



GED Study

Is China Systematically Buying Up Key Technologies?

Chinese M & A transactions in Germany in the
context of “Made in China 2025”

Author

Dr. Cora Jungbluth (Bertelsmann Stiftung, Gütersloh)

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Key findings

“Made in China 2025” (MIC 2025) is the Chinese central government’s main industrial policy strategy aimed at turning China into the global leader of the fourth industrial revolution. Chinese M&A transactions abroad explicitly belong to the instruments for implementing MIC 2025.

Germany is an attractive location for Chinese M&A transactions and offers tailor-made know-how for MIC 2025 due to its large number of “hidden champions”, i.e. technological world market leaders in highly specialized niches.

64 percent or 112 of the 175 analyzed Chinese M&A transactions with a share of at least ten percent in German companies between 2014 and 2017 percent can be assigned to one of the ten key sectors in which China aims to assume global technology leadership with the help of MIC 2025.

On the one hand, there is a clear focus on the MIC 2025 sectors of “energy-saving and new-energy vehicles”, “electrical equipment” and “high-end numerical control machinery and robotics” – i.e. sectors in which Germany can in part demonstrate significant competitive technological advantages. Even before the introduction of MIC 2025 in 2015, however, these sectors were already a focus of interest for Chinese investors in Germany.

On the other hand, key sectors that played little or no role for Chinese M&A transactions in Germany have also become increasingly important since the introduction of MIC 2025. This is particularly evident in the MIC 2025 sector of “biomedicine and high-performance medical devices”.

The majority of the 112 Chinese M&A transactions (just under 60 percent) that are relevant for MIC 2025 are distributed across only three German states: Baden-Württemberg (26), North Rhine-Westphalia (22) and Bavaria (18) – the very regions in which the majority of the German “hidden champions” are located.

State-owned investors make up 18 percent of the Chinese M&A transactions examined, and are therefore a minority. However, taking into account only the M&A transactions that can be assigned to the MIC 2025 sectors, their share rises to around 22 percent – a possible indication of state stakeholders’ greater interest in acquiring know-how abroad for the implementation of MIC 2025.

However, the formal type of ownership of Chinese companies does not show the full picture of potential state influence due to the complex interplay between the state and companies in China. Therefore, the great challenge for Germany consists in the forms of state influence that are not or only insufficiently reflected in the majority ownership type of Chinese investors.

Three recommendations for addressing Chinese direct investments

1. Germany needs a differentiated debate on direct investment from China, but also from other emerging countries.

The public debate on this topic is currently dominated by the fear that technology will be “sold off”. In contrast, the positive effects of foreign direct investment are often ignored. Direct investments from China and other countries create jobs, bring capital into the country and contribute to tax revenue. Chinese investors also improve integration with the Chinese market, which is important for Germany. Compared to financial investors from other countries, Chinese companies have a long-term interest in the M&A transactions and in some cases offer location guarantees. In the past, they have also rescued German companies from insolvency.

A fundamental culture of openness and welcoming with respect to foreign investors, regardless of where they come from, must be maintained and possibly even strengthened. This is because Germany as a globalized economic location needs foreign direct investment.

2. Germany and the EU basically have nothing to counter China’s industrial policy ambitions. That should change.

The Chinese government is pursuing a clear industrial policy strategy by investing in foreign high-tech companies. Such M&A transactions should help China to rise to the top of the world in technology. German companies are in the focus here. If there is reason to believe that state influence distorts competition, politicians need to act.

In the case of M&A transactions in strategic sectors such as critical infrastructure, serious consideration should be given to lowering the threshold for foreign investment screening from its current level of 25 percent to ten percent. Of course, all interest groups involved should be consulted in this process. According to the common international definition, a foreign investment above ten percent is considered a direct investment, with which the investor generally pursues the goal of obtaining control over the investment target.

As discussed previously, it would also make sense to adopt a European framework for analyzing and, if necessary, screening M&A transactions from third countries, which includes dealing with state-owned and state-affiliated investors. This may prevent EU states from being played off against each other and avoid the undermining of European standards in investment projects. At present, only twelve of the 28 Member States have such a screening process in place.

In general, a harmonized European position with respect to China would be desirable. This is the only way for the EU to exert any influence at all on Beijing.

3. Germany and the EU should demonstrate determination and self-confidence in addressing the issue of lack of reciprocity in economic relations with China.

Germany, like the other EU states, offers Chinese investors free market access and has no extensive protection mechanism for key technologies. In contrast, the Chinese government has deliberately protected strategic industries from foreign access to date. In short: A Chinese KUKA, if there were one, would never fall into foreign hands. Almost 17 years after China joined the WTO, there is still no level playing field in mutual economic relations.

This is where Trump's trade policy could play into the hands of Germany and the EU: as dangerous as the trade war provoked by Trump may be, it clearly shows how dependent China still is on Western know-how. The EU could take advantage of this situation. Instead of resorting to protectionist measures, the EU could position itself as a more reliable partner for China than the United States – and thus ensure that its demands are heard in Beijing.

First on this list is the conclusion of the bilateral investment treaty that has been under negotiation since 2014. This could be an important step towards fair competitive conditions between Chinese and European, and thus also German, companies in China.

In times of increasing global protectionism, both China and the EU are more dependent than ever on reliable partnerships. It should therefore be in both sides' interests to actively promote the maintenance of an international rule-based economic order.

1 Introduction

The robotics manufacturer Kuka, the automotive supplier Finoba, and the pharmaceutical company Bendalis – three companies from very different sectors, yet with two things in common (see table in the annex): firstly, they are majority-owned by Chinese investors, and secondly, their respective technology fits into China’s industrial policy strategy “Made in China 2025” (MIC 2025). This strategy defines ten key sectors in which China aims to become a global leader in the first half of the 21st century, including robotics, e-cars and computer-controlled machines. Chinese M&A transactions abroad explicitly belong to the instruments for implementing “Made in China 2025”.

Germany has a wealth of technological know-how that is relevant to the ten MIC 2025 sectors. It is therefore not surprising that Chinese direct investments in Germany, including an increasing number of M&A transactions (see table in annex), have risen in recent years. After German companies invested considerably more in China than Chinese companies did in Germany for decades, the situation changed for the first time in 2017: According to the Chinese Ministry of Commerce (MOFCOM), China’s foreign direct investment (FDI) in Germany that year was significantly higher than German FDI in China (Figure 1). That is also due to the fact that German companies continue to face restrictions and discrimination in comparison to Chinese companies. Their investment activities in China are therefore more conservative (German Chambers of Commerce Abroad, 16 November 2017).

These developments have led to a partly very critical debate on Chinese investment in Germany, particularly M&A transactions, in politics, business and the public. Two aspects are the main focus here (see, for example: Bündnis 90/Die Grünen, 10 March 2018; BDI 2017; Gabriel 2016):

Firstly, there is the question of the political influence on these M&A transactions: it is unclear what role the Chinese government plays in this. This is accompanied by fears of

state-led systematic acquisitions of German key technologies and of market competition thus being distorted, for example through politically subsidized purchase prices for German companies.

Secondly, there is a lack of reciprocity between China and Germany or the EU: while Chinese companies can go on a “shopping spree” in Germany without significant restrictions, the Chinese government deliberately protects strategic industries from foreign access. In short: A Chinese Kuka, if there were one, would not fall into foreign hands.

Germany is facing a dilemma here: as a major export nation, it advocates open markets like hardly any other country and welcomes foreign investors in principle. However, the aforementioned uncertainties associated with Chinese M&A transactions have led Germany to tighten its legislation for the screening of foreign M&A transactions. A 2017 amendment to the German Foreign Trade Ordinance [Außenwirtschaftsverordnung] granted the German Federal Ministry for Economic Affairs and Energy [Bundeswirtschaftsministerium] (12 July 2017) more powers in this area, for example with regard to critical infrastructure – but still only above the level of a 25 percent stake. Cases such as the planned investment by the Chinese state-owned State Grid Corporation of China in the network operator 50Hertz thus remain below the radar of legislators. State Grid wanted to acquire a 20 percent stake – i. e. well below the threshold relevant for screening. The plan ultimately failed formally because the Belgian majority shareholder Elia exercised its pre-emptive right (Welt, 23 March 2018). However, the debate about how to deal with Chinese M&A transactions in Germany, especially in key technologies, continues.

The main goal of this study is to compare these M&A transactions with China’s high-tech strategy “Made in China 2025”. This primarily involves providing an overview of the Chinese M&A transactions that can be categorized as

FIGURE 1: FDI flows between China and Germany, 2004–2017 (in USD million)



— German FDI in China — Chinese FDI in Germany

Sources: German FDI in China from 2004–2015: Statistical Year Book of China, various years; for 2016 and 2017: MOFCOM, 4 February 2017 and MOFCOM, 29 January 2018. Chinese FDI in Germany from 2004–2010: MOFCOM et al. 2011; from 2011–2015: MOFCOM et al. 2016; for 2016 and 2017: MOFCOM et al. 2017 and MOFCOM, 1 February 2018.

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falling under this industrial policy strategy. However, the analysis cannot provide any evidence as to whether these M&A transactions are actually politically motivated.

Below, we begin with a brief summary of China’s foreign direct investment (FDI), especially in Germany. Next, we will categorize the 175 total Chinese M&A transactions in German companies from 2014 to 2017 according to the ten key sectors listed in MIC 2025. This will enable us to put forward suggestions for how to possibly handle Chinese M&A transactions in the future.

2 Comet-like rise: China as a foreign investor

Direct investments *from* China have been an essential part of the reform agenda since the announcement of the Going Global strategy in 2000. These investments were heavily regulated beforehand. The political focus was on direct investments by foreign companies in China. In the meantime, the Chinese government has been using the Going Global strategy to promote the “reverse direction” for almost 20 years, i. e. to encourage the international expansion of Chinese companies in the form of FDI, among other things. The main goal of the strategy is to promote China as an economy and Chinese companies in the global value chains. This means that China will no longer be just the “factory of the world”, but also increasingly become the “research laboratory of the world”. This should be accompanied, for example, by indigenous innovation and patents as well as original Chinese “global players”, i. e. Chinese Samsungs, Siemens or Sonys. In the 21st century, according to the Chinese government’s vision, the label “Made in China” should no longer stand for cheap products for the masses, but rather for high-quality innovative products (Jungbluth 2015: 183–184). Although the government has again tightened FDI in certain areas in recent years due to capital controls, its fundamental commitment to FDI by Chinese companies remains unbroken as an important factor in the country’s economic development (see, for example, Xi, 18 October 2018).

Leaving aside political strategies, the corporate level is a central driving force for FDI from China. Many Chinese companies, like companies from other countries, are now pursuing their own internationalization strategy. They are looking for access to sales markets, technologies and qualified employees abroad. In addition, Chinese companies have also begun to relocate their production to other countries, as labor cost in China is rising rapidly. From the perspective of economic history, it is frequently observed that companies expand abroad when their competitiveness and financial strength have reached a certain level, certain production factors on their home market are no longer availa-

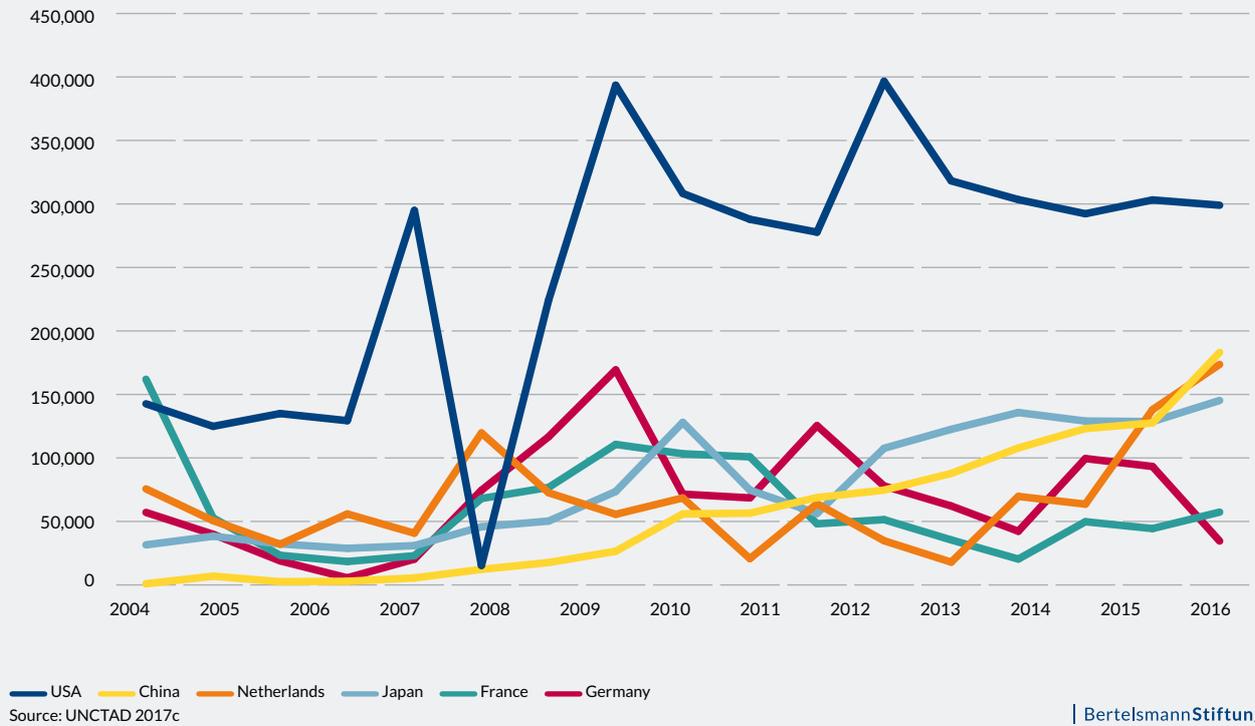
ble in sufficient quality or quantity, or the market is saturated (Jungbluth 2015: 40–43).

