Changes in common ownership of German companies

By Jo Seldeslachts, Melissa Newham and Albert Banal-Estanol

Ownership of publicly listed German companies has undergone significant changes in recent years. The aim of this report is to document these trends since 2007 and analyze the extent to which firms that compete in the same product market are owned by the same investors, which is known as common ownership. We show that some large foreign institutional investors have overtaken domestic investors and now occupy the top spots. This is true both in terms of value and the number of blockholdings, i.e. large blocks of shares. In addition, there has been an increase in ownership concentration overall. That said, private and governmental investors with few but large holdings, still own more than half of German equity. Using two leading industries, the chemical and car industries, we show that ownership trends and levels of common ownership can be very different across industries. While it is unclear a priori what common ownership implies for competition, innovation, and consumer welfare, markets that show more common ownership, such as the chemical sector, deserve more attention from policy makers, regulators, and academics alike.

Policy makers and the popular press have recently given a lot of attention to the rise of common ownership through large institutional investors' holdings.[1] Institutional investors are entities that invest money for others. They include mutual funds, endowments, banks, pension funds, insurance companies, and hedge funds. Institutional investors in general have a lot of money to invest and typically diversify their holdings across many companies. This results in the same investor owning equity shares in several companies at once, a phenomenon called "common ownership." Some of these common holdings can create indirect links among companies operating in the same product market.

In the present report, we first briefly discuss the current policy debate in the U.S., where people have started to take notice of institutional investors' potential impact on product markets. We then situate the debate in the EU and Germany, where the discussion has just started, and document recent trends in common ownership in Germany. In doing so, we aim to raise awareness on the topic and provide a starting point for further analysis and research.

The debate on common ownership in the U.S. and Europe

Two new empirical industry-level studies document a positive relationship between prices and common ownership in the U.S. airline and banking industries.[2] Investors that have (even relatively small) blockholdings in several competitors at once can have strong effects on the competitive outcomes of an industry. That is, decision makers in a firm may decide not to compete aggressively against a competitor that is (partially) owned by the same investors. Based

1 See Steven Davidoff Solomon, "Rise of Institutional Investors Raises Questions of Collusion," *New York Times,* April 12, 2016 (available online; retrieved July 1, 2017. This applies to all other online sources cited in this report unless otherwise noted) and "Stealth Socialism," *The Economist*, September 17, 2016 (available online).

2 José Azar, Martin C. Schmalz, and Isabel Tecu. "Anti-competitive effects of common ownership." Ross School of Business Paper No. 1235, 2017 (available online) and José Azar, Sahil Raina, and Martin C. Schmalz, "Ultimate ownership and bank competition," SSRN 2016 (available online).

Box 1

Economic theory: How common ownership may affect firm's behavior in research and development and product markets

Suppose there are two competing firms in a market; let us call them firm A and firm B.[1] Assume that each firm takes its shareholders' interests into account when deciding how much to invest in research and development (R&D) and when deciding how to compete against the other firm. Let us analyze the effect of common ownership by analyzing two extreme ownership structures.

The first possibility is that the two firms' shareholders are distinct, so there is no common ownership. In this case, firms will take R&D decisions and set prices independently to maximize their own profits. Firms will, for instance, not invest (enough) in innovations as these innovations may spill over to rival firms and benefit them. Further, firms will not take into account that by competing aggressively in prices, the other firm's profits may decrease.

Suppose instead that there is common ownership between firms A and B. This may be because a subset of A's shareholders acquires an ownership stake in firm B (and vice versa, a subset of B's shareholders may acquire an ownership stake in firm A). In this case, the profits of firms A and B are linked: managers know that some of their firm's owners also care about the other firm's profits. How does this change firms' incentives? First, firms may invest more in R&D and perhaps even coordinate their innovation activities through research alliances, for example. This could result in more innovative products and more efficient production processes, which ultimately benefit consumers.[2]

Second, however, the managers of firms A and B may also have less incentive to compete aggressively in product markets than if there were no common ownership, even if the two firms set prices independently. The resulting higher prices are to the detriment of consumers. In the worst case, common ownership might make it easier for firms A and B to even coordinate on prices through tacit or explicit collusion.

The overall effect of common ownership on consumer welfare, (i.e., more innovation versus higher prices), is therefore not clear a priori and an open empirical question.

In theory, the above effects are at play even when the common owners of firms A and B do not communicate with the managers of the firms. Assuming that (i) managers are fully aware of their shareholders' portfolios, and (ii) seek to maximize shareholder profits, these effects arise solely because managers make their decisions taking into account that some of the shareholders have ownership interests in both firms. Common owners' communications with the companies might result in stronger coordinative effects, but how this communication works in practice is still open for debate.[3]

These effects may exist even when common owners have no majority interests in the firms in which they invest. Indeed, a group of investors with ownership interests in two rival firms, no matter how small, would cause the manager of a firm to place some weight on its rival's profits.[4]

1 Parts of this exposition are based on Manesh Patel, "Common Ownership, Institutional Investors," and Antitrust Law Journal (forthcoming).

