



World chemicals market: Asia gaining ground

July 28, 2008

Strong turnover growth in chemicals industry. Turnover in the global chemicals industry rose by approx. 5% p.a. to EUR 2.3 tr between 1997 and 2007. Pronounced regional differences remain, however. While the sector grew disproportionately strongly at 6% in Asia (China's performance: +15%), the increase was slightly below the world average in the EU-27 and the NAFTA countries (both approx. +4%) – the result of weaker industrial output growth and a slower increase in private consumption.

Dynamic development continues. Up until 2020 we expect global chemicals turnover to grow by 4.5% p.a. to EUR 4 tr. Growth will likely be below average in the first half of the forecast period and above average in the second half.

Strong turnover growth in Asia. We forecast turnover growth of 6% p.a. for Asia, which would bring Asia's share in the world chemicals market up to 38% by 2020 (from 31% currently). China looks set to overtake the US as the world's most important chemicals producer from 2015. Both basic and special chemicals production are picking up in China. At the same time, the Chinese market remains of interest to western companies, e.g. as a sales market for special chemicals.

Weaker growth in NAFTA and EU-27. The world market share of these regions will likely shrink by 4 and 3 pp, respectively, by 2020. Chemical companies there focus on innovation and profit margins rather than on capacity expansion.

Risks should not be underestimated. Owing to the gigantic capacity build-up in Asia there is a risk of excess capacities – combined with shrinking margins for petrochemicals. This will mainly affect producers in Europe and the US. In the short run, the strong euro will remain a burden for European companies; the ongoing rise in oil prices is likely to pose a challenge to the chemicals industry for decades to come, certainly outside the Middle East.

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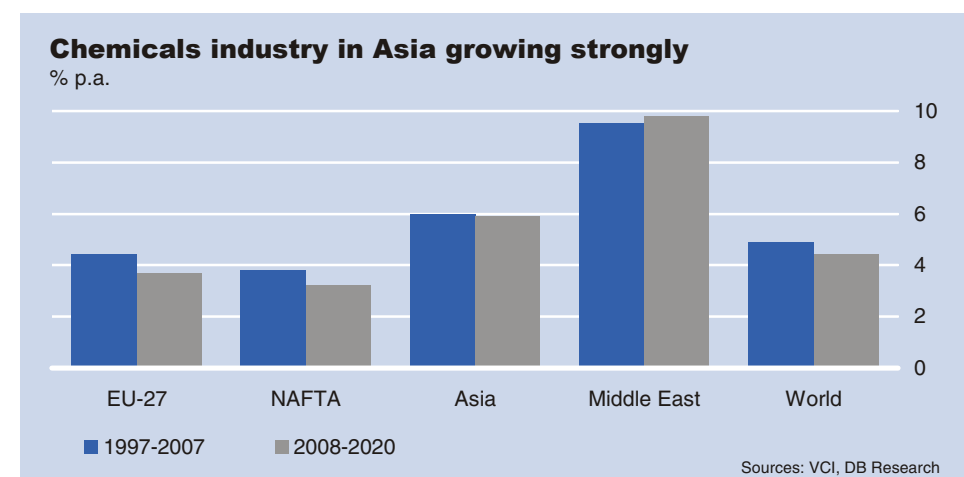
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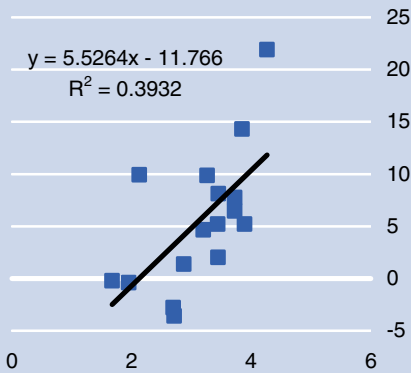
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World chemicals industry and world GDP

World GDP (%; x-axis),
World chemicals turnover (%; y-axis)



Sources IMF, DB Research

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1. Introduction

Over the last ten years the international chemicals industry has benefited from dynamic growth throughout the world. While GDP rose by an inflation-adjusted 4% p.a. between 1997 and 2007, real output growth in the sector averaged 3.5% p.a. This was mostly due to the fact that Asian countries like China and India, but also in the Middle East (Iran and Kuwait) gained strongly in importance as both producers and purchasers of chemical products. This was attributable, on the demand side, to strong demand for basic chemicals to make plastics and for special chemicals to produce paints and lacquers, and on the supply side to the enormous cost advantages compared with producers from Europe and North America.

Chemical products sold to broad range of customers

The chemical industry comprises a large spectrum of products used in very different sectors of the economy. There is demand for chemical products not only from other segments of the chemicals industry but also from nearly all industries as well as from agriculture and private consumers. The agricultural sector requires fertilisers and pesticides. Industrial gases, polymers (plastics in primary forms), paints and lacquers, textile fibres and insulating materials are primarily delivered to other industrial sectors. These include, for instance, plastics processing, vehicle manufacture and shipbuilding, electrical engineering, the textile industry and the construction sector. Private consumers demand pharmaceuticals as well as detergents and body care products, which are sold through the retail channel. In these segments, brand names are of great significance.