Against this backdrop, it is not surprising to see the comet-like rise of China as a foreign investor in recent years. According to data from the United Nations Conference on Trade and Development (UNCTAD), the country was the second largest foreign investor worldwide in 2016: USD 183 billion or 12.6 percent of global FDI flows came from China in that year. In 2006, the figure was just under USD 18 billion, only 1.3 percent. Since then, China’s annual FDI has increased almost tenfold, leaving all other emerging countries far behind in this respect (Figure 2). For comparison: India invested just USD five billion abroad in 2016. This represents 0.4 percent of global FDI flows.

The situation is different for FDI outward stock, i. e. the cumulative foreign direct investments: in 2016 China held about five percent of global FDI outward stock at around USD 1.3 trillion, putting it in 10th place worldwide (Figure 3). If FDI outward stock is viewed in relation to gross domestic product (GDP), it becomes clear that China still has considerable catch-up potential here – especially in comparison with important foreign investors such as the United States or Germany: China’s FDI outward stock total just 11.3 percent of its economic output. This metric is 33.3 percent for the United States, and even around 40 percent for Germany (UNCTAD 2017a and 2017b).

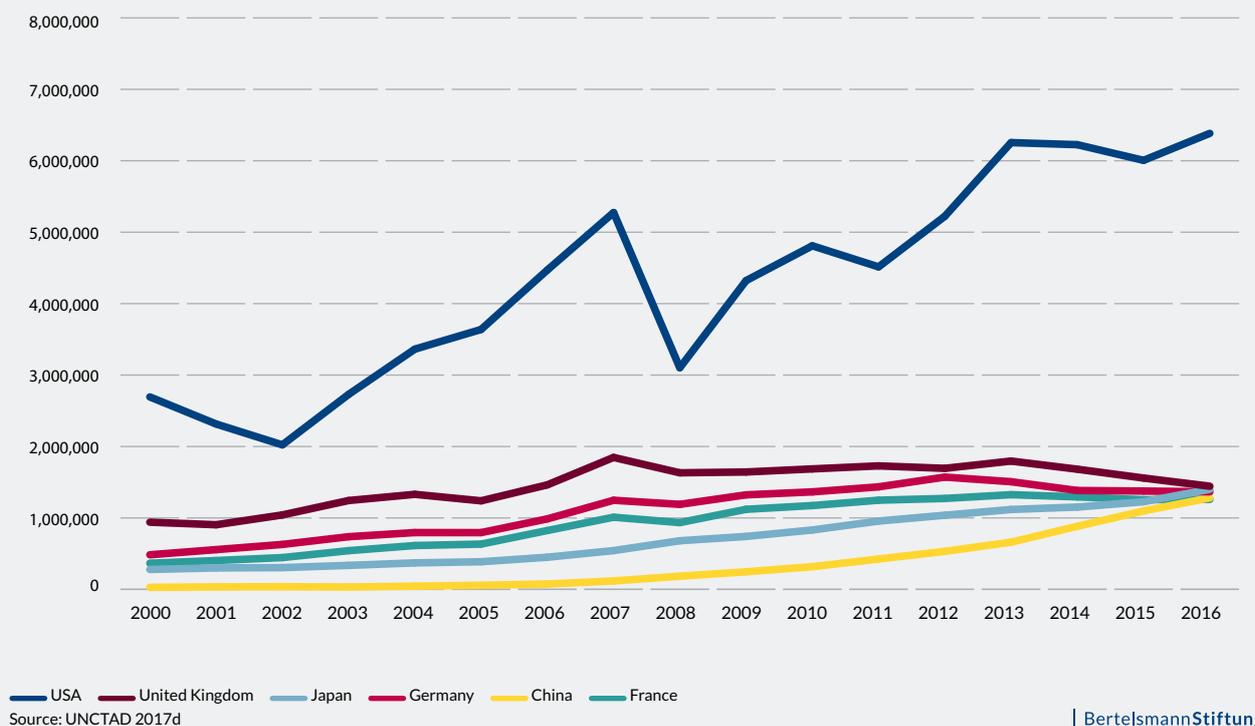
It can therefore be assumed that China’s direct investments abroad will continue to increase in coming years. According to a projection by Prognos AG on behalf of the Bertelsmann Stiftung, China could already be investing USD 288 billion abroad in 2025. Around USD 4.3 billion of this could go to Germany (Jungbluth 2016: 5).

FIGURE 2: FDI outflows from selected countries, 2000–2016 (USD million)



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FIGURE 3: FDI outward stock of selected countries, 2000–2016 (USD million)



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3 Top target in Europe: Chinese direct investments in Germany

Germany was the main target country for Chinese direct investments in Europe and the eighth largest recipient of Chinese FDI worldwide in 2016. Nevertheless, Germany only accounted for USD 2.4 billion or 1.2 percent of China's total FDI flows that year. The lion's share of the country's direct investments continue to go to its Asian neighborhood (Figure 4).

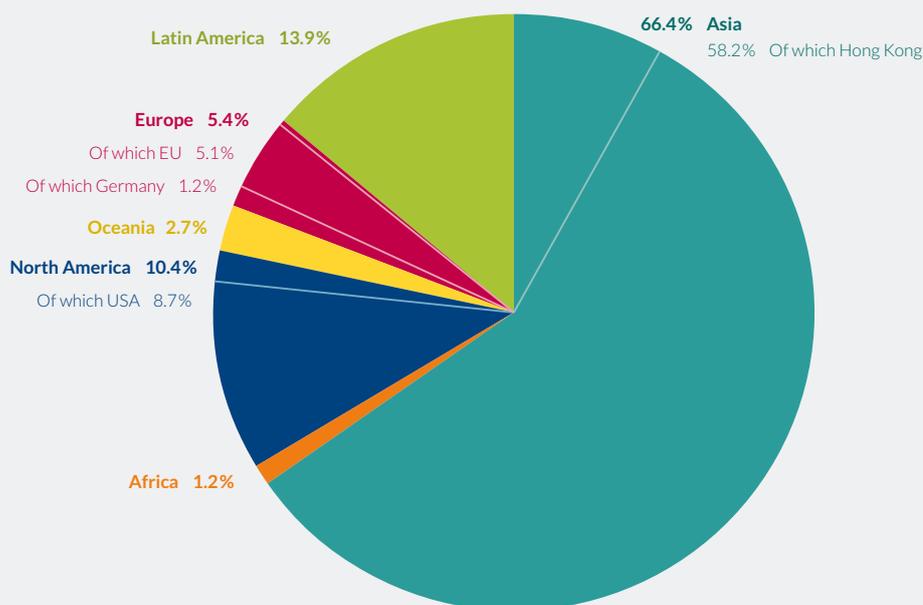
However, the "Hong Kong factor" must be taken into account for the regional distribution (see Jungbluth 2016: 40): Chinese companies also invest through their subsidiaries in Hong Kong or other countries abroad. The share

of Chinese investments that have Germany as their final target is therefore likely to be higher than recorded in the official national statistics.

This also applies to Chinese FDI stock in Germany. They totaled USD 7.8 billion in 2016, landing them in 4th place in the EU and 13th place worldwide. Only 0.6 percent of China's total FDI stock are therefore attributable to Germany (Figure 5).

According to Chinese statistics, Chinese investors are focusing on manufacturing, leasing and business service as well

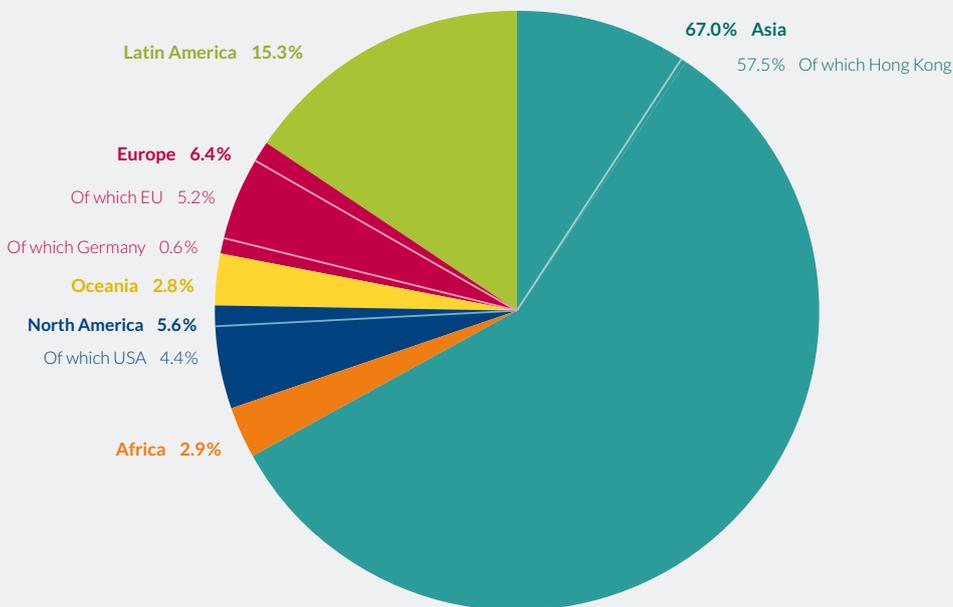
FIGURE 4: Regional distribution of Chinese FDI flows, 2016 (in percent)



Source: MOFCOM et al. 2017

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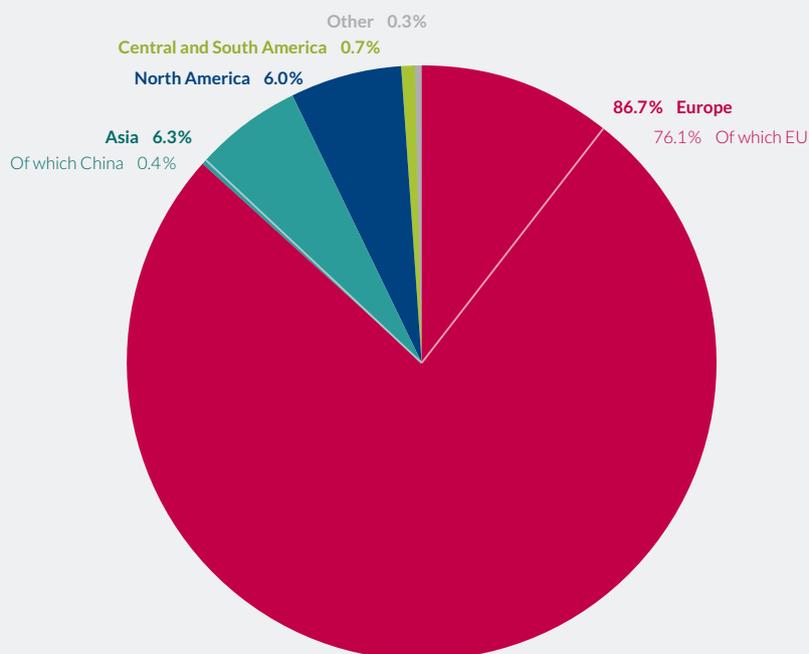
FIGURE 5: Regional distribution of Chinese FDI outward stock, 2016 (in percent)



Source: MOFCOM et al. 2017

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FIGURE 6: FDI stock in Germany by region of origin, 2016 (in percent)



Note: Based on primary and secondary FDI stock in Germany (consolidated)
Source: Deutsche Bundesbank 2018

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as scientific research and technical service (MOFCOM et al. 2017: 30).