2 Ángel L. López and Xavier Vives, "Cross-ownership, R&D Spillovers, and Antitrust Policy," CESifo Working Paper 5935, 2016 (available online).

3 See for example Joseph A. McCahery, Zacharias Sautner, and Laura T. Starks, "Behind the scenes: The corporate governance preferences of institutional investors," *The Journal of Finance* 71, no. 6 (2016): 2905–2932; Jan Fichtner, Eelke M. Heemskerk, and Javier Garcia-Bernardo, "Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk," *Business and Politics*, (2017): 298–326.

4 See for example Daniel P. O'Brien and Steven C. Salop, "Competitive effects of partial ownership: Financial interest and corporate control," *Antitrust Law Journal* 67, no. 3 (2000): 559–614.

on these two papers, several influential U.S. antitrust policy papers have recognized that common ownership in rival firms may diminish firms' competitive incentives.[3] Given the large amounts of equity owned by institutional investors – by some accounts nearly 70–80 percent of the total market value of U.S. stocks at present – the impact on consumer welfare could be substantial.[4]

However, in response to the aforementioned papers, other U.S. policy makers criticize the economic evidence and advocate for caution in making a link between common

3 Jonathan B. Baker, "Overlapping Financial Investor Ownership, Market Power, and Antitrust Enforcement: My Qualified Agreement with Professor Elhauge," *Harvard Law Review* 129, no. 5 (2016): 212–217 and Eric A. Posner, Fiona Scott Morton, and E. Glen Weyl, "A Proposal to Limit the Anti-Competitive Power of Institutional Investors," *Antitrust Law Journal* (forthcoming) and Einer Elhauge, "Horizontal Shareholding," *Harvard Law Review* 129, no. 5 (2016): 1267.

4 See, for example, Azar et al., "Anti-competitive effects of common ownership."

ownership and anti-competitive conduct.[5] While common ownership may lead to anti-competitive behavior in theory, the exact channels of how this would work are still not well documented. In addition, some recent scholarship argues that common ownership may also have positive effects, as for example economies of scale in information production and information sharing.[6] Box 1 develops the theoretical arguments of both positive and negative effects through common shareholdings.

While it is still open to debate whether and under which circumstances common ownership is good or bad for competition, innovation, and ultimately consumer welfare, the rise of common ownership is undoubtedly one of the most important changes in the U.S. economy in the last decade.

Although later and to a lesser extent than in the U.S., some policy makers in Europe and in Germany have also started to take note. In October 2016, the European parliament organized a session in which the potential effects of common ownership in Europe were discussed and to ask for further research on the topic.[7] The Monopolies Commission (*Monopolkommission*), an independent expert committee that advises the German government on competition policy, recently recommended keeping a close eye on institutional investors in Germany.[8] In the following, we document current common ownership trends in Germany.

Drawing from a global ownership database for the period 2007–2015

We used data from the Thomson Reuters Global Ownership database, which contains ownership shares of all publicly traded companies in Germany. Thomson Reuters collects this information from the companies either through direct contact or via their websites, the Deutsche Boerse, and financial newspapers. Our sample contains data for all publicly listed companies in Germany for the years 2007–2015, and thus focuses on the years after the 2007 financial crisis.[9] We restricted ourselves to the investor holdings that represent at least one percent in the equity of the firms, as this is arguably the minimum threshold through which owners can have influence. Investors who hold more than one percent in at least four different companies in our sample are referred to here as *institutional investors*. In contrast, we refer to investors who hold more than one percent in less than four different companies as *insiders*. Nearly all of these insiders are domestic investors. Results are qualitatively the same for alternative thresholds.

BlackRock and Norwegian wealth fund overtake German institutional investors

In 2007, German institutional investors were major shareholders in publicly listed German companies, both in terms of overall value held and number of block holdings.[10] Allianz Group and BlackRock, an American institutional investment manager, held roughly the same value in public German companies in 2007 at around 17 billion US dollars (Figure 1). This came right after BlackRock's merger with Merrill Lynch Investment Managers at the end of 2006. Deutsche Asset Management, the investment management arm of Deutsche Bank, was not far behind with 13.3 billion US dollars in the German market.[11]

In 2008, BlackRock became the largest investor and grew quickly thereafter. Indeed, by 2015 its holdings had more than quadrupled in value, reaching more than 78 billion US dollars. The jump in BlackRock's holdings from 2009 to 2010 can be attributed to its acquisition of Barclays Global Investors completed in December 2009.

