



What's Next for the Chinese Chemical Industry?

An outlook to 2025

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Nobel prize winner Niels Bohr once famously stated that prediction is very difficult, especially about the future. Still, while there is a risk in forecasting specific developments, there may be an even greater risk in not making any assumptions for the future. With this in mind, this paper will try to make some predictions about the future of the Chinese chemical industry within the next five to seven years, based on a number of hypotheses as outlined below. Admittedly, these hypotheses do not assume any massive disruptions in the current situation – however, given the relatively smooth development of the industry in the past 15 years, such an assumption seems realistic.

Hypothesis 1: Growth of the chemical industry will accelerate in absolute terms. The importance of China as a part of the global chemical market will increase further.

While in the past decade China's chemical industry grew at a rate faster than GDP, this is probably not realistic in the long term as the economy shifts towards services and large parts of the chemical industry are relatively mature (particularly petrochemicals and commodity chemicals). However, growth with GDP is realistic and in line with expert forecasts. It is even possible that overall growth will be slightly above GDP due to the contributions of the chemical industry to areas such as new materials (e.g., for electric vehicles) and life sciences (e.g., nutrition, cosmetics).

This means that as the basis for growth gets bigger, even a relative slowdown in GDP and chemical industry growth will still mean that absolute growth will increase. In 2017, GDP growth was 6.9%. To achieve the same absolute growth, a growth rate of only about 6.5% is necessary in 2018. Extrapolated to 2025, an annual compound growth rate of only 5.7% would be sufficient to stabilize absolute growth. This seems a very modest target, particularly given that in 2017 the chemical industry grew much faster than GDP (at about 16-17%, though of course this is partly due to oil price changes – e.g., the average OPEC crude oil price increased by about 29% from 2016 to 2017).

Consequently, organizations such as CEFIC assume that the China share of the global

chemical market will keep increasing – from 40% in 2015 to 44% in 2030. And Yousef Al-Banyan, CEO of SABIC, estimates that between 2016 and 2025, half of the global chemical industry growth will come from China.

Hypothesis 2: Environmental regulation will become tighter and will be implemented more strictly. The vast majority of chemical production will be relocated to chemical parks.

Given the strong position of China's president Xi Jinping and his clear emphasis on environmental protection, it is very likely that the tightening of regulation observed in the last two years will continue. Currently individual provinces are in the process of announcing their individual targets – for example, in May Heilongjiang province announced the closure of 14 chemical plants and the relocation of five others. Government officials clearly have been incentivized accordingly, and industrial parks now occasionally advertise the number of chemical plants they have closed down, rather than being apologetic about it.

As a consequence, production of hazardous chemicals will be almost exclusively restricted to chemical parks by 2025. Smaller chemical companies will be forced to relocate even earlier (by 2020). Companies moving to such parks generally will be subjected to tighter emission controls, often by a factor of 10 or so. Meeting these tighter limits will be facilitated by centralized treatment in these parks, offering economies of scale. Meanwhile, many marginal players will close production as they cannot afford the cost of moving to chemical parks and complying with new regulation.

This of course represents a big shift from the early days of China's opening up, when industrial parks were mainly created to attract investment, particularly foreign one. Nowadays, chemical parks have the purpose of offering specialized services in specific areas, ideally making the industry both more efficient and easier to control.

This longer-term shift towards efficiency of chemical parks will also mean that ultimately such parks should and will be managed by professional site management companies rather than by government agencies, as it is the case today.

Hypothesis 3: Local and central governments will become much more selective about which chemical activities to promote and which to restrict.

Cities with many alternatives to chemical production – e.g., Shanghai with its focus on being a center of culture and commerce – have already become very restrictive with regard to allowing new chemical production even next to existing plants and in chemical parks. The better chemical parks will be restrictive in their acceptance and will only accept a minority of applicants based on criteria such as investment size and environmental friendliness. As a consequence, chemical companies will increasingly be limited in their choice of sites, particularly in relatively affluent provinces. Chemical segments which are regarded as innovative or strategically important (e.g., new materials, electronic chemicals) will be welcomed much more than those catering to traditional industries such as textiles, independent of their environmental impact.

Hypothesis 4: Environmental regulation will not lead to major longer-term disruptions of the industry. Over all segments, China's chemical industry will remain competitive despite the elimination of some players.

The chemical industry contributes a substantial part to China's industrial production – 7.5% of total industrial revenue using a very narrow definition ("Manufacture of raw chemical materials and chemical products"), or 13.4% if some other segments related to chemicals are added (manufacture of chemical fibers, medicine, rubber and plastics products, all data for 2016). In addition, the chemical industry is a key supplier to other very important industries such as automotive and electronics. As a consequence, the government has no interest in driving the chemical industry out of China. In fact, the relevant Five-Year Plan for the Chemical Industry envisions a strengthening of the overall industry, though some restrictions may be applied to the lower end chemical segments. The government will therefore avoid putting a high cost burden on the industry in general, though it may put up entry barriers for smaller players, e.g., in the shape of emission standards. However, for the bigger players these higher standards will not result in a net loss of profit as it reduces competition from marginal players.

As for labor costs, even though these have been rising substantially, they are generally not a



major factor in most chemical segments and can also still be reduced by automation. However, labor costs may negatively affect some chemical segments indirectly as selected customer industries such as textiles increasingly invest outside of China.