The official statistics published by the Deutsche Bundesbank [German Federal Bank] confirm the from a macro-economic perspective relatively low quantity of Chinese direct investments in Germany: in 2016, Chinese companies held EUR 2.2 billion, only 0.4 percent of the direct investment stock in Germany (Figure 6).¹

Even if all the EUR 1.3 billion of Hong Kong FDI stock in Germany were attributed to companies from the People's Republic of China due to the "Hong Kong factor", the Chinese share of FDI stock would still only be 0.7 percent.

Japan continues to be the largest Asian investor in Germany with EUR 19.8 billion. This represents four percent of FDI stock in Germany. In contrast, German companies have invested some EUR 76 billion in China to date. This represents around seven percent of Germany's global FDI stock in 2016. A clear quantitative asymmetry can therefore still be seen in mutual investment relations.

Regardless of the data source used, Chinese FDI stock in Germany have increased significantly in recent years: Both the Deutsche Bundesbank and the Chinese MOFCOM assume that Chinese FDI stock in Germany almost doubled in just three years from 2013 to 2016.

In the course of this development, the M&A transactions that Chinese companies have made in German companies have also increased sharply. According to our research, there were at least 47 such M&A transactions in Germany in 2017 with at least a ten percent stake – M&A trans-

actions above this threshold are considered direct investments, with which the investor pursues the "objective of obtaining a lasting interest and control" according to the international standard definition (Jungbluth 2016: 37). For comparison: the consulting firm EY reports a total of 25 Chinese M&A transactions in Germany, i. e. roughly half, in 2013 (EY 2014: 5).²

However, the majority of Chinese investment projects in Germany continue to take the form of so-called greenfield investments and expansion investments. This means that Chinese companies establish their own sales companies, factories, research and development centers, etc. or expand existing company structures "on a greenfield". In this way, they create new assets, for example in the form of jobs, and contribute to tax revenue. According to preliminary figures from Germany Trade and Invest (GTAI), there were 147 Chinese greenfield and expansion projects in Germany in 2017, about three times more than M&A transactions (German Parliament [Bundestag], 7 March 2018: 3).

Although greenfield investments predominate in terms of the number of Chinese investment projects in Germany, most of them are under the radar. As described at the beginning, public attention is primarily focused on Chinese M&A transactions. This is connected with the fact that M&A transactions in companies involve the takeover of existing assets (technology, jobs, property and land, etc.), and the total investment is generally considered to be substantially higher than for greenfield investments (Jungbluth 2016: 27–28). This combination underpins the fear that Chinese investors, possibly politically subsidized, may take over German high-tech companies, leading to a systematic technological "sell-off" of German national interests.

1 The considerable differences between FDI stocks in German and Chinese national statistics have been observed for years and are heavily discussed. The possible reasons for this are: different surveying and reporting methods, different publication dates, etc. For more details, see the statistical explanatory notes in Jungbluth 2016: 37–40.

2 The information on Chinese investments in Germany discussed above is based on publicly available information and does not claim to be complete. For more details, see Jungbluth 2016: 40 and the table with the 175 Chinese investments analyzed here in the annex.

Beyond this sometimes controversial debate and the seemingly small quantity of Chinese FDI in Germany, it remains a fact that Germany has become an important target country for direct investments from China in recent years and will remain so in future. There are fundamentally two reasons for this: access to key technologies and know-how as well as access to the German and European markets.

On account of its industrial and corporate structure, Germany, whose own digitization initiative called Industry 4.0 was an important model for MIC 2025 (Petersen/Jungbluth 2018: 145), fits into both the internationalization strategies of Chinese companies and the Chinese government's industrial policy strategy "Made in China 2025". A key factor in the analysis of Chinese FDI in Germany is therefore less its quantity than its quality.

4 “Made in China 2025”: Industrial policy for the fourth industrial revolution

Through an active industrial policy, China aims to use the fourth industrial revolution (digitization) to become a global leader in the key industries of the future. Digitization affects almost all areas of the economy and life and thus changes the foundations of international competitiveness. Traditional competitive advantages, technologies and business models are becoming obsolete. New ones are being created at a speed that far exceeds the three preceding industrial revolutions (mechanization, automation, computerization) (for more details in this regard, see Schwab 2016). In the course of these global upheavals, China aims to shed its role as an original equipment manufacturer for Western companies, and become a leading technology and innovation location worldwide in the first half of the 21st century.

The strategy “Made in China 2025” (MIC 2025), announced by the Chinese government in May 2015, is intended to lay the foundation for this. It defines a clear goal: “[...] By the 100th anniversary of the founding of the New China, we want to build our country into an industrial powerhouse leading the development of the global industrial sector” (State Council, 8 May 2015). In order to achieve this, China wants to catch up with the industrialized countries by 2025, and overtake them by 2049. The top priorities are found in nine “strategic tasks and focal points”:

1. Increasing the innovative capacity of local industry
2. Deepening the integration of informatization and industrialization
3. Strengthening the industrial base
4. Improving product quality and developing own brands
5. Nationwide implementation of environmentally friendly production
6. Promoting development breakthrough in ten key areas
7. Promoting in-depth restructuring in the industrial sector
8. Actively developing service-oriented production and product-oriented service
9. Increasing the level of internationalization in the industrial sector

Task “6. Promoting development breakthrough in ten key areas” also lists the ten often cited key sectors in which China wants to become a global technology and innovation leader in future:

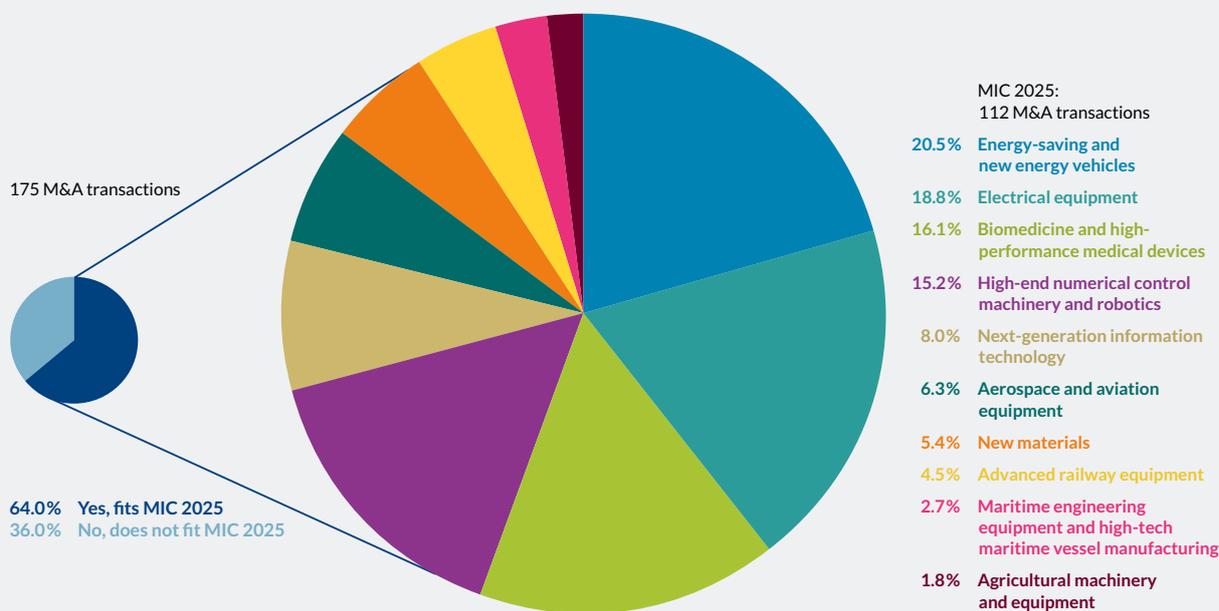
1. Next-generation information technology
2. High-end numerical control machinery and robotics
3. Aerospace and aviation equipment
4. Maritime engineering equipment and high-tech maritime vessel manufacturing
5. Advanced railway equipment
6. Energy-saving and new-energy vehicles
7. Electrical equipment
8. Agricultural machinery and equipment
9. New materials
10. Biomedicine and high-performance medical devices.

In the core areas central to these sectors, China, by 2025, is to substantially “expand its market share of its own intellectual property rights [...], significantly reduce its dependence on foreign countries [...] and [...] reach a leading international level” (State Council, 8 May 2015).

MIC 2025 also lays out under Task “9. Increasing level of internationalization in the industrial sector” that direct investments abroad should explicitly be part of the strategy in order to achieve these goals in the near future: “Companies should be supported in making acquisitions, investments in companies, founding start-ups and setting up research and development centers, testing facilities and global sales and service systems abroad” (ibid.).

In the following, we will therefore analyze the extent to which Chinese M&A transactions in Germany match the MIC 2025 sector catalogue. We will also discuss the sector distribution, the formal type of ownership of Chinese investors and the regional distribution of these M&A transactions within Germany.

FIGURE 7: Chinese M&A transactions in Germany fitting the 10 key sectors of MIC 2025, 2014-2017 (in percent)



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

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4.1 Chinese M&A transactions are predominantly in line with “Made in China 2025”

Our analysis covers 175 Chinese M&A transactions in Germany between 2014 and 2017 with a stake greater than ten percent. A total of 124 of them or 71 percent, according to our information, are majority-owned (investment of > 50 percent) by Chinese investors. A detailed list of all M&A transactions and graphs for the analysis of the individual years from 2014 to 2017 can be found in the annex.

The ten key sectors of MIC 2025 are clearly the focus of Chinese M&A transactions in Germany: The vast majority, namely 112 or 64 percent of the analyzed Chinese M&A transactions can be assigned to one of these sectors. At 74 percent, the share of the majority-owned M&A transactions is somewhat higher than the overall average. In MIC 2025 sectors, Chinese investors seem to be striving even more strongly for majority control of the acquired companies than in other sectors.

The majority of the 112 M&A transactions that match MIC 2025 (79 M&A transactions or 71 percent) are concentrated among four sectors (Figure 7):

- 1 Energy-saving and new-energy vehicles (23 M&A transactions)
- 2 Electrical equipment (21 M&A transactions)
- 3 Biomedicine and high-performance medical devices (18 M&A transactions)
- 4 High-end numerical control machinery and robotics (17 M&A transactions)

This is not surprising at first since these are also the areas in which Germany is economically and technologically strong and internationally successful. As a result, the machine tool sector and the automotive industry in particular attracted Chinese investors long before MIC 2025 was announced (for the years 2001–2013 see Emons 2013: 19–20; Jungbluth 2013: 13; Strack and Schwarzer 2014: 3; Wassner 2015: 5). However, two observations are interesting:

Firstly, the number of M&A transactions that can be allocated to the MIC 2025 sectors has increased significantly since the strategy was announced: it was over 70 percent for 2016 and 2017, whereas in the year MIC 2025 was announced and the year prior to that, it was only just over 50 percent.

Secondly, greater diversification in the ten key sectors can be seen from 2015 onwards. While Chinese M&A transactions in Germany concentrated on a total of six of these sectors in 2014, M&A transactions are found in almost all sectors in the following years. Particularly striking is the great interest of Chinese investors in the area of biomedicine and high-performance medical devices. This can only be observed from 2015 onwards, i.e. the year in which MIC 2025 was announced. Previously, this sector played basically no role (in this regard, also see Jungbluth 2016: 31).

Against the backdrop of the complex interplay between the state and companies in China,³ two explanations are conceivable here:

On the one hand, industrial policy strategies such as MIC 2025 generally create incentives for Chinese companies to invest in the politically desirable sectors, whether at home or abroad, through appropriate subsidy measures.

On the other hand, it can be assumed, in particular with FDI, that companies can expect easier implementation if their investment project fits into the strategy. This is because FDI from China is still subject to certain restrictions, some of which have been tightened again in the last two years due to greater capital controls (MERICS 2018). The approval procedure for foreign M&A transactions has been greatly liberalized and has now been largely converted into a registration system (Jungbluth 2016: 14–16). Nevertheless, FDI for Chinese companies involves a considerable amount of bureaucracy. Furthermore, access to foreign exchange is also regulated.

The Chinese government therefore has sufficient leverage to steer FDI from China in a politically desired direction – irrespective of the formal type of ownership of the companies.

³ For an in-depth discussion of China's political and economic system, see: Heilmann 2016: 220–222; Jungbluth 2015: 31–37.