By 2010 Norges Bank Investment Management (NBIM), the world's largest sovereign wealth fund, had over-

5 Patel, "Common Ownership, Institutional Investors, and Antitrust, a.a.O.; Edward B. Rock and Daniel L. Rubinfeld, "Defusing the Antitrust Threat to Institutional Investor Involvement in Corporate Governance," NYU Law and Economics Research Paper No. 17-05, 2017 (available online); and Daniel P. O'Brien and Keith Waehrer, "The Competitive Effects of Common Ownership: We Know Less Than We Think," 2017 (available online).

6 Marcin Kacperczyk, Clemens Sialm, and Lu Zheng, "On the industry concentration of actively managed equity mutual funds," *The Journal of Finance* 60, no. 4, (2005): 1983–2011; Jie He and Jiekun Huang, "Product Market Competition in a World of Cross-Ownership: Evidence from Institutional Blockholdings," *Review of Financial Studies* (forthcoming).

7 European Parliament, Question for oral answer to the Commission Rule 128, Subject: Anti-competitive effects of common ownership by large institutional investors, September 16, 2016 (available online).

8 The Monopolies Commission reports on the importance of institutional investors in Germany and discusses some potential anti-competitive effects. Monopolies Commission, "XXIst Main Report – Competition 2016," Chapter III: European interlocking network (2016) (available online); Achim Wambach and John P. Weche, "Gefährden institutionelle Anleger den Wettbewerb?," *Wirtschaftsdienst* 96, no. 12 (2016): 900–904.

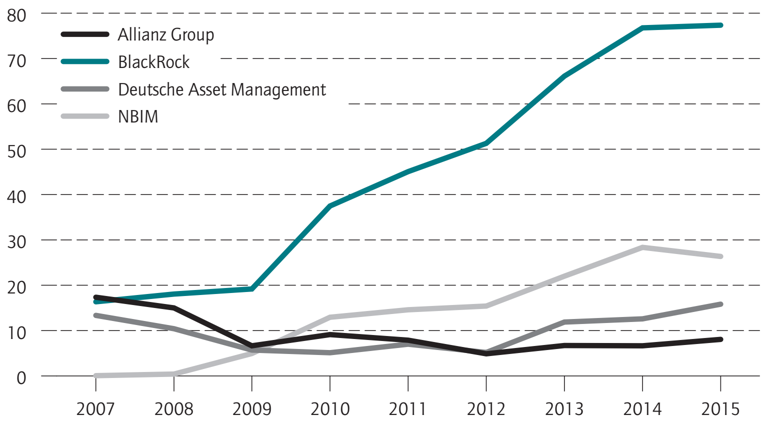
9 As this is a worldwide database managed by the U.S.-based firm Thomson Reuters, values are expressed in billions of US dollars.

10 A block holding is a large ownership stake in a company. While there is no consensus on how high this stake should be – because it depends, for example, on the stakes of the other shareholders – throughout the paper we use one percent, three percent and five percent in line with the literature. See for example Fichtner et al., "Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk."

11 We show results for the two most important foreign institutional investors across our sample, BlackRock and NBIM; other investors, such as Vanguard and Capital Group, exhibit similar, yet less pronounced, patterns. We also show the trends for the most prevalent German institutional investors across our sample, Allianz Group and Deutsche Asset Management. Other German investors, such as Dekabank and Union Investments, are left out for expositional reasons but again show trends similar to those of the other two German investors.

Figure 1

Value held by selected institutional investors in German publicly listed companies
In billion U.S. dollars

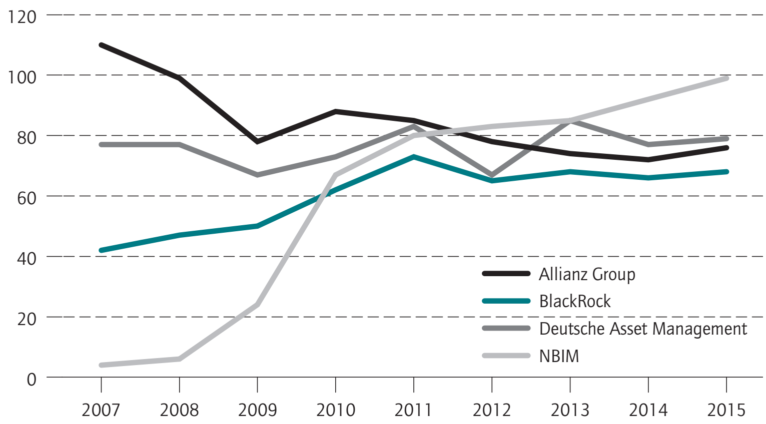


Source: Authors' own calculations based on Thomson Reuters Global Ownership database.