In Germany, for instance, roughly 55% of total sales of chemical products go to other sectors of the chemicals industry, while about 25% are sold to external industrial customers, about 15% to private consumers and the rest to the agricultural sector.¹

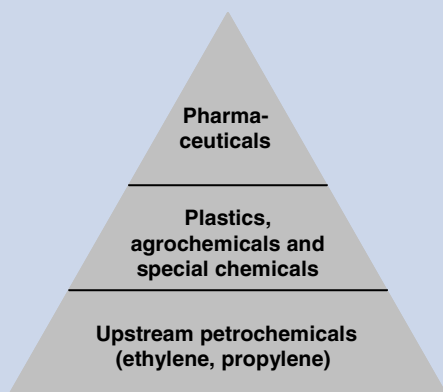
Small production volumes for special chemicals

Chemicals production comprises two large segments: basic chemicals such as ethylene, propylene and polymers are produced in large plants. In this segment, economies of scale and scope call for huge production units and thus entail high costs for plant construction. The products are basically available throughout the world in roughly the same quality. Competition between the numerous suppliers largely works via the price channel. By contrast, special chemicals such as coatings and additives, adhesives, flavours and scents but also basic pharmaceutical substances are produced in much smaller volumes. Companies in the special chemicals segment are drivers of innovation in new fields of application.

Looking at the industry as a whole, one can compare the production of chemicals with a pyramid in which production volumes decrease from bottom to top. Mass-produced upstream petrochemicals (ethylene, propylene etc.) form the basis. They are followed by plastics as well as agrochemicals and special chemicals. Pharmaceuticals are at the top.

Chemicals pyramid:

Smaller output of special chemicals



Source: DB Research

2

¹ Cf. VCI (Association of the German chemicals industry) (2007). Chemiewirtschaft in Zahlen. Frankfurt am Main.

Predominance of small and medium-sized companies

Despite the great significance of basic chemicals the sector has predominantly small and medium-sized companies. The ten largest producers only account for one-tenth of global turnover. This ratio is considerably higher, for instance, in the steel industry (30%). In Germany, the 70 large chemicals companies (employing over 1,000 staff) account for nearly 60% of total turnover, whereas the roughly 2,100 companies with up to 20 employees contribute a mere 2%.

2. The last 10 years: A period of growth

Worldwide, the chemicals industry has been on an expansionary course for years now. Between 1997 and 2007 turnover in the sector rose by about 5% p.a. to EUR 2.3 tr. Besides rising demand from major customers in other industries and from households, mainly in Asia, ever new fields of application have been discovered. In this context, the substitution of traditional materials (steel, aluminium, ceramics) has played an important part. This is attributable to the excellent product properties of plastics, for instance (low weight, easy deformability). Their share in vehicle manufacturing has increased (by weight!) from 8 to 15% since the beginning of the 1980s. The resulting weight reduction supports the trend towards more economical vehicles. Plastics are gaining in importance also in shipbuilding as they not only reduce weight but also increase the products' lifespan. Plastics were used in the aerospace industry at a very early stage, as low weight is the key argument there too.

Chemicals turnover rising faster in Asia

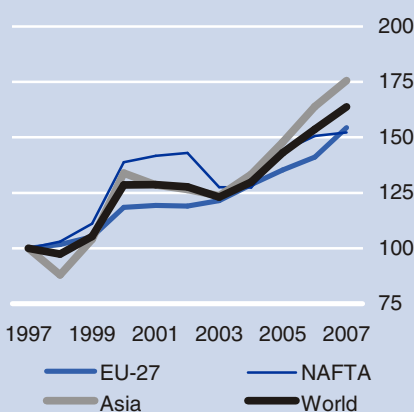
	2007 EUR bn	2007/1997 in % p.a.	2007/2002 in % p.a.
EU-27	699.0	4.4	4.4
DE	173.6	3.9	5.6
NAFTA	586.1	3.8	1.6
US	522.8	3.6	1.3
Asia	719.6	6.0	6.9
CN	241.4	15.3	17.1
JP	196.4	-0.3	-1.7
Other	287.6	5.7	8.2
World	2,292.3	4.9	4.8

Sources: VCI, DB Research

3

Booming chemicals consumption in Asia

1997=100



Sources: VCI, DB Research

4

Sharp divergence in individual regions

The time has passed when a few industrial nations dominated the world market. New business centres have developed in China, India, Brazil and Russia, but also in Mexico, South Korea and Eastern Europe. A classic example is the textile and clothing industry which for cost reasons shifted production to the Far East at a very early stage. Today, more than half of the global production of chemical textile fibres takes place there, 50% of which in China.