4.2 Formal type of ownership: State-owned investors are in the minority

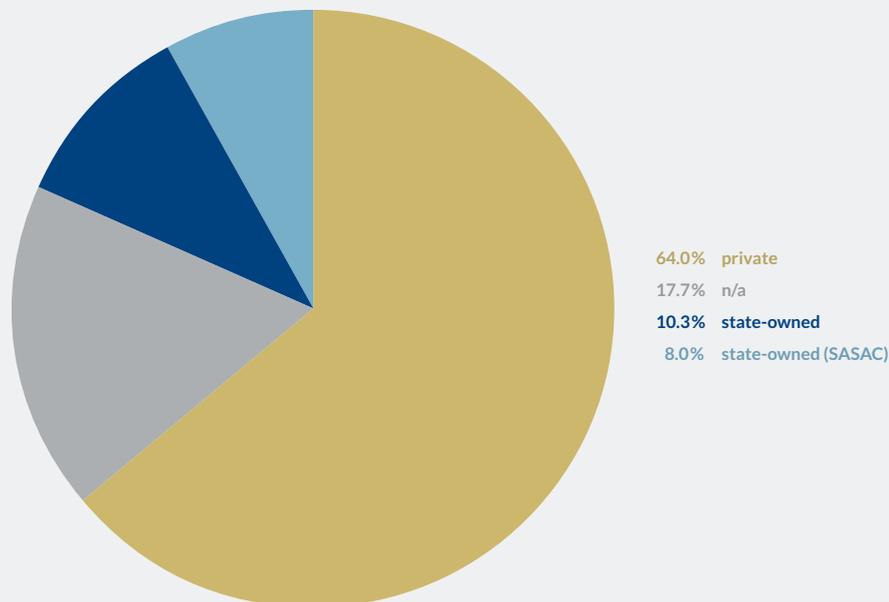
The previously mentioned ties between the state and companies in China mean that Chinese investors' formal form of ownership cannot fully answer the question of the much-discussed potential influence of the Chinese government. However, the analysis shows the investors that are (can be) at least formally under this influence. We distinguish between private and state-owned companies as well as companies that are directly controlled by the State owned Asset Supervision and Administration Commission (SASAC) and thus the central government in Beijing.

Almost two-thirds, and thus the overwhelming majority, of the 175 Chinese M&A transactions analyzed here were made by companies which are majority privately owned (> 50 percent) (Figure 8). 18 percent of the cases involve state-owned investors, with eight percentage points being attributable to SASAC companies.

However, if only the 112 M&A transactions that can be assigned to the ten MIC 2025 sectors are taken into account, the state's share is to some extent higher at around 22 percent. SASAC companies account for nine percentage points of this figure, which is also slightly higher than the overall average. This suggests greater political interest in these sectors. Nevertheless, state-owned investors are formally in a minority when it comes to Chinese M&A transactions in Germany.

Therefore, the great challenge for Germany consists in the forms of state influence that are not or only insufficiently reflected in the majority ownership type of Chinese investors. These range from mixed private-state forms of ownership (*hunhe suoyouzhi*) to party-state organizations in companies or opaque financing structures and numerous informal ties that constitute a black box for outsiders and

FIGURE 8: Chinese M&A transactions in Germany by type of ownership of investor, 2014–2017 (in percent)



SASAC = State-owned Assets Supervision and Administration Commission of the State Council of the People's Republic of China
 Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

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especially for foreigners (in this regard, see Wübbecke 2016: 51–54; Jungbluth 2016: 35–36).

4.3 Regional distribution: Baden-Württemberg and North Rhine-Westphalia in front

77 of the analyzed Chinese M&A transactions, i. e. 44 percent, are located in solely two German federal states: 39 in Baden-Württemberg and 38 in North Rhine-Westphalia (NRW). Of which 26 and 22 fit the MIC 2025 sectors. In both German states, the focus is particularly on energy-saving and new-energy vehicles, biomedicine and high-performance medical devices, and high-end numerical control machinery and robotics. Electrical equipment also plays a prominent role in Baden-Württemberg. Bavaria follows in third place with 26 Chinese M&A transactions. 18 of these can be assigned to MIC 2025, with a similar sector focus as in NRW and Baden-Württemberg (Figure 9).

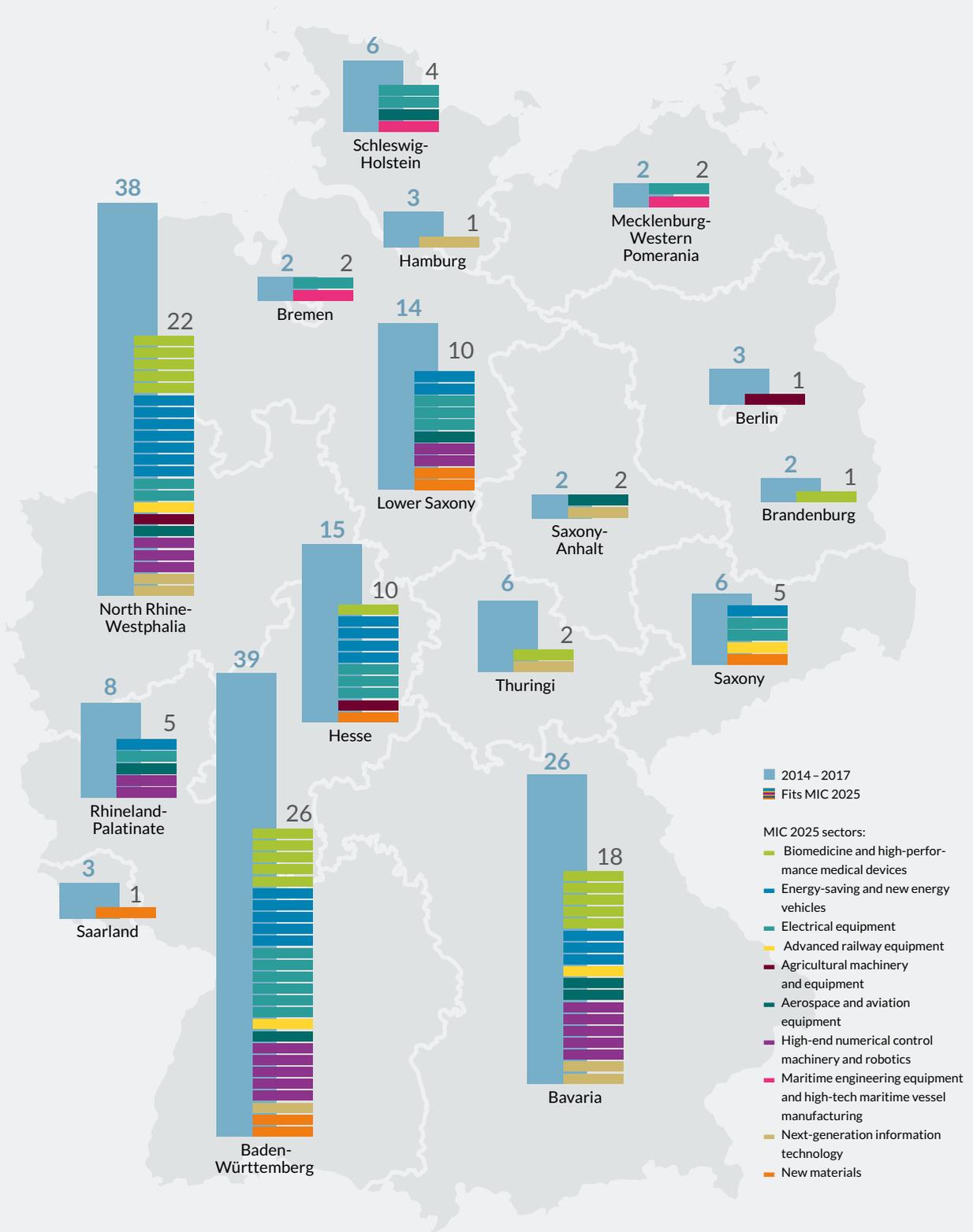
Baden-Württemberg, North Rhine-Westphalia and Bavaria are also the three federal states with the highest number of so-called “hidden champions” in Germany (Hermann 2007, cited according to Baden-Württemberg, without

year). These are medium-sized companies, often unknown to the public, which are world market leaders in their technological niches. This type of company has been a particular focus of Chinese M&A transactions in Germany for years (Emons 2013).

The three German states mentioned are also the states in which the most patents were applied for in 2017 (in comparison to other German states; German Patent Office 2018). Patent applications are not to be equated with innovative ability, but at least they demonstrate that research and development activities are a focal point in these locations – and that these states are apparently particularly attractive for Chinese M&A transactions. Christian Rusche (2017) also shows that there is a strong connection here: According to Rusche, Chinese investors are investing in German states “where the patent application intensity is high”. The focus of the MIC 2025 sectors on highly specialized technologies will probably ensure that Chinese companies will continue to be very interested in German companies.

Overall, the focus of Chinese investors is clearly on the West of the Republic: Solely 18 of the 175 M&A transactions (10.3 percent) went to the five new German states and

FIGURE 9: Chinese M&A transactions in Germany by federal state, 2014–2017



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

twelve of them were in MIC 2025 sectors. Most of them were in Saxony (6; MIC 2025 = 4) and Thuringia (6; MIC 2025 = 2). Possible reasons for this could be, among others, the differences in the economic structure and development, as well as access to technologies and skilled workers.

In general, the 16 German states – just like the economic location of Germany itself – offer foreign investors an open investment environment, irrespective of their country of origin. This is because FDI can have positive effects for the German states in the form of jobs, tax revenue and an increase in international ties. German states are also facing direct competition with each other in attracting FDI and pursue an active location policy through their investment promotion agencies.⁴ The main focus is on greenfield investments. However, foreign M&A transactions in companies are also generally seen as neutral to positive, if this is connected with maintaining a location. In future, however, dealing with potential state influence on such M&A transactions could also become a major issue for the German states, especially in connection with unfair competitive conditions for their domestic companies in China or in Germany vis-à-vis state-financed Chinese investors.

4 See, for example, the websites of the following investment promotion agencies: Baden-Württemberg: <http://www.bw-invest.de>; Hamburg: <http://www.hamburg-invest.com>; North Rhine-Westphalia: <https://www.nrwinvest.com/de/startseite>; Saxony: <https://standort-sachsen.de/de/investoren>

5 Outlook: Fair framework for mutual investments necessary

Germany is an attractive location for foreign direct investments due to its business and economic structure. Regardless of investors' country of origin, it offers an open investment environment and generally welcomes FDI. In recent years, however, the rapidly increasing number of M&A transactions from China has led to a controversial discussion about Germany's openness as a business location. Primarily, there is fear of a state-orchestrated transfer of technology to China.

In fact, a clear focus of Chinese M&A transactions in Germany is on the ten key sectors defined in "Made in China 2025" (MIC 2025). MIC 2025 is the main industrial policy strategy aimed at making China the global leader of the fourth industrial revolution. M&A transactions abroad are explicitly one of the instruments to implement MIC 2025. 64 percent or 112 of the 175 analyzed Chinese M&A transactions with a stake of at least ten percent in German companies between 2014 and 2017 match one of the ten key sectors in which China aims to assume global technology leadership with the help of MIC 2025. The focus is on specialized segments of the automotive and machine tools, in which Germany in part has significant technological competitive advantages. Even before the introduction of MIC 2025 in 2015, therefore, these sectors were already a focus of interest for Chinese investors in Germany. Since the introduction of MIC 2025, however, the importance of MIC 2025 key sectors, which had previously played no role or only a minor role in Chinese M&A transactions, has also increased. This is particularly evident in the MIC 2025 sector of "biomedicine and high-performance medical devices".

Formally, there is no concentration of state-owned companies: state-owned investors make up 18 percent of the Chinese M&A transactions analyzed and are therefore a minority. If we only take into account the M&A transactions that can be assigned to the MIC 2025 sectors, however, their share rises to around 22 percent – a possible

indication of state-owned stakeholders' greater interest in acquiring know-how abroad for the implementation of MIC 2025. Moreover, mixed types of ownership with state and private ownership play an important role in China. Even in the case of companies that are majority privately owned formally, the state may exercise influence.

Furthermore, the formal type of ownership of Chinese companies does not show the full picture of potential state influence due to the complex interplay between the state and companies in China. The informal ties through networks, party structures and other channels are not reflected in this. These forms of state influence represent a particularly great challenge for Germany, as it is difficult in such cases to find a solution that is consistent with international principles such as non-discrimination. Moreover, Chinese and other foreign investors should not gain the impression that they are generally no longer welcome in Germany.

Germany should therefore concentrate on three areas when dealing with Chinese FDI:

Firstly, it should maintain its basic culture of openness for foreign investors, regardless of their country of origin. FDI exerts positive effects, for example in the form of job creation, and contributes to Germany's international integration.