Hypothesis 5: Selected chemical segments with high negative environmental impact will see losses, particularly if they serve labor-intensive and low-tech customer segments. For the other chemical segments, environmental regulation, other government policies and market forces will lead to some consolidation, somewhat improved margins and higher long-term utilization rates.

There are certain chemical segments which the government will only protect to a limited extent. In particular, these are chemical segments which are highly polluting, are not particularly innovative and serve labor-intensive and mature customer industries. Thus, leather and textile chemicals may see longer-term declines in China at the same time that these industries also suffer from the relatively high labor cost in China and thus are vulnerable to a shift to countries such as Vietnam and Bangladesh.

In many downstream segments such as coatings, adhesives and plastics compounding, the stricter environmental regulation will reduce the number of players. This is a side effect which is entirely desired by the government as it forces these segments to consolidate. Margins in these highly fragmented segments will subsequently improve, strengthening the overall economy.

By tightening pollution control, the Chinese government also aims at consolidating the chemical industry via reducing competition from low-end and marginal players. This is entirely in line with the overall policy of upgrading China's industry.

Hypothesis 6: Those chemical segments which are innovative and can help China achieve its "Made in China 2025" targets will show growth substantially above GDP and the chemical industry average. Low-end commodities will show below average growth.

China's government is aware of falling into the middle-income trap and has taken a number of initiatives to escape it. Key is the "Made in China 2025" initiative, which was announced by Li Keqiang in 2015 and which was described by a German think tank (the Mercator Institute for China Studies) as "a forceful and smart challenge to the leading economies of today". The initiative aims to move China's manufacturing up the value chain by focusing on 10 sectors believed to be at the focus of technological innovation. These

sectors include aerospace equipment, maritime equipment, railway equipment, electric vehicles, power equipment, new materials and medical devices. Obviously innovative chemical materials form the basis of advances in innovations in these segments. As a consequence, China is already strongly promoting related chemical areas, e.g., via tax deductions and direct funding of R&D. In combination with the likely market expansion in these new areas, this will lead to high growth in a number of chemical segments such as new materials (e.g., engineering plastics, organosilicone materials, organic fluorine materials, specialty rubbers) and environmental services and materials.

On the other hand, planning regulations and emission standards will tighten for a number of commodity chemicals such as calcium carbide, leading to below average growth (and having the desired side effect of reducing overcapacity and improving the industry structure).

Hypothesis 7: Among the three main ownership types for chemical companies in China, private domestic companies will gain further market share at the expense of foreign companies and state-owned entities.

In the past 10 years (from 2006 to 2016), the revenue share of state-owned chemical companies has declined from 30% to 15% while the share of wholly or partly foreign-owned companies has declined from 27% to 21%. Thus, domestic non-state-owned entities (such as private companies, limited liability companies and shareholding companies) increased their share from 43% to 64%. Though this trend has slowed down a bit in the last few years, it is still ongoing as private companies still have higher sales growth rates than the other two types. In addition, any serious reform of the state-owned entities – aimed at making them more competitive and profitable – would probably result in a further decline of their market share.

Hypothesis 8: A trade war with the US will likely not have a major longer-term impact on China's chemical industry.

China is still a net importer of chemicals – imports reached US\$110 billion in 2016 compared to exports of US\$99 billion. In fact, many of the tariffs that China may impose should the US administration pursue their own restrictions will be on chemicals imported from the US. So, in the long run this may even lead to a strengthening of the Chinese chemical industry as competition from the US may be excluded.

In addition, the Chinese economy is no longer very strongly dependent on exports. After a peak export share of about 37% of GDP, the percentage has declined to slightly below 20% in 2016, with

a further decline expected due to the larger size of the domestic economy and the increasing importance of services.

Different from the situation between Europe and China in the past few decades, the US and China are not directly competing in the chemical world but are each working in different value chains. The US is an important end market for chemicals but less important for manufacturing, which will probably not change despite recent efforts by the US government.

Conclusion and implications for foreign chemical companies

Overall, this paper argues that in the next 5-7 years, the Chinese chemical industry will become cleaner, less fragmented and remain on a path of healthy growth. State policy will also push the industry to become more modern and innovative. The advantages of China – now that GDP per capita has passed US\$8 000 and is much higher in big cities like Shanghai (about US\$ 20 000) – no longer are in low labor cost but rather in exploiting the huge local consumer market, particularly in areas such as health care, entertainment, high quality nutrition and high-end materials.

In the past decade, the position of foreign chemical companies has weakened. Sales growth rates that seemed impressive from a Western perspective were well below market growth and thus meant a decreasing market share. Reasons cited for this development often included the "non-level playing field" – the notion that only foreign-owned companies had to obey regulation, particularly in the area of environmental protection. As China's environmental campaign is for real and accompanied by a strong anti-corruption campaign, this notion is certainly not valid today. As a consequence, the next few years offer a great opportunity for foreign chemical companies to leverage their experience in clean chemical production and in producing higher-end products while at the same time benefitting from reduced competition from rogue and marginal players that will be driven out of the business.

Once Chinese players have fully mastered the new situation, it will get more difficult for foreign players again as a mature industry such as chemicals generally favors those catching up over those struggling to keep ahead via innovation. Foreign chemical companies therefore should use the next few years wisely. ■