Initially these countries benefited from the shift in labour-intensive industries. In many cases the chemicals industry followed as an important supplier. This is true especially of Asia (e.g. China, India, South Korea, Thailand). The Middle East (Saudi Arabia, Iran and others) benefited from its wealth of natural resources. As a result, the chemicals industry grew at an appreciably faster pace in these regions than in the EU-17 or the NAFTA region. In a second phase, the production of high-value-added goods was also shifted to Asia. In this stage, the sector exploited the fact that plant construction was relatively inexpensive and licensing procedures were considerably shorter than in Europe or North America.

Asia: Chemicals industry sees strong growth thanks to dynamic economies

As a result of the strong increase in chemicals consumption of 6% p.a. and the capacity increase thanks to dynamic economic growth, chemicals turnover in Asia rose by 6% p.a. over the last 10 years, to EUR 720 bn. Thus the sector achieved about 1% higher growth here than on average worldwide. However, there are still very pronounced differences between the individual countries. The growth gap ranges from -0.3% p.a. in Japan to +15% p.a. in China.

Booming car manufacture in Asia

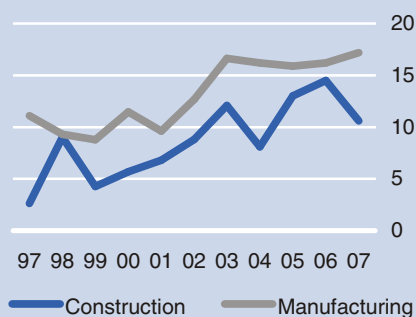
Million units

	03	05	07	07/03 % p.a.
EU-27	18.0	18.2	19.8	2.4
DE	5.5	5.8	6.2	3.0
NAFTA	16.2	16.3	15.4	-1.3
US	12.1	11.9	10.8	-2.9
Asia	20.8	24.1	29.2	8.9
China	4.4	5.3	8.8	18.9
Japan	10.3	10.8	11.6	3.0
Other	4.8	6.4	7.5	11.8
World	59.8	65.0	71.9	4.7

Source: VDA **5**

Industrial output up again in China

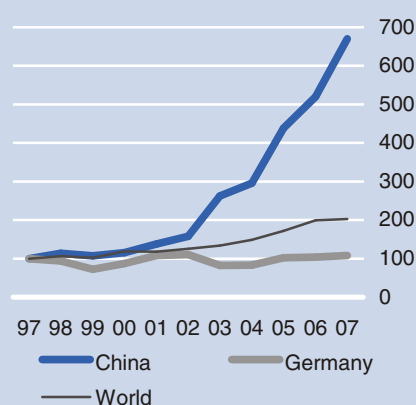
Real, % yoy



Sources: Global Insight, Oxford Economics **6**

Shipbuilding boom in China

Newly built ships, index 1997=100



Sources: VSM, DB Research **7**

China: Rising consumption due to strong performance of major customers

China achieved by far the strongest increase in chemicals turnover in the last ten years. With turnover in the order of EUR 241 bn in 2007 China already ranked second only to the US (EUR 523 bn) and ahead of Japan (196 bn) and Germany (174 bn). One reason for the strong growth was the good performance of major customer industries. These include above all the construction sector, automobiles and electrical engineering as well as the textile industry; considerable impetus also came from private consumption. Despite large-scale new capacities, China's imports were up from EUR 24 bn to EUR 80 bn (about 13% p.a.) between 1997 and 2007. At EUR 290 bn in 2007, China's consumption of chemicals was the highest in all of Asia, followed by Japan (roughly EUR 180 bn) and South Korea (EUR 75 bn). Despite big investment projects there are considerable production shortfalls, for instance, for ethylene. According to the China National Petroleum and Chemical Planning Institute, the self-sufficiency ratio for ethylene is currently only 40%.

On its way to the top in major sectors

Construction activity has been buoyant in China, partly because more and more people have moved from rural areas to the cities; moreover, expanding industrial capacity requires construction investment. This benefits the segments of the chemicals industry with relevance to the construction sector (coating materials and synthetics, among other things). Today, China is an important location for the global automobile industry.² China's shipbuilding industry, too, made its way to the top over the period monitored. With its low prices it managed to win market share from the traditional suppliers. In the last ten years the number of newly built ships in China (measured in CGT³) was up by 20% each year compared with a mere 1% in Germany (world: +7% p.a.). Last but not least, the consumption-oriented segments of the chemicals industry were on an expansionary course – favoured by households' rising incomes. Producers of cosmetics, for example, built up production capacities as demand for body care products had risen strongly above all in the prospering Chinese cities. More mobile phones and flat-screen television sets were produced to meet the rising demand.⁴

Japan: Growth dent hurts chemicals

Unlike China, Japan has failed to revitalise its chemicals industry over the last ten years. The country's share in global chemicals sales has declined from 14% in 1997 to just under 9% today owing to the sluggish economy and weak exports. Nonetheless, at EUR 196 bn of chemicals turnover Japan still outstrips Germany (EUR 174 bn).