Secondly, political support for this openness makes sense in order to prevent a naive sell-off under unfair competitive conditions. The implementation of the proposal to lower the stake threshold for screening foreign M&A transactions has been discussed in public since February 2018 and is a possible measure (Handelsblatt, 14 February 2018). The current threshold is 25 percent. However, ten percent would be conceivable, since a direct investment begins here, with which the investor expects to gain a controlling interest in a company, according to the international standard definition. Some EU member states currently even screen for-

foreign takeovers already starting from a stake of five percent (European Commission 2017: 3). In this respect, Germany is in the middle when compared to other EU countries. In addition, a common European framework for analyzing and screening of foreign M&A transactions from third countries that includes dealing with state-owned and state-affiliated investors would be useful. At present, only twelve of the 28 Member States have such a screening mechanism in place.

Thirdly, Germany and the EU should work resolutely and self-confidently on fair framework conditions in mutual investment relations with China, i. e. for the establishment of the much-cited reciprocity. In a globalized world, China is at least as economically dependent on Germany as Germany is on China. The conclusion of the EU-China Investment Treaty that has been under negotiation since 2014 is the first measure to be mentioned here. This could be an important step towards reciprocity.

In times of increasing global protectionism, both China and the EU are more dependent than ever on reliable partnerships. It should therefore be in both sides' interests to actively promote the maintenance of an international rule-based economic order.

Annex

Chinese M & A transactions between 2014 and 2017

Chinese M & A transactions in Germany between 2014 and 2017

Target company	Sector	Chinese investor	Majority ownership type of investor	Percentage (per cent)	Transaction value (EUR million)	MIC 2025 key sector
2017: 47 transactions						
Biotest	Pharmaceuticals, biotechnology and health	Creat Group	Private	89.9	1,300.0	Biomedicine and high-performance medical devices
Curasan	Pharmaceuticals, biotechnology and health	Chindex / Fosun International	Private	25.0	2.3	Biomedicine and high-performance medical devices
Elexxion	Pharmaceuticals, biotechnology and health	Shanghai Tianying Medical Instruments	n/a	55.0	n/a	Biomedicine and high-performance medical devices
Metrax	Pharmaceuticals, biotechnology and health	Jiangsu Yuyue Medical Equipment & Supply	Private	100.0	n/a	Biomedicine and high-performance medical devices
Romaco Pharmatechnik	Pharmaceuticals, biotechnology and health	Truking Technology	Private	75.1	150.0	Biomedicine and high-performance medical devices
Bosch Mahle Turbo Systems	Automotive	FountainVest Partners	Private	100.0	n/a	Energy-saving and new-energy vehicles
CP Tech	Automotive	Nedschroef / Shanghai Prime Machinery	State-owned	90	5.3	Energy-saving and new-energy vehicles
Finoba Automotive	Automotive	China National Machinery Industry Corp (Sinomach)	State (SASAC)	100.0	n/a	Energy-saving and new-energy vehicles
Koller Gruppe	Automotive	Nanjing Nangang Iron & Steel United / Fosun International	Private	Majority stake	n/a	Energy-saving and new-energy vehicles
Robert Bosch Starter Motors Generators Holding (SEG Automotive Germany)	Automotive	Zhengzhou Coal Mining Machinery Group / China Renaissance Capital Investment (CRCI)	n/a	100.0	545.0	Energy-saving and new-energy vehicles
Schürholz Gruppe	Automotive	Jiangsu Olive Sensors High-Tech	Private	32.0 ^(a)	6.0 ^(b)	Energy-saving and new-energy vehicles
TEG Technische Entwicklungsgesellschaft	Automotive	Punch Power Train / Yinyi Investment Holding Group	Private	100.0	n/a	Energy-saving and new-energy vehicles
Trimet Automotive Holding	Automotive	Shandong Binzhou Bohai Piston	State-owned	75.0	62.0	Energy-saving and new-energy vehicles
VEM Holding	Automotive	SEC Holding	Private	Majority stake	n/a	Energy-saving and new-energy vehicles
Duisburg Tubes Production	Industry and machine tools	Taihai Manoir Nuclear Equipment	n/a	100.0	n/a	Energy systems
Gelpag Advanced Technology	Energy and environmental technology	Motic (Xiamen) Electric Group	Private	100.0	0.4	Energy systems
Manz CIGS Technology	Energy and environmental technology	Shanghai Electric Group / Shenhua Group	State-owned	100.0	50.0	Energy systems
mdexx	Energy and environmental technology	Zhuzhou Lince Group	Private	100.0	n/a	Energy systems
Sea & Sun Technology	Energy and environmental technology	Zhonghuan TIG Meteorological Instruments	State-owned	100.0	n/a	Energy systems
WKS Group	Energy and environmental technology	China Aerospace Science and Industry Corporation	State (SASAC)	20.0	n/a	Energy systems

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Target company	Sector	Chinese investor	Majority ownership type of investor	Percentage (per cent)	Transaction value (EUR million)	MIC 2025 key sector
SMA Railway Technology	Electronics	Beijing Dinghan Technology	Private	100.0	23.0	Advanced railway equipment
Aluminiumwerk Unna	Industry and machine tools	China Zhongwang Holding	Private	99.7	75.0 ^(b)	Aerospace and aviation equipment
Flughafen Frankfurt-Hahn	Transport and logistics	HNA Group	Private	82.5	15.0	Aerospace and aviation equipment
Lilium	Aerospace	Tencent Holdings u. a.	Private	n/a	n/a	Aerospace and aviation equipment
SBM Development	Aerospace	Anhui Yingliu Electromechanical	Private	100.0	0.1	Aerospace and aviation equipment
M.A.i	Industry and machine tools	Estun Automation	Private	50.0	8.9	High-end numerical control machinery and robotics
Maschinenfabrik Lauffer	Industry and machine tools	Hefei Metalforming Intelligent Manufacturing	Private	100.0	24.0	High-end numerical control machinery and robotics
PA Power Automation	Industry and machine tools	Techmation (Taipei / Taiwan) / Ningbo Techmation	Private	19.9	3.3	High-end numerical control machinery and robotics
Benjamin	Technology, media, telecommunications (TMT)	Henderson Group (Hong Kong)	Private	25.0	n/a	New generation of information technologies
in-tech	Technology, media, telecommunications (TMT)	Beijing BDStar Navigation	n/a	57.1	80.0	New generation of information technologies
ista International	Energy and environmental technology	Cheung Kong Property Holdings / Cheung Kong Infrastructure Holdings	Private	100.0	5,776.0 ^(b)	New generation of information technologies
ZF Friedrichshafen (Global Body Control Systems and Radio Frequency Electronics divisions)	Automotive	Luxshare Precision Industry	Private	n/a	n/a	New generation of information technologies
Compositence	Industry and machine tools	Qingdao Gon Technology	Private	Majority stake	n/a	New materials
Cotesa ^(c)	Aerospace	Advanced Technology & Materials / China Iron & Steel Research Institute	State (SASAC)	Majority stake	100.0 ^(b)	New materials
Acura Klinken Baden-Baden	Pharmaceuticals, biotechnology and health	Sino Great Wall	Private	Majority stake	n/a	n/a
Bode Belting	Industry and machine tools	AA Industrial Belting (Shanghai)	Private	49.0	1.5	n/a
Ehrfeld Mikrotechnik BTS	Chemical industry	Shaoxing Eastlake High-Tech	n/a	100.0	n/a	n/a
EKOF Mining & Water Solution ^(d)	Chemical industry	REFD HK	Private	100.0	n/a	n/a
Feuer Powertrain	Automotive	Tianjin Haowu Electro-mechanical Automobile Trading	State-owned	50.0	n/a	n/a
Grammer	Automotive	Ningbo Jifeng Auto Parts	Private	25.5	n/a	n/a
Reifen Schäfer	Automotive	China National Chemical Corporation (ChemChina)	State-owned (SASAC)	n/a	n/a	n/a
RUSI Cosmetic	Consumer goods	HCP Holdings	n/a	100.0	n/a	n/a
SAM-Gruppe	Consumer goods	Kinen Sanitary Ware Industrial	n/a	100.0	n/a	n/a
SieMatic Möbelwerke	Consumer goods	Nison International Investment Management	n/a	Majority stake	n/a	n/a

Target company	Sector	Chinese investor	Majority ownership type of investor	Percentage (per cent)	Transaction value (EUR million)	MIC 2025 key sector
Vermes Microdispensing	Industry and machine tools	Chaozhou Three-Circle Group	n/a	100.0	n/a	n/a
Deutsche Bank	Finance	HNA Group	Private	9.9	3,310.0	n/a
NSM Packtec	Industry and machine tools	Ningbo Lehui International Engineering Equipment	Private	100.0	4.0	n/a
2016: 56 transactions						
Axiogenesis	Pharmaceuticals, biotechnology and health	Sino-German High-Tech Fund / Donghai Securities	Private	10.0	n/a	Biomedicine and high-performance medical devices
Creative Balloons	Pharmaceuticals, biotechnology and health	Well Lead Medical	n/a	25.0	3.8	Biomedicine and high-performance medical devices
Crelux	Pharmaceuticals, biotechnology and health	WuXi AppTec	Private	100.0	n/a	Biomedicine and high-performance medical devices
Fiagon	Pharmaceuticals, biotechnology and health	Sino-German High-Tech Fund / Donghai Securities	Private	n/a	n/a	Biomedicine and high-performance medical devices
Gesellschaft für analytische Sensorsysteme	Pharmaceuticals, biotechnology and health	Jinan Hanon Instruments	n/a	60.0	n/a	Biomedicine and high-performance medical devices
InflaRx	Pharmaceuticals, biotechnology and health	Staidson (Beijing) Biopharmaceuticals	Private	16.3	n/a	Biomedicine and high-performance medical devices
Transcatheter Technologies	Pharmaceuticals, biotechnology and health	Venus MedTech (HangZhou)	n/a	n/a	n/a	Biomedicine and high-performance medical devices
Carcoustics International	Automotive	Liaoning Dare Industrial	Private	100.0	200.0	Energy-saving and new-energy vehicles
Fuba Automotive	Electronics	North Lingyun Industrial Group	State-owned	100.0	n/a	Energy-saving and new-energy vehicles
LIMO Holding	Electronics	Focuslight Technologies Inc.	n/a	100.0	30.0	Energy-saving and new-energy vehicles
Metalsa (formerly: ISE) Automotive	Automotive	SinoMach	State-owned (SASAC)	100.0	n/a	Energy-saving and new-energy vehicles
Sideo Vogt/ Hermann Vogt	Automotive	Shenzhen Kaizhong Precision Technology	Private	100.0	n/a	Energy-saving and new-energy vehicles
Technisat Digital (automotive division)	Automotive	Joyson Electronics	Private	100.0	236.0	Energy-saving and new-energy vehicles
TriStone Flowtech S.A.S.	Automotive	Zhongding Sealing Parts	Private	100.0	170.0	Energy-saving and new-energy vehicles
Bilfinger Water Technology	Energy and environmental technology	Chengdu Techcent Environment Group	Private	100.0	223.0	Energy systems
EEW Energy	Energy and environmental technology	Beijing Enterprises Holding	State-owned	100.0	1,594.0	Energy systems
High Lux/Weier Antriebe und Energietechnik	Industry and machine tool	Jiangxi Special Electric Motor	Private	n/a	2.8	Energy systems
Manz	Industry and mechanical engineering	Shanghai Electric Group	State-owned	19.7	53.0 ^(b)	Energy systems
RMG Messtechnik	Energy and environmental technology	Dalian Energas Gas-System	Private	100.0	n/a	Energy systems

