

## Foreign Direct Investments in the German Stock Market from China and the Gulf States

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### Abstract

We document empirical evidence that the investment patterns of the two most relevant investor groups from regions with hierarchical structures in the German stock market, namely China (including Hong Kong) and the Gulf Cooperation Council, differ substantially. Chinese investors buy large shares in relatively small, but not necessarily young, companies. Since their objective is often to gain control, they appear to pay higher premiums when acquiring large equity stakes. Investors from the Gulf states purchase smaller shareholdings in notably larger, older, and more international companies. They seem to seek long-term benefits rather than short-term profits. Our findings are mainly attributable to industrial policies pursued by Chinese and Gulf investors, which mirror the different political and economic goals in these two regions.

*Keywords:* Foreign Direct Investments, China, Gulf States, Corporate Governance, Event Study

*JEL Classification:* G11, G18, G34, G38

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## I. Introduction

Foreign direct investment (FDI) from emerging economies to developed countries has steadily become more important in increasingly globalized capital markets. FDI allows companies from less-developed economies to offset the technology gap between their home and more developed markets and gain competitive advantages (*Luo/Tung 2007*). Furthermore, FDI has a positive impact on domestic economic diversification and growth (*Mathews 2002; Rui/Yip 2008*), which is particularly important for countries with hierarchical structures where FDI decisions also reflect political and macroeconomic goals. In line with that, in Germany, for example, investors from China and the Gulf states are, besides investors from the United States, the key foreign shareholders of listed companies.

There is a substantial amount of established research on FDI and state capitalism (*Dunning 2001; Erel/Liao/Weisbach 2012; Jandik/Kali 2009; Stulz 2005*) and, in particular, on Chinese companies as key FDI protagonists (*Boisot/Meyer 2008; Buckley et al. 2007; Buckley et al. 2016; Buckley et al. 2018; Rugman 2010*). However, we still know little about micro-level FDI patterns related to countries with hierarchical structures since most academic studies take a macro-level perspective (*Paul/Benito 2018*). With concerns about European companies being “sold out” to foreign investors fueled by recent anecdotal evidence, such as when China’s Midea acquired German robot producer Kuka (*Reuters 2016*), a deeper understanding of such micro-level patterns is required. Recent studies by *Karolyi/Liao (2017)* and *Fuest et al. (2019)* shed light on this issue and investigate deal-level determinants of cross-border acquisitions by government-controlled companies and Chinese investors. However, distinct research gaps remain.

Our study contributes to the academic FDI literature by investigating micro-level investment patterns associated with investors from countries with hierarchical structures, namely China and the Gulf states, using a sample of German listed firms from 2009 to 2018. We aim to assess whether the investment goals of investors from hierarchical regimes, which include region-specific political and economic objectives, reflect in the corresponding FDI patterns. In contrast to prior studies, we focus on one major target country of these investors to more closely assess the link between their specific investment objectives related to the German market and target firm characteristics. The fact that we look at the two most relevant investor groups from regions with hierarchical structures in the German stock market facilitates our analysis. Anecdotal evidence suggests that Chinese investments are mainly motivated by access to technology and know-how. In contrast, Gulf investors are primarily interested in building long-term strategic relationships with German firms (*Xuan 2016*). Therefore, we expect to find substantial empirical differences in the FDI patterns we investigate.

Our study further extends prior research as we analyze FDI characteristics and the decision to be invested in German firms using granular investment-level data based on firms' shareholder structures in addition to aggregated company-level data. With our regression analyses, we also account for investor type (e.g., government, bank) to differentiate between region- and owner type-specific effects, thereby extending research conducted by *Fuest et al. (2019)*. In addition to univariate tests and multiple regressions, we conduct an event study analysis to provide evidence on the shareholder value effects associated with Chinese and Gulf investments in German firms and to assess whether these effects are related to the specific FDI patterns.

Our results suggest that the investment patterns associated with Chinese and Gulf investors indeed differ significantly. We find that Chinese investors buy large shares – often a controlling stake – in relatively small, but not necessarily young, companies. In contrast, investors from the Gulf states purchase smaller equity stakes – amounting to about 10% on average – in larger, more mature, and more international firms. These findings are broadly consistent across all our uni- and multivariate analyses and mirror the different investment objectives pursued by the two investor groups. Chinese investors want to further close the technology gap to more developed economies, in our specific context particularly with regard to industrial technology. In line with that, they aim to gain control over their German target companies and, thus, to get access to their (intangible) assets, which is achieved via mergers and acquisitions. Our finding that Chinese portfolio companies have a significantly lower R&D ratio can be attributed to Chinese investors aiming to access existing technologies as well as the fact that German family firms – relatively small but typically mature – fit Chinese FDI patterns and are known for reporting their R&D expenses very conservatively (*Schmid et al. 2014*).

Gulf investors, who are mostly related to domestic ruling families, are interested in “getting a foot in the door” of large established German firms via minority stakes and building long-term relationships. Their goal is that German firms in turn invest in the Gulf region and help to diversify their economies beyond oil (*Cermak 2017*). Our finding that investors from Gulf states prefer more international firms supports the latter notion. Furthermore, the significantly lower return on assets ascertained for Gulf state portfolio firms suggests that Gulf states pursue long-term strategies rather than seeking short-term profits.