India: Impetus from pharmaceuticals boom and population growth

With a turnover of about EUR 60 bn, India is Asia's fourth-largest chemicals producer behind China, Japan and South Korea and,

² The reasons are China's immense pent-up demand as well as location advantages over traditional production regions in Europe and the US. China already has a 12% share in the global automobile industry and ranks third behind the US and Japan.

³ Compensated Gross Tons: (weighted measure, adjusted for value added and personnel input in shipbuilding).

⁴ See Perlitz, Uwe (2005). Chemicals industry in China: Overtaking the competition. Deutsche Bank Research. Current Issues. Frankfurt am Main.

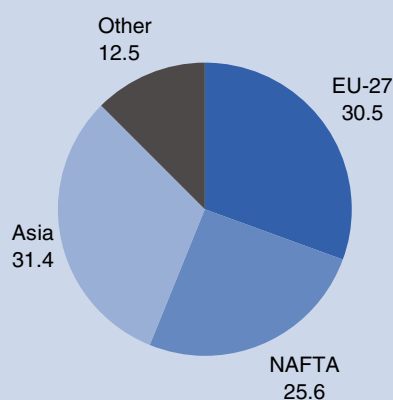
Above-average growth rates in India

like China, has achieved above-average growth rates. Growth has been driven by population growth and a prospering services sector. With a 9% p.a. increase in turnover in the last ten years, the Indian pharmaceuticals sector grew faster than the global pharmaceuticals market (+7% p.a.).⁵ Indian companies quickly expanded their capacities, making the country largely self-sufficient, and increased their exports by nearly 20% per year to just under EUR 4 bn (Germany: less than 15% p.a. to EUR 35 bn). This sets India's development well above that of China.

With its National Policy on Petrochemicals in 2007, above all, India's government considerably improved the political and legal environment for the chemicals industry, and its positive effects were felt even before the policy came into effect. In the Special Economic Zones, subsidies are available for investment in petrochemical plants, as there is particularly strong demand for polymers, e.g., on the Indian subcontinent. Consumption in this segment has risen by an average 10% p.a. since 1990 to 5 kg per capita (global average: 25 kg).

Asia's share in world chemicals turnover increased

Share in 2007 turnover, %



Sources: VCI, DB Research

8

Largest chemicals companies worldwide

Rank	Company	Country	Turnover EUR bn
1	BASF	DE	58
2	Dow Chemical	US	38
3	Bayer	DE	32
4	Lyondell-Basell	US	31
5	Dupont	US	22
6	Sabco	SA	22
7	Reliance Ind.	IN	19
8	Evonik Ind.	DE	14
9	Linde	DE	12
10	Air Liquide	FR	12

Sources: Annual reports, DB Research

9

Strong chemicals growth in other Asian countries

The remaining Asian states together registered lower turnover growth rates than China and India but were still growing at rates above the global average. With an annual increase of nearly 8% they recently achieved total turnover of approximately EUR 184 bn. These countries' share in the global chemicals market rose in the same period from roughly 7% to roughly 8% and is now about as high as Germany's share. The most important countries in this group are South Korea, Taiwan and Singapore, together accounting for turnover in the order of EUR 118 bn.

In South Korea, chemicals turnover has almost doubled over the past ten years. Petrochemicals is one of the key sectors of South Korea's chemicals industry and is currently undergoing a process of restructuring. Capacities have been expanded to improve production efficiency. Growth impetus has also come from the semi-conductor and LCD segments and from cosmetics. New areas of technology such as displays, fuel cells and high-function textiles as well as bio- and nanotechnologies also play an increasingly important role.

EU: Chemicals industry holding its own

Europe's chemicals industry was able to hold its own in the last ten years. In 2007 it accounted for 31% of global chemicals turnover; in 1997 the share was 32%. Of the world's ten largest chemicals companies, no less than five are from the EU. With turnover of approx. EUR 60 bn, Germany's BASF is the world market leader. By comparison, this is the same amount as the annual turnover of India's entire chemicals industry.

Flourishing foreign sales have been a major pillar of support for the chemicals industry. Between 1997 and 2007, the sector's exports grew by roughly 9% to more than EUR 195 bn. (Intra-EU trade comes to EUR 361 bn); in this period the domestic market⁶ grew by approx. 4% p.a.

⁵ Siehe Perlit, Uwe (2008) India's pharmaceutical industry on course for globalisation. Deutsche Bank Research. Current Issues. Frankfurt am Main.
⁶ Total chemicals turnover within the EU minus extra-EU exports plus extra-EU imports.

Western Europe: Specialisation on high-tech products

With a share in total EU-15 turnover of approx. 55%, Germany, France and the UK are the most important producers in Western Europe (share in EU-27 turnover: 51%).