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Target company	Sector	Chinese investor	Majority ownership type of investor	Percentage (per cent)	Transaction value (EUR million)	MIC 2025 key sector
WindMW	Energy and environmental technology	China Three Gorges	State-owned (SASAC)	80.0	1,700.0	Energy systems
Windpark Butendiek	Energy and environmental technology	CITIC / Itochu (Japan)	n/a	22.5	n/a	Energy systems
Bochumer Verein Verkehrstechnik (BVV)	Industry and machine tool	Full Hill Enterprises	Private	100.0	> 100.0 ^(b)	Advanced railway equipment
CIDEON Engineering	Industry and machine tool	China Railway Construction	State-owned (SASAC)	100.0	n/a	Advanced railway equipment
Rail Power Systems GmbH	Energy and environmental technology	Tianjin Keyvia Electric Co., Ltd.	Private	100.0	n/a	Advanced railway equipment
Compo Consumer	Consumer goods	Kingenta	Private	100.0	116.0 – 132.2 ^(b)	Agricultural machinery and equipment
Broetje-Automation	Aerospace	Shanghai Electric Group	State-owned	100.0	174.0	Aerospace and aviation equipment
Göbler-Hirthmotoren	Industry and machine tool	DEA General Aviation Holding	Private	100.0	4.5 – 5.0 ^(b)	Aerospace and aviation equipment
AMK	Automotive	Zhongding Sealing Parts	Private	100.0	130.0 – 147.6 ^(b)	High-end numerical control machinery and robotics
ebu Umformtechnik	Industry and machine tool	Xuzhou Metalforming Machine Group	Private	100.0	n/a	High-end numerical control machinery and robotics
Kleinknecht	Industry and machine tool	China Everbright via BEPCO	State-owned ^(e)	100.0	n/a	High-end numerical control machinery and robotics
KraussMaffei	Industry and machine tool	ChemChina	State-owned (SASAC)	100.0	1,012.0	High-end numerical control machinery and robotics
Kuka	Industry and machine tool	Midea	Private	94.5 ^(f)	4,663.0 ^(f)	High-end numerical control machinery and robotics
Wolf Holding	Industry and machine tool	Shanghai Qishi Investment & Assets Management / Hunan Boyun New Materials	n/a	100.0	n/a	High-end numerical control machinery and robotics
Nordic Yards Shipyards	Industry and machine tool	Genting Hongkong	Private	n/a	250.0	Maritime engineering equipment and high-tech maritime vessel manufacturing
Rockson Automation	Industry and machine tool	Beijing Highlander Digital Technology	Private	51.0	2.1	Maritime engineering equipment and high-tech maritime vessel manufacturing
hetras Deutschland	Technology, media, telecommunications (TMT)	Beijing Shiji Information Technology	Private	100.0	n/a	New generation of information technologies
METRIC mobility solutions	Technology, media, telecommunications (TMT)	Dutech Holdings	n/a	n/a	3.0	New generation of information technologies
Smaato	Technology, media, telecommunications (TMT)	Spearhead	Private	100.0	142.0	New generation of information technologies
ItN Nanovation	Energy and environmental technology	Shanghai SafBon Investment	n/a	67.7	4.0	New materials
Scholz Holding	Energy and environmental technology	Chiho-Tiande Group	Private	n/a	n/a	New materials
ALBA SE (China business and services segment)	Energy and environmental technology	Chengdu Techcent Environment	Private	each 60.0	300.0	n/a

Target company	Sector	Chinese investor	Majority ownership type of investor	Percentage (per cent)	Transaction value (EUR million)	MIC 2025 key sector
Ayanda A/S (Softgel division / Ayanda GmbH & Co. KG)	Pharmaceuticals, biotechnology and health	Sirio Pharma	Private	n/a	n/a	n/a
Bameta	Industry and machine tool	GEM	n/a	30.0	5.2	n/a
Bigpoint	Technology, media, telecommunications (TMT)	Youzu Interactive	Private	100.0	80.0	n/a
Dürr (cleaning division)	Industry and machine tool	Shenyang Blue Silver Group	Private	85.0	120.0	n/a
Elgato Systems (Eye TV division)	Technology, media, telecommunications (TMT)	Geniatech Inc.	n/a	n/a	n/a	n/a
EuRec Environmental Technology	Energy and environmental technology	Jiangsu WELLE Environmental	Private	70.0	n/a	n/a
GLP German Light Products ^(g)	Electronics	Fujian Ji'aipu Lightning Technology	n/a	100.0	9.0	n/a
Mr von Gimborn	Consumer goods	Hillhouse Capital Management	Private	100.0	n/a	n/a
HPTec ^(h)	Industry and machine tool	China Tungsten and Hightech Material	n/a	100.0	n/a	n/a
Industrial Acoustics (German subsidiary of a US company)	Industry and machine tool	Beijing Greentec Acoustic	Private	n/a	n/a	n/a
Osram (light saving division) / Ledvance	Electronics	IDG Capital Partners / MLS / Yiwu State-Owned Assets Operation Center	n/a	100.0	400.0	n/a
Schäfer HPS (high pressure technology division)	Industry and machine tool	Beijing Huahai Machinery Corporation	Private	n/a	n/a	n/a
Schimmel	Consumer goods	Guangzhou Pearl River Piano	State-owned	90.0	24.0	n/a
Skil Elektrowerkzeuge (Robert Bosch GmbH)	Consumer goods	Chervon Holdings	Private	n/a	n/a	n/a
WITA Wilhelm Taake	Industry and machine tool	Shimge Pump Industry Group	Private	100.0	9.0	n/a

2015: 37 transactions

Bendalis	Pharmaceuticals, biotechnology and health	Hainan Shuangcheng Pharma	Private	74.9	29.0	Biomedicine and high-performance medical devices
Cardionovum	Pharmaceuticals, biotechnology and health	Grand Pharma & Healthcare / Shanghai Muyi Investment	Private	73.0	67.8	Biomedicine and high-performance medical devices
IMD Natural Solutions GmbH	Pharmaceuticals, biotechnology and health	Zhejiang Hisun Pharmaceutical	State-owned	21.0	4.0	Biomedicine and high-performance medical devices
KTB Tumorforschungsgesellschaft	Pharmaceuticals, biotechnology and health	China Equity Group	Private	100.0	n/a	Biomedicine and high-performance medical devices
Lyomark Pharma	Pharmaceuticals, biotechnology and health	Hainan Shuangcheng Pharma	Private	74.9	10.0	Biomedicine and high-performance medical devices
Medisana	Pharmaceuticals, biotechnology and health	Xiamen Comfort Science & Technology Group	Private	n/a	26.2	Biomedicine and high-performance medical devices
EFA-S	Automotiv	Beijing Zhonghuan Investment Management	n/a	75.0	n/a	Energy-saving and new-energy vehicles

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Target company	Sector	Chinese investor	Majority ownership type of investor	Percentage (per cent)	Transaction value (EUR million)	MIC 2025 key sector
Waldaschaff Automotive	Automotiv	North Lingyun Industrial Group	State-owned	100.0	7.0	Energy-saving and new-energy vehicles
Apt Hiller	Industry and machine tools	Sedant Group	Private	75.0	n/a	Energy systems
Soitec SA (Freiburg production plant)	Energy and environmental technology	Suncore Photovoltaics / Fujian San'an Optoelectronics	Private	n/a	n/a	Energy systems
Krauth Technology	Industry and machine tools	Dutech Holdings / Tri Star Holding	n/a	n/a	n/a	Advanced railway equipment
HAWE Inline Hydraulik	Industry and machine tools	Jiangsu Hengli High-pressure Oil Cylinder	Private	100.0	n/a	Agricultural machinery and equipment
Xtremeair	Aerospace	DEA General Aviation Holding	Private	100.0	3.6	Aerospace and aviation equipment
Lloyd Werft Bremerhaven / Lloyd Investitions- und Verwaltungsgesellschaft	Transport and logistics	Genting Hongkong	Private	70.0 / 50.0	18.0	Maritime engineering equipment and high-tech maritime vessel manufacturing
WEGU Holding	Automotiv	Zhongding Sealing Parts	Private	100.0	95.0	New materials
KSL Kuttler Automation Systems ⁽ⁱ⁾	Industry and machine tools	Suzhou Fountain Group	n/a	100.0	n/a	High-end numerical control machinery and robotics
OHE Mining Technology	Industry and machine tools	Beijing Huahai Machinery Corporation	Private	100.0	n/a	High-end numerical control machinery and robotics
Stoll	Industry and machine tools	SGSB Group	Private	26.0	28.5 - 109.6 ^(b)	High-end numerical control machinery and robotics
Whitesell Germany	Automotive	Nedschroef B. V. / Shanghai Prime Machinery	State-owned	n/a	n/a	High-end numerical control machinery and robotics
Baden Baden Cosmetics Group	Consumer goods	DY Affluent Fund Management	n/a	100.0	n/a	n/a
Beltco Systems	Industry and machine tools	Shanghai Yongli Belting	Private	45.0	0.5	n/a
Berkenhoff	Industry and machine tools	Powerway	Private	100.0	n/a	n/a
Carl Mertens International	Consumer goods	Sichuan Liuhe Forging	Private	100.0	n/a	n/a
Compo Expert	Chemical industry	Xio Group (London / Shanghai / Hong Kong)	Private	100.0	n/a	n/a
Corsina Europe	Textiles and clothing	Hop Lun (Hong Kong)	Private	100.0	n/a	n/a
Hauck & Aufhäuser Privatbankiers	Finance	Fosun International	Private	80.0	210.0 - 262.5 ^(b)	n/a
HG Sales	Textiles and clothing	Royal Spirit (Hong Kong)	n/a	n/a	n/a	n/a
Jobspotting	Technology, media, telecommunications (TMT)	Horizons Ventures (Hong Kong)	Private	n/a	0.5	n/a
MBVG (subsidiary of Ostdeutschland Daimler AG)	Automotiv	Lei Shing Hong (Hong Kong)	Private	n/a	n/a	n/a
Nordic Hotels	Hotel and gastronomy	Louvre Hotels (Jin Jing International)	State-owned	n/a	n/a	n/a
Quin	Automotiv	Joyson Electronics	Private	75.0	90.0	n/a
Rheintal Klinik	Pharmaceuticals, biotechnology and health	Huapont Life Sciences	Private	100.0	6.0	n/a
Triumph (Dorina)	Textiles and clothing	Hop Lun (Hong Kong)	Private	n/a	n/a	n/a
HAT Hauser Trucks	Transport and logistics	TIP Trailer Services Germany / HNA Group	Private	100.0	n/a	n/a

Target company	Sector	Chinese investor	Majority ownership type of investor	Percentage (per cent)	Transaction value (EUR million)	MIC 2025 key sector
Lamberet Deutschland	Automotiv	AVIC / Xinfai Group	State-owned (SASAC)	100.0	n/a	n/a
Metz Werke	Electronics	Skyworth Holdings	Private	100.0	n/a	n/a
Vincenz Wiederholt	Industry and machine tools	Zhongding Sealing Parts	Private	100.0	n/a	n/a
2014: 35 transactions						
Alterprodia	Automotive	Ningbo Huaxiang Electronic	Private	75.0	0.9	Energy-saving and new-energy vehicles
Hilite International (part of hydraulics division of Siemens)	Automotive	AVIC	State-owned (SASAC)	n/a	473.0	Energy-saving and new-energy vehicles
KACO	Automotive	Zhongding Sealing Parts	Private	80.0	64.0	Energy-saving and new-energy vehicles
Kokinetics	Automotive	AVIC	State-owned (SASAC)	100.0	n/a	Energy-saving and new-energy vehicles
KS Aluminium-Technologie	Automotive	Huayu Automotive Systems / SAIC	State-owned	n/a	n/a	Energy-saving and new-energy vehicles
Avancis	Energy and environmental technology	China National Building Group (CNBM)	State-owned (SASAC)	100.0	n/a	Energy systems
S.A.G. Solarstrom	Energy and environmental technology	Shunfeng Photovoltaik International	Private	100.0	65.0 – 153.0 ^(b)	Energy systems
SGL Rotec	Energy and environmental technology	Beijing Better Life	Private	100.0	n/a	Energy systems
Solutronic	Energy and environmental technology	Shanghai ChuRui Energy Technology	Private	100.0	n/a	Energy systems
Sunways (solar inverter and BIPV division) ⁽ⁱ⁾	Energy and environmental technology	Shunfeng International Clean Energy	Private	n/a	n/a	Energy systems
TLT-Turbo (part of ventilators division of Siemens)	Industry and machine tools	Power Construction Corporation of China	State-owned (SASAC)	100.0	n/a	Energy systems
Lübeck Airport	Transport and logistics	Puren Group	Private	100.0	n/a	Aerospace systems
Falcom Wireless Communications	Technology, media, telecommunications (TMT)	Maestro Wireless Solutions Ltd (Hong Kong)	Private	n/a	n/a	New generation of information technologies
Renesas Electronics Europe (Display division)	Electronics	Tianma Microelectronics	n/a	100.0	n/a	New generation of information technologies
Boge Elastmetall	Automotive	Zhuzhou Times New Material Technology	n/a	100.0	315.0	New materials
Deutsche Mechatronics	Industry and machine tools	Tri Star Holding	n/a	54.5	n/a	High-end numerical control machinery and robotics
Heidelberger Druck (Post-press Packaging division)	Industry and machine tools	Masterwork Machinery	Private	100.0	17.0	High-end numerical control machinery and robotics
IMA Automation Amberg	Industry and machine tools	Joyson Electronics	Private	100.0	20.0	High-end numerical control machinery and robotics
Künkel-Wagner Prozesstechnologie	Industry and machine tools	QME Qingdao Machinery Industry	State-owned	100.0	n/a	High-end numerical control machinery and robotics
BHF Bank	Finance	Fosun International	Private	19.2	98.5	n/a
Columbus Holding / Cybex	Consumer goods	Goodbaby International Holding (Hong Kong)	Private	100.0	70.7	n/a

Target company	Sector	Chinese investor	Majority ownership type of investor	Percentage (per cent)	Transaction value (EUR million)	MIC 2025 key sector
Koki Techni Transmission Systems	Automotive	AVIC	State-owned (SASAC)	100.0	n/a	n/a
M-Tec Mathis Technik	Industry and machine tools	Zoomlion Heavy Industry	State-owned	n/a	41.0	n/a
miacom diagnostics	Pharmaceuticals, biotechnology and health	Fosun International / Shanghai Fosun Pharmaceutical	Private	37.0	n/a	n/a
Peine	Textiles and clothing	Shandong Ruyi Sciences & Technology	Private	51.0	n/a	n/a
Penta Hotel Holdings	Hotel and gastronomy	New World China Land (Hong Kong)	Private	100.0	13.5	n/a
Russ & Janot	Automotive	Lei Shing Hong (Hong Kong)	Private	100.0	n/a	n/a
Schumag	Industry and machine tools	Meibah International	Private	54.6	2.8	n/a
Selig & Böttcher	Industry and machine tools	TK Mold	Private	100.0	n/a	n/a
Tom Tailor Holding	Textiles and clothing	Fosun International	Private	23.2	87.5	n/a
WACO	Industry and machine tools	Jiangsu Hengli Highpressure Oil Cylinder	Private	51.0	0.3	n/a
Weingut Diehl-Blees	Agriculture	Jiangsu GPRO Group	Private	100.0	n/a	n/a
Wilbert Turmkrane	Industry and machine tools	Nanyang Guoyu Seal Development	n/a	100.0	n/a	n/a
Zenith Maschinenfabrik	Industry and machine tools	Fujian Quangong Machinery	Private	100.0	n/a	n/a
Ziegler	Automotive	China Fire Safety Enterprise Group	Private	40.0	56.0 – 140.0 ^(b)	n/a

(a) In each case in three companies of the Schürholz Group.