BlackRock and NBIM have overtaken German institutional investors.

Figure 2

Number of blockholdings held by selected institutional investors in German publicly listed companies



Note: The figure shows the number of blockholdings with a stake of at least one percent in a company.

Source: Authors' own calculations based on Thomson Reuters Global Ownership database.

NBIM has substantially increased its number of blockholdings.

taken both Allianz and Deutsche Asset Management.[12] Whereas neither of the two German investors ever surpassed the 20 billion US dollar mark, NBIM reached it in 2013. Contrary to BlackRock, NBIM receives regular capital inflows from the Norwegian Government Petroleum Fund and has not acquired other institutional investors to grow.

We can observe a similar pattern in terms of number of blockholdings, which gives an indication of the size and density of an investor's network across companies (Figure 2). In 2007, Allianz and Deutsche Asset Management had by far the largest networks of the four investors examined here with 110 and 77 holdings over one percent, respectively. BlackRock had fewer blockholdings, and NBIM had barely any. Since then, however, the situation has changed substantially. NBIM's network grew strongly between 2007 and 2010, and BlackRock expanded gradually over the sample period. At the same time, Allianz reduced its number of blockholdings. By 2015, NBIM had the largest network with about 100 holdings greater than one percent.[13]

In 2007, BlackRock did not even appear in the top ten investors in Germany in terms of number of one percent blockholdings (see Table 1). On the other hand, BlackRock had the largest network for blockholdings greater than three percent and greater than five percent in 2015. It is perhaps further noteworthy that other giant U.S. investors, such as Fidelity and Capital Group, are also present in Germany albeit with smaller networks.

Institutional ownership has become more concentrated

Figure 3 plots the Herfindahl-Hirschmann Index (HHI) of the institutional investors' holdings. The HHI is the most commonly used measure of market concentration; it is given by the sum of squared market shares for each firm competing in a market. Here, the market share refers to the share of asset value an institutional investor holds in the total value of German assets held by all institutional investors. Higher values indicate a stronger concentration. The underlying idea in considering institutional investors as a separate market is that these investors are by definition the ones that can have influence across companies and markets, as they are the entities whose holdings create networks of common ownership. As can be seen in Figure 3, concentration more than dou-

12 Sovereign wealth funds are state-owned institutional funds that invest revenues from commodity exports – oil in the case of Norway – in foreign exchange reserves held by the central bank.

13 NBIM has significantly fewer large blockholdings. This may reflect the management mandate of the fund; it follows an upper limit of ten percent for individual positions (available online).

Table 1

Top blockholders in German publicly listed companies

2007	Number of blockholdings			2015	Number of blockholdings		
	>1 percent	>3 percent	>5 percent		>1 percent	>3 percent	>5 percent
Allianz Group	110	35	16	NBIM	99	15	2
Universal Investment	88	22	6	Deutsche Asset Management	79	24	15
Cominvest Asset Management	86	23	15	Allianz Group	76	32	15
HarbourVest Partners	85	22	8	BlackRock	68	40	31
Fidelity Investments	83	45	24	Dimensional Fund Advisors	56	6	0
LBBW Asset Management	78	37	19	Fidelity Investments	54	18	4
Deutsche Asset Management	77	41	18	Vanguard Group	43	1	0
DekaBank Group	65	16	8	Berenberg Bank	29	15	4
Axxion	63	27	17	FPS Vermögensverwaltung	26	9	6
Union Investment	51	16	5	Axxion	24	12	6

Source: Authors' own calculations based on Thomson Reuters Global Ownership database.

BlackRock did not appear in the top 10 in 2007, but became one of the top blockholders by 2015.

bled between 2007 and 2015. There is a marked jump after 2009, explained by BlackRock's acquisition of Barclays and various developments in the wake of the financial crisis, among other factors.