In this context, the change in the product range to focus on higher-value-added goods such as pharmaceuticals and coating materials has been advantageous, while the production of basic products has meanwhile been shifted to a large part to low-cost countries. In Germany, for instance, the share of basic chemicals in total chemicals output has declined by some 5 percentage points to 48% over the last ten years, while the share of pharmaceuticals and coating materials has grown considerably (by 4.5 pp and 3 pp, respectively). The development was similar in other western EU countries such as France and the UK. Among the large international pharmaceutical companies, enterprises from the UK have moved to the top ranks – GlaxoSmithKline, for instance, ranks second worldwide after Pfizer from the US, and AstraZeneca holds fifth place.

Thanks to this shift in focus, the western EU countries also saw their export chances improve. The three largest EU countries together registered an increase in exports of nearly 50% in the last ten years (with the export ratio up from 48% to 68%) and the export surplus grew by a total of EUR 17 bn.

European companies very active abroad

According to the German chemicals industry, about 750 German chemical companies are engaged abroad, employing approx. 250,000 staff and generating turnover of EUR 85 bn (by comparison: turnover in Germany is EUR 174 bn). While Germany's share in global turnover has declined by approx. 1.5 percentage points to 8.5% over the last ten years, the German chemicals companies were able to slightly increase their share in the world market to 12% (1997: approx. 11.5%) – thanks to foreign production.

New EU members: High growth rates, small share in turnover

In the EU accession countries of Central and Eastern Europe, chemicals consumption has benefited from the fact that GDP growth there has been higher than in Western Europe. Since 2005 the annual increase in chemicals consumption has been nearly 4 percentage points higher there. The booming automobile industry also provided considerable momentum to the chemicals sector in the last four years. Vehicle production grew by an average of almost 30% p.a. in the EU accession countries, while it virtually stagnated in the EU-15. The construction sector, too, showed dynamic growth. In Poland, Slovakia, the Czech Republic and Hungary housing completions rose by nearly 20% in 2007, while the rate of increase in the EU-15 was less than 1%. However, despite turnover growth of just under 8% p.a. the share of the EU accession countries in total EU-27 turnover recently reached only about 5% and the share in world turnover barely 2%.

NAFTA: Bringing up the rear

In the USA, Canada und Mexico, chemicals turnover has been below average with growth rates of less than 4% p.a.

With turnover in the order of EUR 523 bn, the US is the world's largest chemicals producer by far, and three of the ten major chemicals companies are domiciled in the US. Nonetheless, the sector has been feeling the growing competitive pressure in the

Few cars in Asia

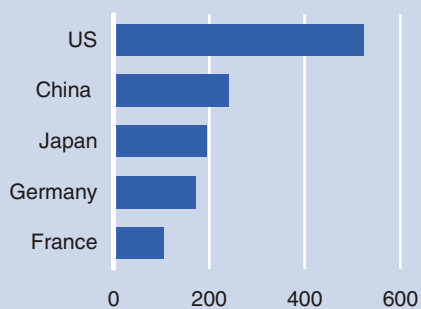
Number of vehicles per 1,000 inhabitants, 2007

Europe	411
Germany	604
Poland	413
Hungary	335
America	376
US	803
Canada	601
Mexico	226
Asia	54
Japan	581
China	27
India	15
World	137

Source: VDA **10**

US by far the largest chemicals producer

Turnover EUR bn, 2007



Sources: VCI, DB Research **11**

course of globalisation. The US automobile industry produced about 1 million fewer vehicles in 2007 than in 2004. This is as much as the total number of vehicles produced in Italy. This development has dealt a hard blow to the US chemicals industry as carmakers require a large variety of plastic products. The US chemicals sector has lately also felt the chill from the real estate crisis – with considerable adverse effects on suppliers to the construction sector. Turnover growth in the US therefore came in markedly below the world average in the last ten years, and imports have for years been rising more strongly than exports. Since 2002 the US external balance has been clearly negative for chemicals. This is due to the fact that the competition from Asia enjoys a considerable cost advantage which has forced companies to consider large-scale outsourcing.

In Canada and Mexico, by contrast, turnover growth (at 7% each) has developed more favourably than in the US. This is attributable to lively domestic demand and rising exports to the US in the framework of the North American Free Trade Agreement (NAFTA), which came into effect in 1994.

3. World chemicals sector expected to continue to grow substantially

We continue to expect strong growth for the chemicals industry. However, the regions will continue to show different degrees of growth dynamic. Demand for chemicals will be particularly strong in regions with economic catching-up processes.

