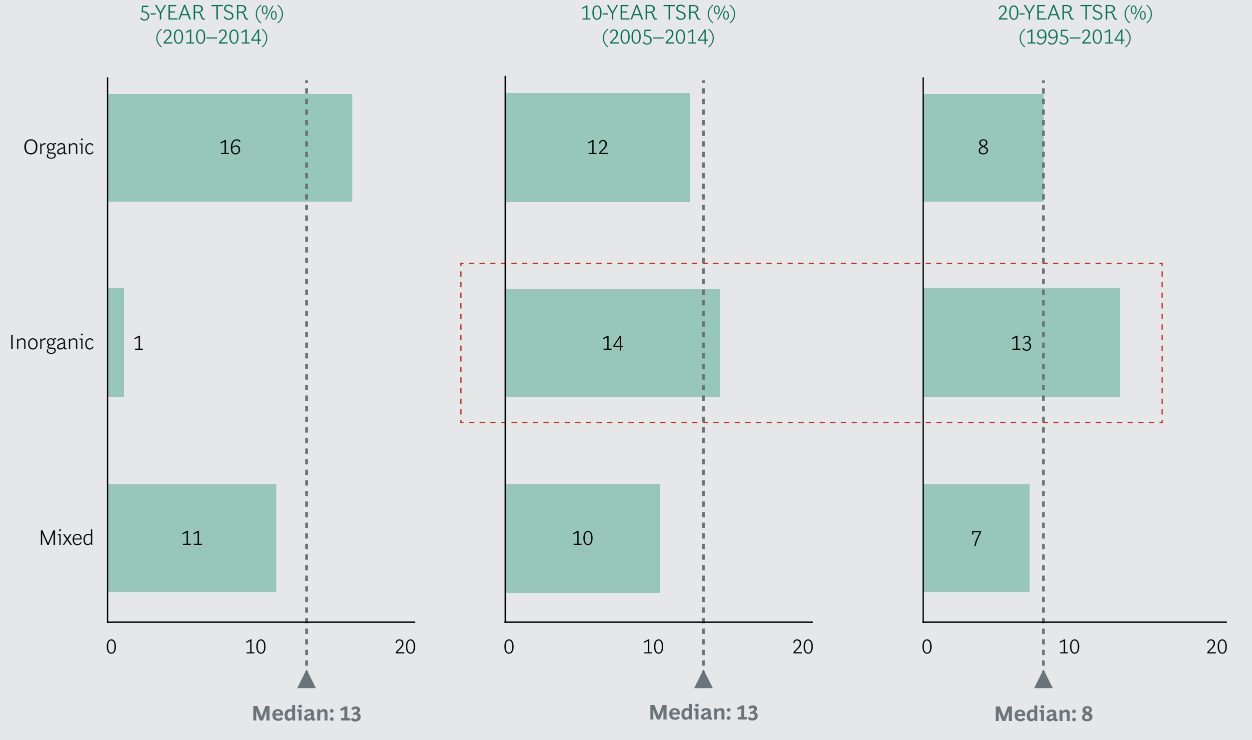
Chemical companies sometimes segment their customers according to needs and price sensitivities, and then differentiate their service levels accordingly. Although that approach has a positive effect on profit margins, it increases the complexity of sales and operations planning (S&OP).

When the same product is delivered and serviced in different ways for different customers, Sales and Manufacturing must coordinate. The two departments must work across organizational boundaries, and they need to ensure that those responsible for the complex planning that's involved have the capabilities to pull it off.

Challenges abound. When an MNC prematurely introduced differentiated business models based on customer segmentations, it encountered all sorts of problems, such as decision-making meetings that involved too many people, undisciplined forecasting, and departures from the plan—which resulted in sales managers' promising service levels to which customers weren't entitled.

Differentiating the S&OP process within a company to ensure that responsibilities, process execution, and managerial behavior are consistent with business requirements will be a key challenge in the future. It will involve limiting the number of participants at S&OP meetings and the number of such meetings, tracking the time spent dealing with requests for exceptions from customers and sales managers, shifting the planning time horizon, and institutionalizing root-cause analysis. To achieve supply-chain excellence, global chemical companies need to focus on all those areas.

EXHIBIT 13 | Companies Based on Inorganic Chemistry Have Done Well in the Long Term



Sources: S&P Capital IQ; BCG analysis.

SOLVING THE EMERGING-MARKETS EQUATION

For Western chemical companies, some of the challenges of emerging markets—China, in particular—are external and immovable. Others are of the companies' own making. BCG's six-pronged Smart Simplicity framework—an approach to reducing cumbersome structure and bureaucracy—can (with a few extrapolations) show Western managers what they should be doing in emerging markets and help them make an unflinching assessment of their capabilities.

1. **Get closer to local markets.** Chemical companies will never be perfectly organized to cope with the differences between one emerging market and another—there is too much complexity in their products and value chains. Consequently, managers should spend less time on organizational design and lengthy planning processes, and more time increasing their understanding of customers and the local business community. Incentives that drive these market-focused behaviors are crucial.