Insiders still strong in Germany

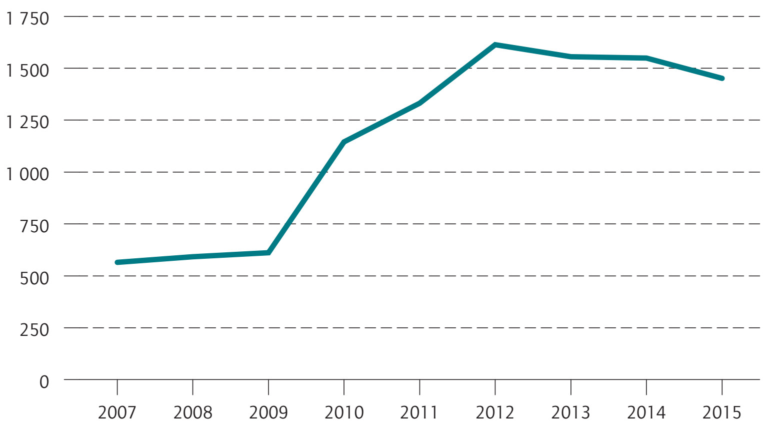
Institutional investors do not dominate all German companies: their share in German companies is actually lower than 50 percent in terms of value, and it has not increased post-2007.[14] The importance of what we refer to as insiders – that is, private and governmental investors holding more than one percent in strictly less than four different companies – is confirmed when we look at the 2015 top investors in terms of value (see Table 2). The second largest investor is the Porsche family (with holdings in Audi, Bertrandt, and Volkswagen); the fifth largest is Maria-Elisabeth Schaeffler-Thumann (with holdings in Continental[15]); number seven is the Henkel family (with holdings in Henkel); and number nine is the state of Lower Saxony (with holdings in Volkswagen and the steel company Salzgitter).

Institutional investors dominate only some German industries

Institutional investors dominate in some industries but not in others (Figure 4). In 2015, institutional investors dominated the chemical industry, holding more than 60 percent of its total value. On the other hand, in industries such as the construction and food sectors, they hold less than ten percent of the total equity in German companies. Therefore, the importance of institutional investment is clearly not a general economy-wide phenomenon but an industry-specific one. To illustrate

Figure 3

Herfindahl-Hirschmann Index for institutional investors' holdings in Germany



Note: Higher index values indicate a stronger market concentration.

Source: Authors' own calculations based on Thomson Reuters Global Ownership database.

The market concentration of institutional investors more than doubled between 2007 and 2015.

14 Authors' calculations based on Thomson Reuters Global Ownership database.

15 Schaeffler AG, which went public on October 9, 2015, is not included in the 2015 data.

Table 2

Top investors in German publicly listed companies 2007 and 2015

	Value held in billion U.S. dollars	Number of blockholdings	Companies (insiders only)
2007			
Bayerische Landesbank	26.80	14	
KfW Bankengruppe	22.99	2	Deutsche Post, Deutsche Telekom
Capital Group	22.94	23	
Fidelity Investments	21.19	83	
Allianz Group	17.35	110	
Porsche Automobil Holding	17.20	2	Bertrandt, Volkswagen
BlackRock	16.37	42	
Haniel, Beisheim and Schmidt-Ruthenbeck families	16.12	1	Metro
Land Niedersachsen	13.92	2	Salzgitter, Volkswagen
Spohn Cement	13.81	1	HeidelbergCement
Deutsche Asset Management	13.39	77	
2015			
BlackRock	77.31	68	
Porsche Automobil Holding	68.90	3	Audi, Bertrandt, Volkswagen
NBIM	26.36	99	
KfW Bankengruppe	21.53	2	Deutsche Post, Deutsche Telekom
Maria-Elisabeth Schaeffler-Thumann	21.40	1	Continental
Deutsche Asset Management	15.83	79	
Familie Henkel	14.82	1	Henkel
Vanguard Group	14.10	43	
Land Niedersachsen	13.92	2	Salzgitter, Volkswagen
Qatar Investment Authority	12.14	2	Hochtief, Volkswagen
Stefan Norbert Quandt	11.80	1	BMW

Note: Insiders, i.e. private and governmental investors holding more than one percent in strictly less than four different companies, are set in italics.

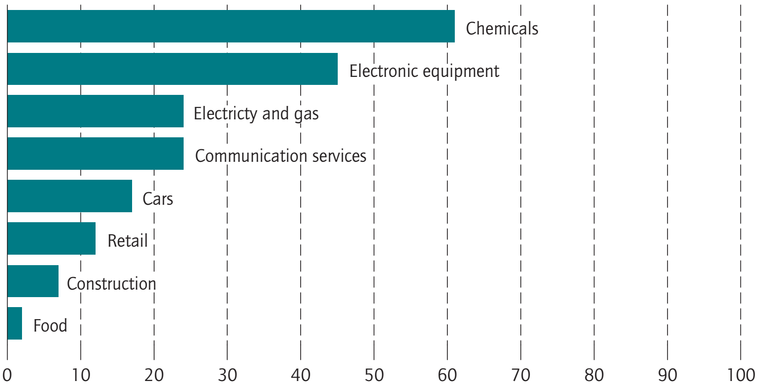
Source: Authors' own calculations based on Thomson Reuters Global Ownership database.

Private and governmental investors still play an important role in Germany.

Figure 4

Share of total value held by institutional investors in different German industries in 2015

In percent



Source: Authors' own calculations based on Thomson Reuters Global Ownership database.