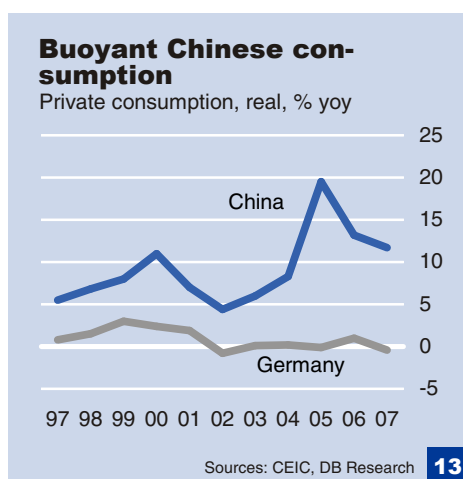
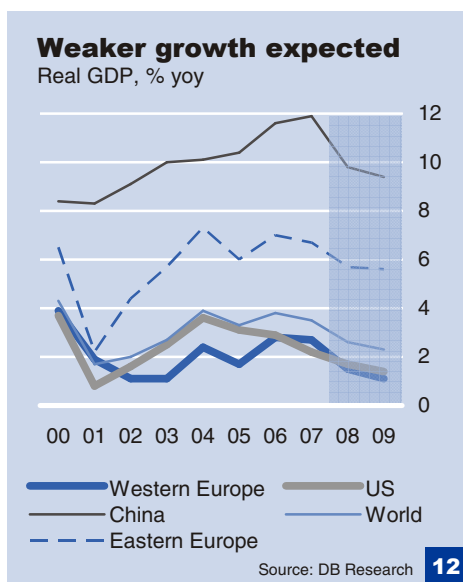
Driving factors tending to lose momentum

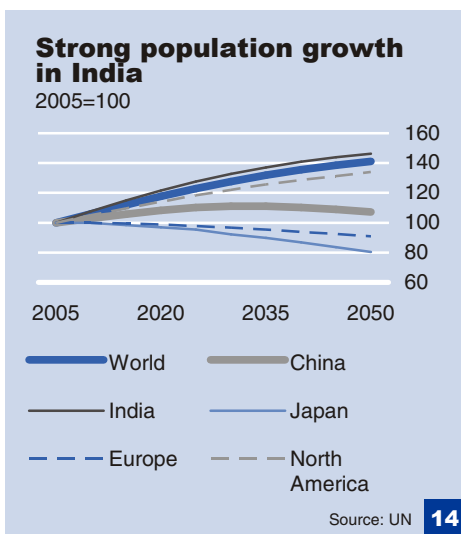
Generally speaking, the slowing world economy will make itself felt in the chemicals industry. Up until 2020, inflation-adjusted world GDP looks set to grow only by an average 2 ¾% – compared with growth of over 3% in the last ten years. At 5% p.a. the growth forecast for Asia is much stronger. There, the catching-up process will likely continue at the same fast pace. China will continue to try to prevent its economy from overheating but this attempt at slowing business activity will hardly be reflected in chemicals output. By comparison, GDP growth in the EU and North America will be substantially lower at an average 2% p.a.

A look at India's automobile industry, for instance, reveals the potential enjoyed by the country's chemicals industry. At the beginning of 2008, the Tata Nano was introduced, of which roughly 1 million units are to be produced annually – this is about the same number of cars produced by Ford in Germany. Its production will give a boost to plastics, paints and lacquers etc. But not only the car industry but also growth in the textile and agricultural sectors as well as pharmaceuticals and packaging are major drivers of India's chemicals industry.

Rising incomes kickstart consumption

Rising per-capita incomes usually also mean rising chemicals consumption. There is a growing middle class, mostly in China and India, which is becoming increasingly demanding as regards the quality of consumer goods. This benefits cosmetics and household goods, for instance. Many chemical products are used as components in other sectors (e.g. automobile industry, electrical engineering). This way the chemicals industry participates in other sectors' growth.





Tailwinds from rising number of consumers

The global chemicals industry also receives a boost from population growth. According to UN estimates, the world's population will rise by nearly 18% to 7.7 bn between 2005 and 2020 – this would mean 1.2 million more people. Up until 2050 this figure will likely even rise to 9.2 bn. In India alone, the population total could rise from 1.1 bn to 1.4 bn by 2020. By 2025 the subcontinent may even have overtaken China as the world's most populous country. In North America as well, the population total will rise further (by about 47 m by 2020). Europe's population, by contrast, looks set to shrink from 731 to 722 m between 2005 and 2020 – by 2050 it may have dropped to 664 m.

Turnover forecast: 2007 to 2020

As a result of slower GDP growth – and other drivers failing to offset the slowdown – we expect the global chemicals industry to see turnover rise more slowly going forward than in the last ten years. Between 2007 and 2020 the sector will likely see growth of no more than 4.5% p.a. compared with 5% p.a. in the past ten years. We expect growth to be below average in the first half of the forecast period and above average in the second half. At EUR 4 tr, chemicals turnover will be about 70% higher than in 1997.

Chemicals turnover growing much faster in China than elsewhere

EUR bn

	2007	2015	2020	% p.a.
EU-27	699.0	934.8	1,121.0	3.7
Germany	173.6	230.4	274.9	3.6
NAFTA	586.1	754.1	882.7	3.2
US	522.8	667.4	777.5	3.1
Asia	719.6	1,138.3	1,516.1	5.9
China	241.4	641.7	1182.4	13.0
Japan	196.4	191.7	188.9	-0.3
Other	287.6	407.9	492.3	4.2
World	2,292.3	3,235.0	4,012.2	4.4

Sources: VCI, DB Research **15**

Weaker turnover growth expected up until 2020

Turnover growth looks set to be above average in Asia (nearly 6% p.a.), so this continent's share in the global chemicals markets will likely rise from 31% currently to 38%. With turnover growth of 13% p.a., China will probably replace the US as the world's largest producer of chemical products from 2015. By contrast, growth in other areas of the globe is merely below average. In the EU-27 chemicals sales look set to rise by barely 4% and in the NAFTA countries by a mere 3%. As a result these regions will lose world market share. During the forecast period, the loss of market share will be greatest in NAFTA, at 4 percentage points, and considerably smaller (-3 pp) in the EU-27 (Germany: -1 pp).