2. **Give managers the power to make changes.** Western chemical companies in emerging markets invest an inordinate amount of time debating and making PowerPoint presentations on the size of various markets and their own shares. Managers should have the discretion to curtail some of this work and to reallocate resources to business development and building supplier and distributor relationships. The proliferation of staff in departments with titles like Strategic Marketing, Regional Marketing, and Industry Marketing should be a red flag.

3. **Introduce more autonomy.** Chemical companies tend to be centralized in their decision making. In some ways and for some activities, that makes sense. However, in emerging markets, local sales and marketing executives need to be able to make their own decisions about customer prioritization, commercial terms, and technical account development. Distributing decision-making responsibility among multiple leaders can also prevent any one leader from amassing too much power. The autonomy imperative is not so much about broad decentralization as it is about adding power in a few strategic parts of the organization.

4. **Push expatriate managers to think long term.** For all the lip service given to the importance of overseas assignments, most up-and-coming executives don't want these positions, which can disrupt their personal lives and their career trajectories. For their part, chemical companies usually limit foreign postings to three years, inadvertently reducing the expatriate executive's motivation to learn the

language and put down roots in the local business community.

Chemical companies should lengthen rotations in emerging markets and implement policies to increase executives' job satisfaction and chances of success. On the professional side, such policies could include greater tolerance for mistakes (a move away from the "no second chances" appraisal process), the inclusion of managers in succession planning, and bonuses linked to performance on local language tests. On the personal side, the policies could include more-flexible holiday schedules and more-generous travel accounts for families.

5. **Look for ways to break down silos in emerging-market operations.** Managers can become rooted in their thinking and resistant to outside input. Recruiting and promotion based on loyalty, not merit, worsens this. One European chemical company addresses the issue by recruiting a certain share of non-Chinese executives who know the language and the culture. The company looks for team members—regardless of their nationality and formal technical skills—who can challenge the sometimes ethnocentric perspective of local executives.

6. **Reward those who cooperate, not those who primarily look out for themselves.** Cooperation doesn't always come naturally in companies. Far too often, managers concerned about their own short-term career interests filter the information that flows to the rest of the organization. This can be an especially big risk in overseas operations, where there is typically less headquarters oversight. If career success at a company can be achieved by controlling information and influencing the design of KPIs, that's a problem. Instead, Western chemical companies operating in emerging markets should reward managers and executives who put their energy into building successful businesses. Such rewards won't guarantee higher shareholder returns, but they are a start.

WHAT'S NEXT

TEN QUESTIONS FOR CHEMICAL EXECUTIVES IN 2016

In the next few years, chemical-company executives will need to confront two big challenges. The first is devising differentiated business models for emerging markets. The second is winning in the most important emerging market of all—China. If executives can answer yes to most of the following questions, they have a good foundation for success.

The two big challenges ahead: strengthening business models in emerging markets and winning in China.

- Does your company have a business model in China and other emerging markets that offers some protection against price competition?
- When making an important decision in an emerging market, do you routinely get input from multiple managers and experts as opposed to relying on the judgment of a single individual or small group?
- Do you have a critical mass of truly "local" and loyal managers in your emerging-market units—people who understand the country's culture and business practices and who speak the language well enough to lead the local team and connect with clients?
- Is a leadership position in an emerging market viewed as an exciting opportunity in your company as opposed to an unwelcome banishment from headquarters?
- Does your HR department have policies to deal with the inevitable downsides of a foreign assignment (time zone differences, lack of public holiday overlap, and language barriers, for instance)?
- When you are filling an executive position, are you satisfied with the caliber of local talent that your HR department presents?
- Can you say with a high degree of confidence that expatriate managers' priorities are in the best interests of the business and don't reflect hidden personal agendas?
- Do your expatriate managers have clear financial incentives to become part of their local business communities?
- Do you have strategies in emerging markets for enhancing local employees'

job satisfaction and for managing cybersecurity and intellectual-property risks?

- Are you testing any new approaches—in customer service, manufacturing, or distribution, for instance—that could lead to major improvements in one or more emerging markets?

There's no denying the difficulties that chemical companies face in emerging markets—China, in particular. In a challenging market, sometimes it's smart to pull back or hold off on further commitments. At other times, it makes more sense to lean in. In light of the many opportunities emerging markets present, the next few years will definitely be a time to lean in.

NOTE TO THE READER

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Andreas Gocke is a senior partner and managing director in the Munich office of The Boston Consulting Group and the global leader of the firm's chemical sector. **Yves-Pierre Willers** is a senior partner and managing director in BCG's Shanghai office. **Hubert Schönberger** is a knowledge expert in the firm's Munich office.

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For Further Contact
This report was sponsored by the Industrial Goods practice. BCG works with its clients to deliver solutions to the challenges discussed in this report. These clients include some of the largest and most successful chemical companies in both developed and emerging economies. If you would like to discuss the insights contained within this report or learn more about the firm's capabilities in the chemical industry, you may contact the authors or your local BCG team.

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