The chemical industry is particularly dominated by institutional investors.

these sectorial differences further, we investigated in more detail the ownership structures of the three largest firms in two leading German industries.

Strong presence of insiders in the car industry

We took the car industry as a relevant industry in which insiders have a strong presence. It is also of vital importance for the overall German economy. We took a closer look at the three largest German car manufacturers: Volkswagen, Daimler, and BMW. All three are also among the largest German companies overall – they are part of the DAX – and are among the world's largest car companies.

As can be seen from Table 3, BMW's top 3 investors in 2015 were individuals that hold more than ten percent each (Johanna Quandt, as well as her children Stefan Quandt and Susanne Klatten). Further, there were few changes between 2007 and 2015 (but BlackRock became investor number four). For Volkswagen, by far the single largest investor is the Porsche family, who increased its share between 2007 and 2015 from 31 percent to 42 per-

Table 3

Top five investors in top three German car companies
Shares in percent

2007					
BMW		Daimler		Volkswagen	
Stefan Norbert Quandt	17	Kuwait Investment Authority	7	Porsche Automobil Holding	31
Johanna Quandt	17	Deutsche Asset Management	6	Land Niedersachsen	20
Susanne Klatten	12	Aberdeen Asset Management	6	HarbourVest Partners	3
Franklin Templeton	3	HarbourVest Partners	2	Aberdeen Asset Management	2
Allianz Group	2	Fidelity Investments	2	Brandes Investment	2
2015					
BMW		Daimler		Volkswagen	
Stefan Norbert Quandt	17	BlackRock	8	Porsche Automobil Holding	42
Susanne Klatten	13	Kuwait Investment Authority	7	Land Niedersachsen	17
Johanna Quandt	12	Renault	3	Qatar Investment Authority	14
BlackRock	7	NBIM	3	Qatar Holding	7
Estate of Johanna Quandt	6	UBS Asset Management	2	BlackRock	3

Source: Thomson Reuters Global Ownership database.

Private and governmental investors own large shares of BMW and Volkswagen.

cent. Number two is the state of Lower Saxony, also with a large double-digit share. Two Qatari-held funds broke into the top five and BlackRock was number five in 2015. Of the top three German car companies, only Daimler has largely been in the hands of institutional investors since 2007, where the top five investors hold smaller shares than their peers do in BMW and Volkswagen.

Institutional investors dominate the chemical industry

Looking at the three largest German chemical companies – BASF, Bayer, and Linde, all players in another important German sector – the pattern is quite different: institutional investors were already present in 2007. Large foreign institutional investors have grown in importance, and they have taken the place of German institu-

Table 4

Top five investors in top three German chemical companies
Shares in percent

2007					
BASF		Bayer		Linde	
AllianceBernstein L.P.	7	Capital Group	13	Capital Group	11
Allianz Group	3	Fidelity Investments	7	Cominvest Asset Management	10
HarbourVest Partners	2	Capital World Investors	3	Deutsche Asset Management	6
BlackRock	2	HarbourVest Partners	2	Allianz Group	6
Union Investment	2	BlackRock	2	Fidelity Investments	6
2015					
BASF		Bayer		Linde	
BlackRock	9	BlackRock	10	BlackRock	7
NBIM	3	Capital World Investors	5	NBIM	7
Credit Suisse	2	MFS Investment Management	3	MFS Investment Management	5
UBS Asset Management	2	Vanguard Group	2	Dodge & Cox	3
Deutsche Asset Management	2	Fidelity Investments	2	Northern Cross	3

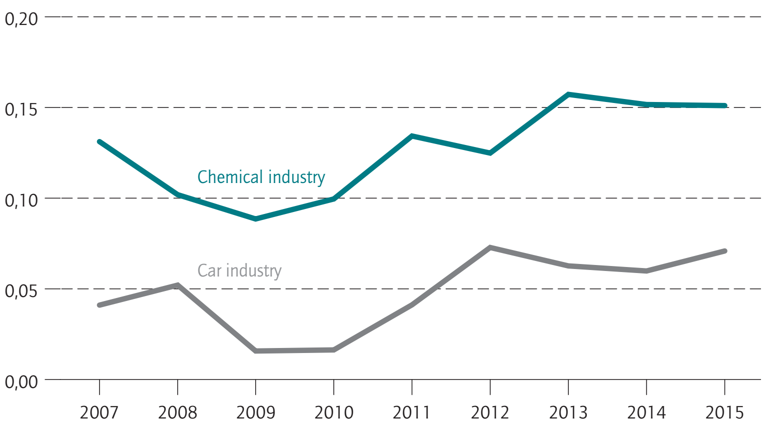
Source: Thomson Reuters Global Ownership database.