(b) Estimate taken from the sources used or indication of different transaction value in various sources.

(c) The investment in Cotesa was agreed in 2017. According to the involved law firm Orrick, however, it was the first Chinese investment in a German company to be reviewed on the basis of the amendment to the German Foreign Trade Act and was only approved in April 2018 by the German Federal Ministry for Economic Affairs and Energy (Orrick, 27 April 2018).

(d) EKOF Mining and Water Solution has been owned by Chinese investors since 2013.

(e) The investment was made indirectly through the China Investment Corporation via Central Huijin Investment.

(f) In 2016, the Chinese investor increased its stake from 5.43 to 94.5 percent. The reported transaction value refers to the investment as a whole.

(g) GLP German Light Products was already owned by Chinese investors before.

(h) HPTec was already owned by Chinese investors before.

(i) KSL Kuttler Automation Systems has been owned by Chinese investors since 2008.

(j) Sunways has been owned by Chinese investors since 2012

Explanatory notes on the dataset used for Chinese M&A transactions in Germany:

The dataset contains a total of 175 Chinese M&A transactions in Germany between 2014 and 2017, which could be verified by means of publicly available information such as company announcements, industry reports or press releases. It is based on a dataset that was already used in the study *Challenge and Opportunity. Chinese Direct Investments in Germany* by the Bertelsmann Stiftung in 2016 and included 99 Chinese investments in Germany (see Jungbluth 2016: 8–10, 40).

The dataset was updated with the author's own research for this study. In addition, M&A transactions with stakes of ten percent or more were systematically recorded. According to the international standard definition, a direct investment above this level is assumed to have a long-term motivation and is usually combined with the investor's expectation to gain a controlling interest in the company (UNCTAD 2016: 3; 79). Exception: The HNA Group's investment in Deutsche Bank is 9.9 percent and thus slightly below the ten percent threshold. However, it is so close to this value that it has been taken into account here.

If available, the dataset provides information on the German target company, the percentage of the Chinese investment and the transaction value. Where only estimates of the transaction value or goodwill were available in the sources used, they were adopted and identified with (b).

Wherever possible, the type of ownership was provided for Chinese investors. A distinction is made between private and state-owned companies. This information was provided in those cases where it was identified that a majority of the shares (> 50 percent) were privately- or state-owned. This can be seen in the annual reports of publicly listed companies, some of which are only available in Chinese. Chinese privately owned companies sometimes describe themselves as such on their corporate websites (*minying qiye*). In addition, the All-China Federation of Industry and Commerce (ACFIC) publishes the "China Top 500 Private Enterprises" every year (see, for example, ACFIC, 25 August 2016). In addition, there are special awards in China for privately owned companies and private entrepreneurs. This publicly available information in many cases helps to identify the type of ownership of Chinese investors.

Companies that are controlled by the State-owned Asset Supervision and Administration Commission (SASAC) and

thus directly by the central government in Beijing, i.e. the so-called *Yangqi* (for more details in this regard, see: Jungbluth 2016: 40) are a separate category. At the present time, there are 97 companies on a list available at the SASAC website (SASAC, 29 December 2017).

The entry n.d. (no data) in regard to the form of ownership means that either no information is available on the type of ownership or both state-owned and private investors were involved in the transaction (e.g. in a consortium) or no clear private or state majority could be identified. In general, the state may or may not hold a stake in companies where the majority of the company is privately owned (for details on the types of ownership at Chinese companies, see Szepan 2016: 198–222).

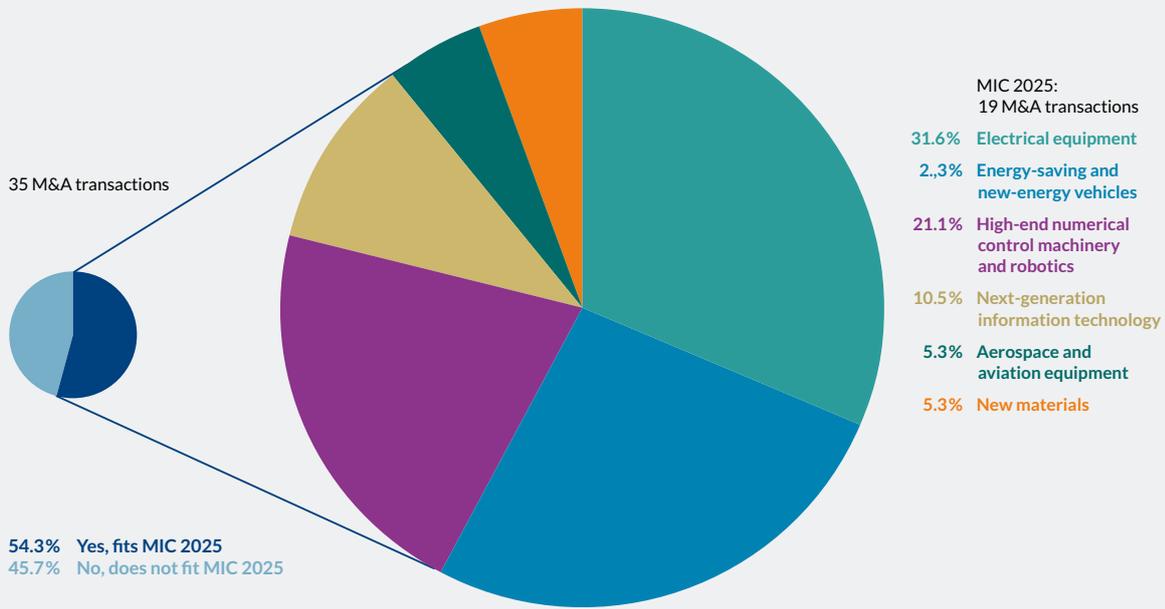
The 175 Chinese M&A transactions were matched with the ten MIC 2025 key sectors for this study. This matching is based on an analysis by Prognos AG on behalf of the Bertelsmann Stiftung, which was supplemented and updated by the author's own research and by research of Felix Vemmer, NOVA School of Business and Economics, Lisbon. The basis for the classification was the Chinese government's core document "Made in China 2025" (State Council, 8 May 2015), the Orbis company database and publicly available information on the analyzed companies (company websites, annual reports, industry services, commercial register, etc.). An M&A transaction was assigned to MIC 2025 if the business area of the German target company could be fully or partially matched with one of the ten MIC 2025 sectors.

The table lists the M&A transaction, first by year, then alphabetically by assignment to the MIC 2025 sectors and finally by the name of the German target company. If no assignment to MIC 2025 has been made, the order is alphabetical according to the name of the German target company.

The most important sources serving as the basis for the compilation of Chinese M&A transactions in Germany between 2014 and 2017 are listed in alphabetical order: EY 2017: 14 and 2018:14; Ginkgo Tree Advisors 2014: 12 and 2015: 6–8; Jungbluth 2016: 8–10; M&A China/Deutschland 01/2017: 10–11; M&A China/Deutschland 01/2018: 10–11.

The compilation does not claim to be complete.

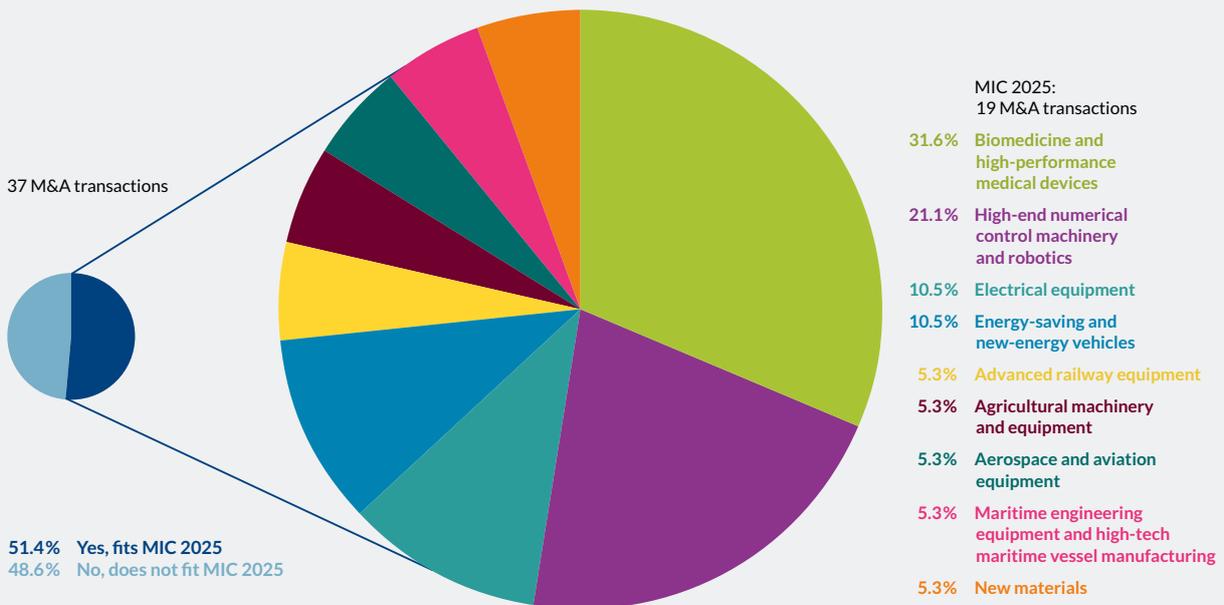
FIGURE 10: Chinese M&A transactions in Germany fitting MIC 2025 – individual years: 2014 (in percent)



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

BertelsmannStiftung

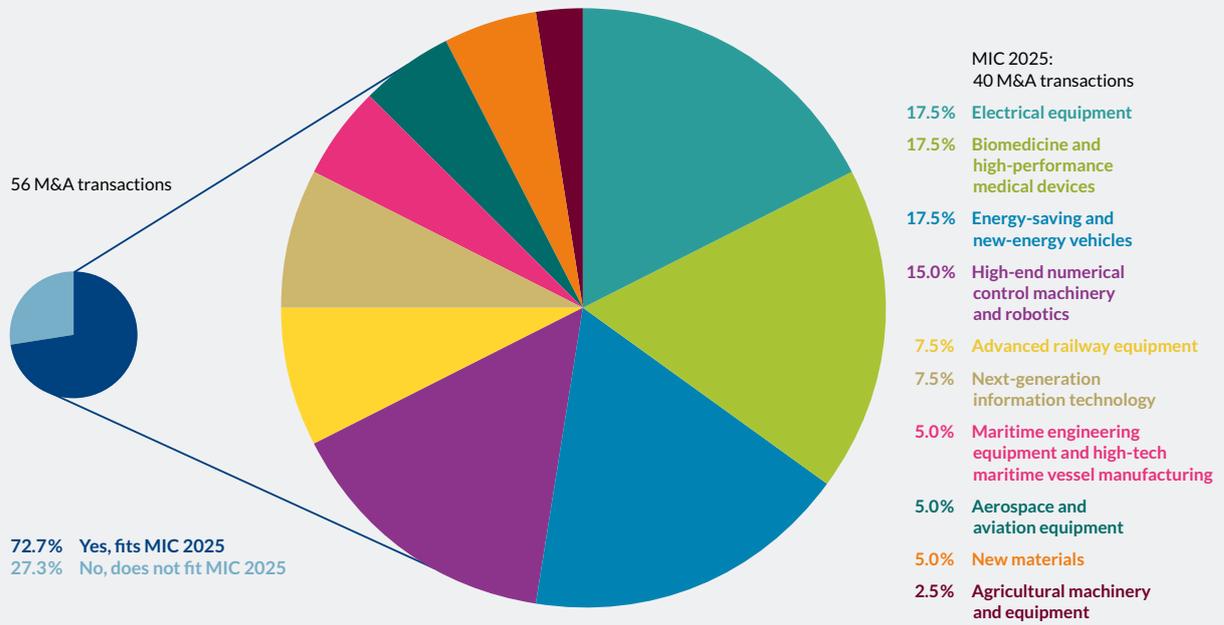
FIGURE 11: Chinese M&A transactions in Germany fitting MIC 2025 – individual years: 2015 (in percent)