Further build-up of chemical capacities ahead

Increasing demand for chemical products has triggered capacity expansion in the chemicals industry. While the plant build-up is mainly confined to Asia, even here companies in several countries are showing greater restraint now, as demonstrated by the example of South Korea. There, a cracker (which separates crude oil into its main components, ethylene and propylene) owned by Hyundai

Oilbank was originally planned with a 70,000 bpd capacity that has meanwhile been reduced to 52,000. Also, S-Oil has completely suspended construction of an entire plant. Japanese companies, too, are being very cautious when it comes to capacity expansion, as the construction of production plants in neighbouring countries is clouding the outlook for Japan.

China seeks high degree of import independence

Government subsidies for large plants in China

China, by contrast, whose consumption of chemicals is rising rapidly and which is seeking to achieve a high degree of import independence is building up capacities in all major chemicals segments. In inland China, coal is to be not only mined but also processed locally. The focus is on coal liquefaction and gasification projects. In China, the basic chemicals business is still predominant with a share of 60%. The government plans to subsidise large-scale ethylene plants with an annual capacity of at least 800,000 tonnes (current plants have a maximum capacity of 500,000 tonnes) in order to bring down the cost per tonne considerably. Its aim is to secure China's international competitiveness. As regards propylene output, projects in the order of an additional 7.2 m tonnes are being planned between 2008 and 2011 (by comparison: Germany's current capacity is 4 m tonnes). The production of special chemicals, too, will likely increase markedly in the next ten years, combined with substantial plant expansion. Cases in point are dyestuffs for expanding textile output as well as scents for the cosmetics industry and basic pharmaceuticals.

Crude oil processing increasingly important in Arab countries

Expansion of basic chemicals segment in the Arab region

The chemicals industry will continue to expand in the Middle East (share in global chemicals industry currently around 2%). In the course of the oil market rally these countries have also amassed funds that have been invested in, among other things, (petro)chemical plant. Countries such as Saudi Arabia, the United Arab Emirates, Qatar and Iran are working on new investment strategies to reduce their dependence on oil and gas exports. For instance, the six countries represented in the Gulf Cooperation Council⁷ intend to spend approx. USD 500 bn by 2015 on expanding oil and gas supply, refineries and petrochemical plant as well as on processing chemical end-products. In Saudi Arabia, the gigantic chemicals complex of Ras Tanura (with an investment volume of USD 20 bn) is planned to go on stream by 2012. Sabic, the Saudi chemicals group, estimates that roughly one-third of the relatively old petrochemical plants in Europe will not be able to withstand the competition from the modern and more cost-efficient producers from the Arab region. Representatives of Europe's chemicals industry share this opinion.

Large risk of excess capacity

Owing to the gigantic build-up in Asia there is a risk of excess capacities over the coming years – combined with shrinking margins for petrochemicals. This will mainly affect producers in Europe and the US. However, European producers in particular have braced themselves for this possibility – either by leaving the chemicals business altogether or by entering partnerships and mergers to improve their cost structure.

⁷ The members are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE.

An example of special chemicals

In the construction sector a new special coating might, over a medium-term horizon, help monitor the safety of bridges. By means of metal components, this “intelligent” paint developed in the UK reacts to material failure in the structure's substance. Damage to the structure is revealed by the electricity generated by the changes, which can be measured.

Higher demands made on product quality***Special chemicals: Opportunities for western companies***

Even if the European chemicals industry loses market share globally by 2020, there will still be large-scale chemical capacities in Europe. Ongoing adjustment to changes in the sector will be inevitable, however. BASF, for instance, is planning to give up the production of polystyrene (used among other things to make yoghurt cups) because profit margins in this segment do not meet the company's targets and because the Persian Gulf countries have become much more serious competitors in this segment. Dow Chemical, the world's second largest chemicals company after BASF, is currently looking to expand in the special chemicals segment, as this is less recession-prone than basic chemicals. Other companies, such as Lanxess and Altana, have also abandoned low-profit segments and are now focusing on special chemicals. Generally speaking, higher costs of raw materials and energy or heavier financial burdens resulting from exchange-rate movements can be more easily passed on to the customers here than in the mass-production basic chemicals segment.

Drivers of innovation more important

The chemicals market as a whole is calling for new products to meet the new requirements regarding environmental protection and energy efficiency. This applies to insulating materials, anti-dust coatings as well as composite materials for fuel cells.