By 2015, BlackRock has become the single largest owner of BASF, Bayer and Linde.

Figure 5

Common ownership in top three German car and chemical companies

Level of connectedness (without unit)



Note: For a description of the level of connectedness see Box 2.

Source: Authors' own calculations based on Thomson Reuters Global Ownership database.

German car companies are less connected than chemical companies.

tional investors. For example, BlackRock went from a stake of two percent in BASF in 2007 to a nine percent stake and is now its largest investor. Allianz, on the other hand, disappeared from the top five. A similar pattern can be observed for Bayer: BlackRock went from two percent to ten percent, climbing from position five to position one. NBIM is now number two in BASF and Linde.

It is evident that with relatively small stakes (seven to ten percent), BlackRock is nevertheless the single largest owner in BASF, Bayer, and Linde in 2015. The fact that BlackRock is the largest investor in all three chemical companies makes BlackRock a particularly relevant common owner in these companies, thereby placing it in a position to potentially influence the competitive strategy of these firms vis-à-vis each other.[16]

Differences in the degree of common ownership

To understand how the largest German companies in the two industries mentioned above are connected through common ownership, we first present the average level of connectedness between the top three firms (Figure 5). Second, we focus on specific domestic and foreign institutional investors and show how common ownership has evolved at the investor level (Figure 6). Box 2 explains how these measures are computed.

The level of connectedness for the chemical companies was 0.13 in 2007 and increased to 0.15 in 2015. For the car companies it was 0.04 in 2007 and increased to 0.07 in 2015 (Figure 5). Thus, German car companies are less connected through common ownership than German chemical companies during the period 2007–2015.

Figure 6 shows how the identity of common owners has changed over time. In 2007, BlackRock, Allianz, and Deutsche Asset Management were roughly equal in their level of common ownership in the chemical and car industries. In the chemical industry, Allianz's level of common ownership declined, while Deutsche Asset Management's level of common ownership was roughly the same in 2015 as it was in 2007. Since 2011, BlackRock and NBIM are the main common owners in both industries, with BlackRock in a particularly strong position.

Conclusion

In Germany, foreign institutional investors, such as BlackRock and NBIM, have grown dramatically in the last decade, overtaking their German counterparts. Even if the overall share of institutional investors' holdings in German companies has not increased since 2007, ownership of publicly listed companies is now more concentrated in the hands of a few large investors. At the same time, domestic private and governmental investors still have a strong position in Germany.

Economic theory is not unanimous on the impact of common ownership on product markets. Potentially, it could be so broad that some have described institutional investors' interests in competing firms as the "major new antitrust challenge of our time," as they may lead to lower competition and higher prices.[17] However, common ownership may be harmful in some contexts and beneficial in others, as it may also stimulate innovation. More in-depth research is required to ascertain in which contexts the various effects are at play and what the policy implications may be.

In order to guide future activities in this field, in this report we highlighted the differences in the extent of common ownership across industries in Germany. German companies in the chemical industry in particular have historically been more connected than, for example, companies in the car industry. Whereas German institutional inves-

16 In a case study, Martin Schmaltz reports how common investors in DuPont and Monsanto, namely Vanguard, BlackRock, and State Street, were instrumental in voting down an activist shareholder proposal that sought to promote more aggressive competition between DuPont and Monsanto (available online).

17 Posner, Morton and Weyl, "A Proposal to Limit the Anti-Competitive Power of Institutional Investors."

Box 2

Level of connectedness between firms

Consider two companies (j and k) and a set of investors that own shares in one or both of these companies. Given ownership shares α_i^j and α_i^k of investor i in companies j and k, respectively, we define the connection between firms j and k through investor i as their minimum link strength: $c_i^{j,k} = min\{\alpha_i^j, \alpha_i^k\}$. While this measure is likely to understate the common interest of the investor in the two companies, it takes into account asymmetric ownership stakes.[1]

The overall level of connectedness between firms j and k over all investors is defined as $C_{j,k} = \sum_i c_i^{j,k}$, where we add the individual connections across all investors holding at least one percent in each of the two firms.

The overall level of connectedness for the set of the top three firms is calculated by taking the average of $C_{j,k}$ for all possible company pairs for each year. To assess the extent to which an individual investor i creates common ownership linkages between pairs of companies in an industry, we take the average of $c_i^{j,k}$ across all company pairs in the industry. If an investor does not own at least one percent of both firms in at least one pair, then common ownership for that investor is zero.