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

BertelsmannStiftung

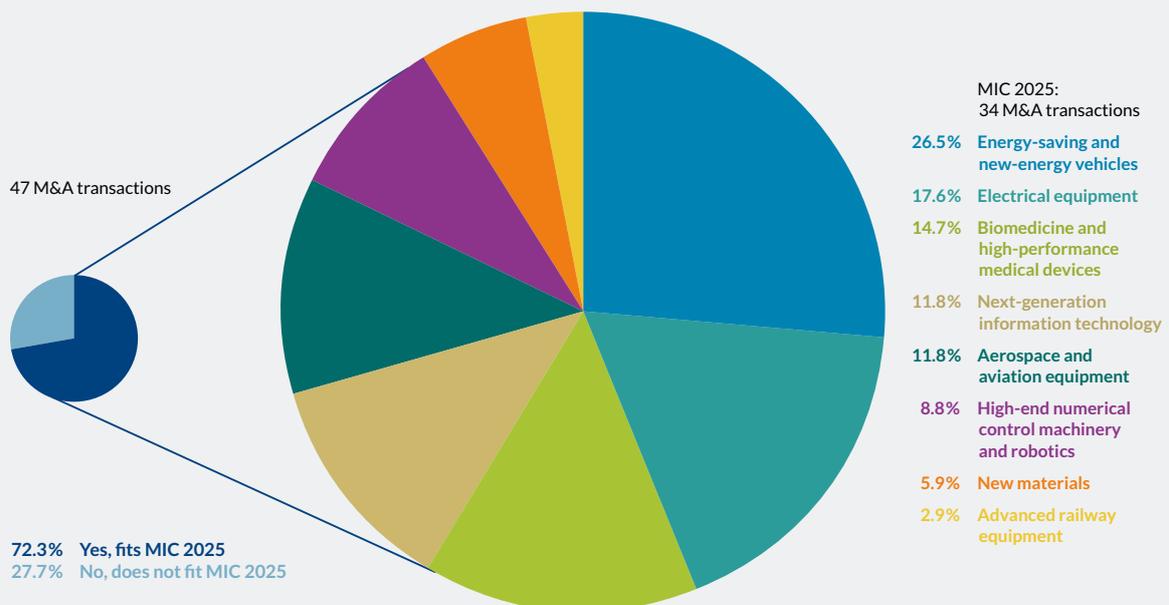
FIGURE 12: Chinese M&A transactions in Germany fitting MIC 2025 – individual years: 2016 (in percent)



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

| BertelsmannStiftung

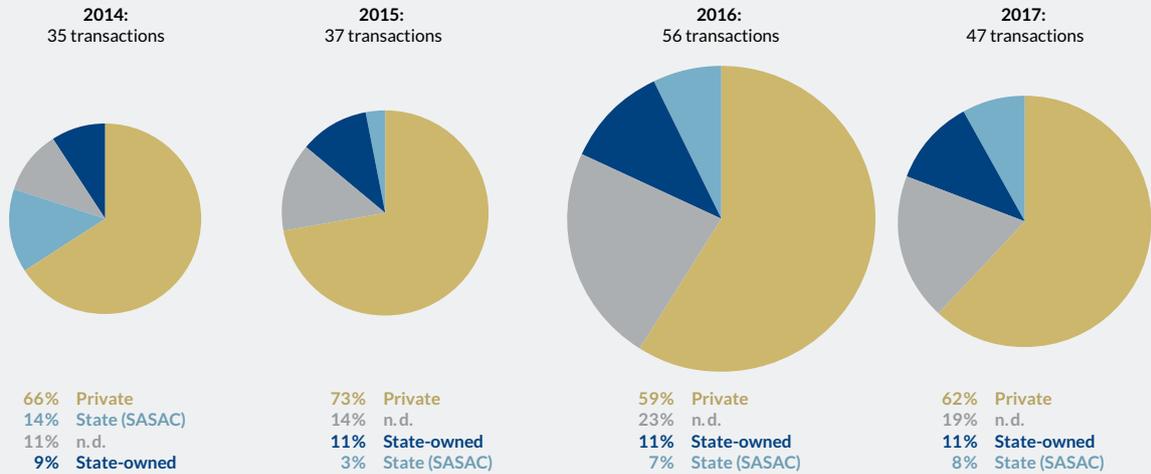
FIGURE 13: Chinese M&A transactions in Germany fitting MIC 2025 – individual years: 2017 (in percent)



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

| BertelsmannStiftung

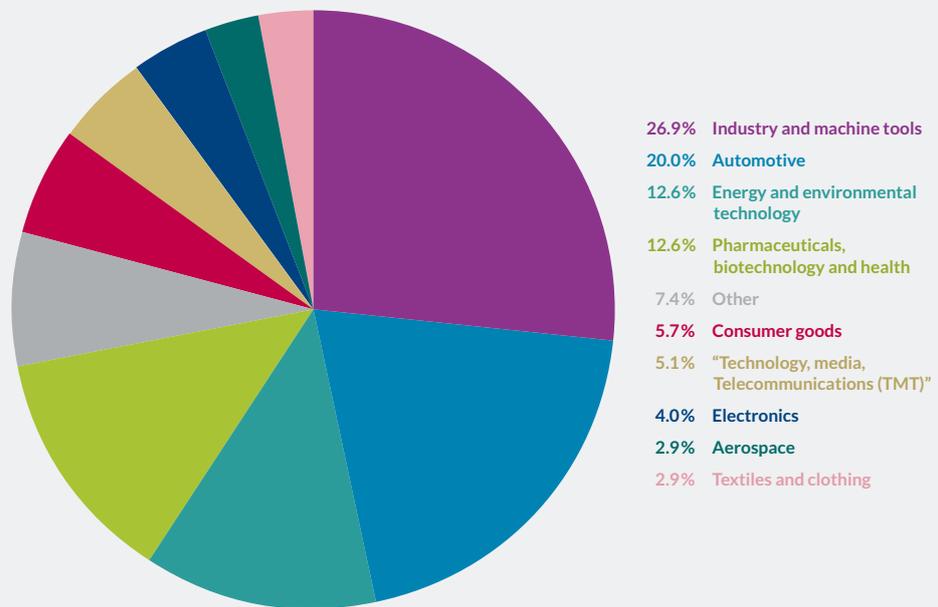
FIGURE 14: Chinese M&A transactions in Germany by type of ownership, 2014–2017 – individual years (in percent)



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

BertelsmannStiftung

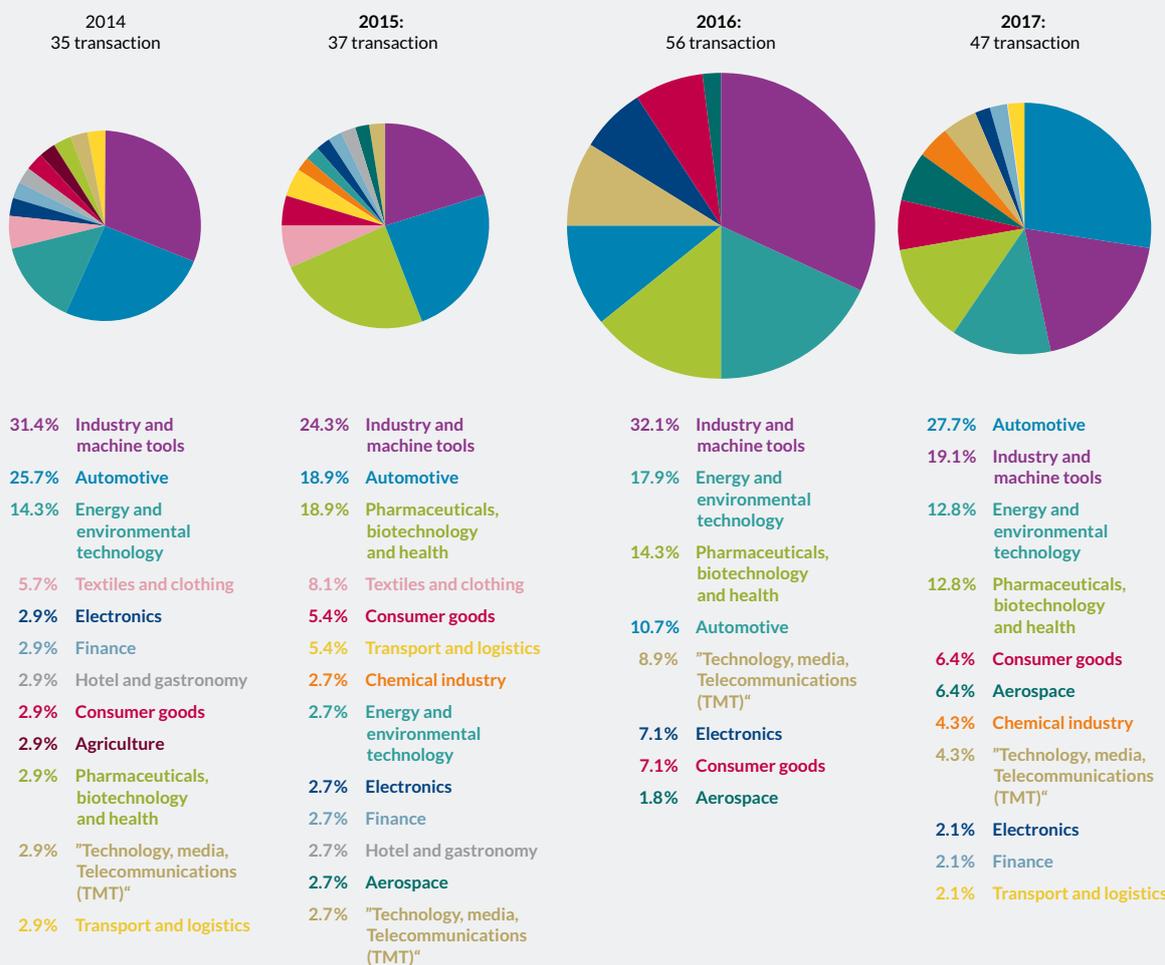
FIGURE 15: Chinese M&A transactions in Germany by sector, 2014–2017 (in percent)



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

BertelsmannStiftung

FIGURE 16: Chinese M&A transactions in Germany by sector, individual years: 2014–2017 (in percent)



Source: Author's own research and compilation. For detailed information see explanatory notes on the dataset used in the annex.

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List of abbreviations

FDI	Foreign direct investment
BDI	Bundesverband der Deutschen Industrie [Federation of German Industries]
BMWi	Bundesministerium für Wirtschaft und Energie (BMWi) [German Federal Ministry for Economic Affairs and Energy]
CNC	Computerized numerical control
EY	formerly: Ernst and Young
GTAI	Germany Trade and Invest
MERICs	Mercator Institute for China Studies
MIC 2025	Made in China 2025
MOFCOM	Ministry of Commerce of the People's Republic of China
NRW	North Rhine-Westphalia
SASAC	State-owned Assets Supervision and Administration Commission
UNCTAD	United Nations Conference on Trade and Development

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Bertelsmann Stiftung
Carl-Bertelsmann-Straße 256
33311 Gütersloh
Telefon +49 5241 81-0
www.bertelsmann-stiftung.de

Responsible
Dr. Cora Jungbluth
Telefon +49 5241 81-81482
cora.jungbluth@bertelsmann-stiftung.de

Editor
Sabrina Even

Design
Dietlind Ehlers, Bielefeld

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Address | Contact

Bertelsmann Stiftung
Carl-Bertelsmann-Straße 256
33311 Gütersloh
Phone +49 5241 81-0

GED-Team
Program Megatrends
Phone +49 5241 81-81353
ged@bertelsmann-stiftung.de
www.ged-project.de

www.bertelsmann-stiftung.de