Increasing energy efficiency

In the energy sector, the German paints and coatings industry concentrates, for instance, on coatings producing electricity from sunlight – similar to solar cells. In view of the huge wall and roof space available on buildings this could become a lucrative business. In aircraft manufacture, new products are to help reduce the weight of the aircraft to bring down fuel requirements. In car manufacture, new additives such as Sulfron can reduce the rolling resistance of tyres, so fuel consumption declines by up to 5%. Nano coatings, too, may fill a niche in the market in the future. One company already produces windows with automatically darkening “smart” glass to control the amount of light passing through, thus capping energy demand.

Environmental protection becoming increasingly important

German companies have developed a dirt-repelling surface coating (so called Lotus effect); rain will automatically wash away the dirt. This can help save large volumes of traditional paints for renovation work and also reduce the use of environmentally deleterious detergents. Hospitals increasingly use anti-bacterial coatings which help reduce infections in patients and staff. Another US invention worth mentioning is a road surface comprising coal fibres to allow precise measuring of the flow of traffic.

Search for oil substitutes

By seeking substitutes for oil-based products, the sector is trying to reduce its dependence on the oil producers. Ford, the car maker, for example is using soy-based polymers, this year for the first time, in the production of its Mustang model. Ford intends to replace about two-fifths of oil-based polymers this way. While the development of large-scale plant has made considerable progress, it will take until 2015 before they can make a serious contribution to raw materials supply. However, this is not entirely without controversy, as soy-

Greater independence from oil sought for polymers

Oil price a decisive factor

beans are an excellent source of protein and other nutrients and noticeable price increases are to be expected.

In aircraft manufacture, too, the new models Boeing 787 and Airbus A350 have seen the traditional aluminium in the fuselage largely being replaced by carbon fibre composites. However, oil prices are an important factor in the substitution of traditional products: first because chemicals production is particularly energy-intensive and second as a major raw material to produce basic goods. While the price of oil still stood at USD 25 per barrel in 2002, it had risen to almost USD 73 in 2007 and currently stands at USD 130 per barrel. This development looks set to continue in the medium term, making petrochemical primary production (ethylene, propylene etc.) considerably more expensive. So other materials such as steel, aluminium and ceramics could become increasingly competitive. According to the German chemicals industry, the prices of primary chemicals such as ethylene and naphtha rose by 85% and 160%, respectively, over the past five years.

China's external trade in chemicals is picking up

Chinese exports and imports, EUR bn



Sources: VCI, DB Research

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Export prospects still strong

Export opportunities for Western chemicals producers remain strong, especially in the special chemicals segment. An increasing number of Asian companies are demanding high-quality products that cannot be produced in sufficient quantities in Asia in the foreseeable future. Even though new capacity is being built up, Asia's import ratio (imports measured against market supply) of currently 34% could rise further. European companies look set to benefit from this development as their product range is well suited for Asia's growing demand. The Asian markets' heavy dependence on special chemicals made by Western companies offsets the noticeably firmer euro.

Corporate takeovers by strategic investors expected

In the medium term, the process of concentration in the global chemicals industry looks set to continue, as production costs per production unit fall with rising output quantities especially in the basic goods sector. By purchasing additional production capacity, companies will seek to improve their cost structure and increase their market clout. Purchases in Asian countries currently seem particularly lucrative due to their generally positive outlook. The process of concentration will likely accelerate in India as many small manufacturers – i.a. in the pharmaceutical sector – are unable to foot the high cost of R&D needed to remain competitive internationally. According to A.T. Kearney estimates, there will only be one to three "Western players" per customer segment in future who can stay on top of the game in the world chemicals industry.

Concentration process continues**4. Conclusion: Growth gap remains**

The global chemicals market has seen pronounced structural changes in the past ten years which look set to continue in future. While turnover in Asia – especially China and India – will gain momentum in the coming years, turnover growth will be below average in the EU and NAFTA, so the growth gap between the large chemicals regions will widen even further. Even though the European chemicals industry is losing market share throughout the world, Europe will continue to be a major location since integrated manufacturing together with key clients will continue to provide indispensable local advantages.

Popular acceptance important for new products

For the widespread use of new chemical products, popular acceptance of other materials made from metal or wood is very important. Moreover, unsatisfactory infrastructure conditions in the countries of Asia will also harbour risks. For example, the supply of energy needed to further expand capacities in China and India is by no means secure. Even today, output quantities are capped by insufficient energy supply in several countries. Transport problems also represent considerable restrictions in some cases.

Firm euro a burden on exports

The development of the euro exchange rate harbours risks for European companies. Between 2002 and 2007, the USD/EUR exchange rate picked up from 0.95 to 1.37 (currently at almost 1.60). This weighs heavily on European exports. It hurts the price competitiveness of European products, and import pressure – especially from Asian countries – is rising. So far, though, the European companies have been able to more than offset shortfalls in the US thanks to rising demand from Asian countries.

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