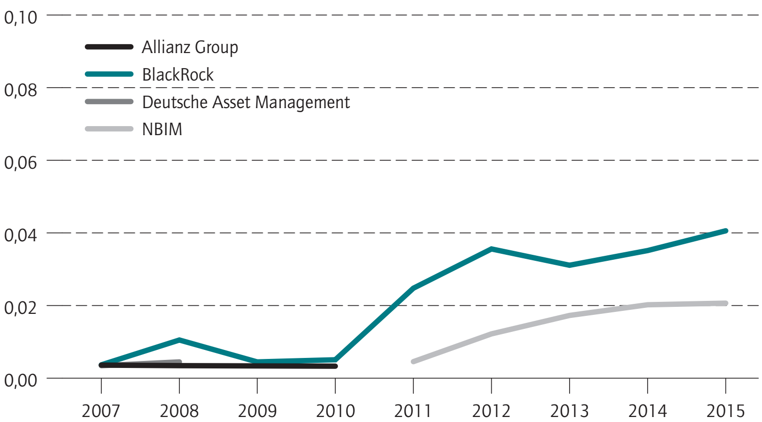
1 For a detailed explanation of this and alternative measures, see Erik P. Gilje, Todd Gormley, and Doron Levit, "The Rise of Common Ownership," working paper, 2017.

Figure 6

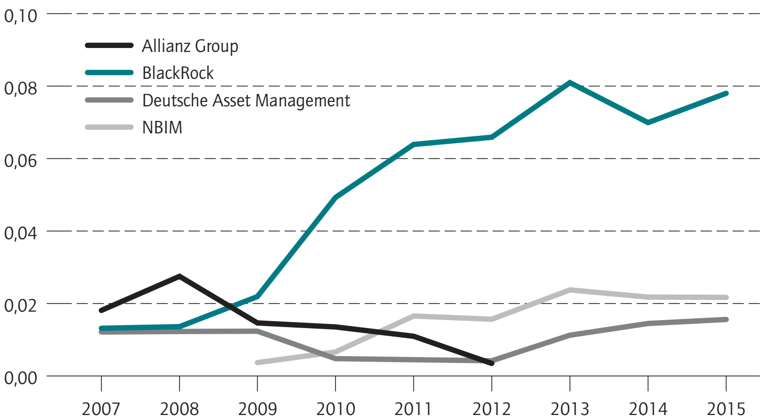
Common ownership by selected investors

Level of connectedness (without unit)

Car industry



Chemical industry



For a description of the level of connectedness see box 2.

Source: Authors' own calculations based on Thomson Reuters Global Ownership database.

Since 2011, BlackRock and NBIM are the main common owners in both industries.

tors such as Allianz previously drove common ownership among chemical companies, it is now mostly driven by foreign (and usually larger) institutional investors.

Concerning the potentially detrimental consequences of common ownership, the current developments in financial markets provide food for thought, as large institutional investors are able to influence the competitive process in product markets through their common holdings. Some industries are more connected by common ownership than others, and therefore should be monitored more closely with regard to innovation and competition. In Germany, this applies to the chemical industry in particular, which should be the first sector to receive such attention.

Jo Seldeslachts is a Professor at KU Leuven and a Research Associate at the Firms and Markets department at DIW Berlin | jseldeslachts@diw.de

Melissa Newham is a PhD Candidate at KU Leuven and at the Firms and Markets department at DIW Berlin | mnewham@diw.de

Albert Banal-Estanol is an Associate Professor at the Universitat Pompeu Fabra | albert.banalestanol@upf.edu

JEL: D43, G23, K21, L62, L65

Keywords: institutional investors, common ownership, German markets, innovation, competition, antitrust

DIW Berlin — Deutsches Institut
für Wirtschaftsforschung e. V.
Mohrenstraße 58, 10117 Berlin
T +49 30 897 89 -0
F +49 30 897 89 -200

Publishers
Prof. Dr. Tomaso Duso
Dr. Ferdinand Fichtner
Prof. Marcel Fratzscher, Ph.D.
Prof. Dr. Peter Haan
Prof. Dr. Claudia Kemfert
Prof. Dr. Lukas Menkhoff
Prof. Johanna Mollerström, Ph.D.
Prof. Karsten Neuhoff, Ph.D.
Prof. Dr. Jürgen Schupp
Prof. Dr. C. Katharina Spieß
Prof. Dr. Gert G. Wagner

Reviewer
Dr. Franziska Bremus

Editors in chief
Dr. Gritje Hartmann
Dr. Wolf-Peter Schill

Editorial staff
Renate Bogdanovic
Dr. Franziska Bremus
Prof. Dr. Christian Dreger
Sebastian Kollmann
Markus Reiniger
Mathilde Richter
Dr. Alexander Zerrahn

Layout and Composition
eScriptum GmbH & Co KG, Berlin

Sale and distribution
DIW Berlin
ISSN 2192-7219