The results of the event study analysis are consistent with our prior findings. The announcements of new or additional investments by Chinese investors are associated with significantly positive average abnormal returns, which are higher for investments related to ultimate ownership stakes above the 25% threshold (i.e., blocking minority). Hence, Chinese investors seem to pay higher premiums when acquiring large equity stakes and, thereby, seeking control to get access to firms' know-how and assets. In contrast, we do not find significant ab-

normal returns for announcements attributed to Gulf investors. That is in line with our finding that they typically take small stakes in German companies and are not looking for control associated with acquisition premiums.

Overall, the results of our analyses extend prior research on micro-level FDI patterns related to investors from countries with hierarchical structures, which should be of particular interest to practitioners and scholars.

The rest of this study proceeds as follows: Section 2 discusses the institutional background of FDI from countries with hierarchical structures considering relevant findings of prior studies and introduces our main hypothesis. Section 3 presents our sample. Section 4 reports the results of our empirical analyses. Section 5 discusses our findings. Section 6 concludes.

## II. Institutional Background, Literature and Resulting Hypothesis

Companies internationalize their activities to gain competitive advantages resulting for example from ownership and control of cost-effective foreign production facilities (Dunning 1988, 2001). However, more refined theories are required to explain FDI from emerging economies to account for the distinct context of such investments (Paul/Benito 2018). Most importantly, when considering FDI from less-developed countries to more developed countries, a strategic component resulting from the technology gap comes into play (Luo/Tung 2007; Mathews 2002). According to this view, companies from less-developed markets pursue foreign acquisitions to acquire know-how and technologies not available in their home markets and thereby gain a competitive advantage. Luo/Tung (2007) use a springboard analogy to illustrate how companies that pursue such strategies accelerate their technological advancement. Corporate takeovers are the most prominent way for firms from emerging markets to acquire strategic assets from more developed economies (Anderson/Sutherland 2015). In line with that, Rui/Yip (2008) argue that Chinese firms historically used cross-border acquisitions to achieve goals, such as acquiring strategic capabilities to offset competitive disadvantages in their home markets. Increasing academic interest in their investment behavior is, amongst others, reflected in the recent work by Fuest et al. (2019).

Our research on FDI in German listed companies focuses on China and the Gulf states because of the investment magnitude and the regions' particularities, for which we expect to observe idiosyncratic patterns. Chinese investors and investors from the Gulf states are key shareholder groups invested in German listed companies. Table 1 shows value-weighted shares of total known market capitalization for these two investor groups. Between 2009 and 2018, Chinese investors were the fastest-growing shareholder group, becoming the third-largest foreign shareholder group in 2018 (behind the Gulf states and the United States).

The Gulf states show a different pattern. Gulf state shareholdings increased sharply until 2014, reaching 5.8% of the total known market capitalization. Since 2015, however, shareholdings have notably declined. In 2018, Gulf investors only owned 0.1 percentage points more than Chinese investors. *Harris* (2009) discusses the increased international importance of China and the Gulf states. He argues that the two regions emerged as global powers due to capital influx related to global production and a surge in energy prices. The significant concentration of capital ultimately established them as new global players in the cross-border investment landscape.

Corporate governance is found to be notably influenced by a country's culture (*Urban* 2019). Hence, we expect countries that value "collectivism", so-called countries with "hierarchical" structures, to exhibit idiosyncratic FDI patterns because their overall political and economic goals play a role in corporate investment decisions. This makes China and the Gulf states particularly interesting as both regions are characterized by the large political aspect of investment activity (*Wang et al.* 2012) and are broadly acknowledged to have hierarchical regimes.<sup>1</sup> Although the government largely controls FDI in both regions, the underlying frameworks differ notably. In China, the government exerts mainly indirect control via several FDI regulations and institutions as well as ownership stakes in Chinese companies. The relevant institutions include the National Development and Reform Commission, the Ministry of Commerce, the State Administration of Foreign Exchange and, if it involves a state-owned entity, the State-owned Assets Supervision and Administration Commission (*Riemschneider/Li* 2018). While nearly 95% of Chinese shareholdings in German firms are attributable to Chinese companies and individuals, they cannot pursue any foreign investment without prior approval from the Chinese government, for instance, for currency conversion. Chinese institutions also assess the rationality of investments and contribution to Chinese strategic goals, such as access to particular technologies in more developed countries (*Kastner* 2019; *Luo/Tung* 2007; *Rui/Yip* 2008). The latter is also applicable to Chinese companies where the state directly or indirectly holds equity stakes that allow to impact corporate decisions. A prominent example of an indirect state shareholding is the 37% equity stake of Legend Holdings Corporation, whose major shareholder is the Chinese Academy of Sciences, in Lenovo Group Limited.<sup>2</sup>

In contrast, governments in the Gulf states are more directly involved, as much of the region's total wealth is concentrated in the hands of ruling families

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<sup>1</sup> For identification we follow *Karolyi/Liao* (2017), using the Polity IV Individual Country Regime Trends database published by Societal-Systems Research Inc.

<sup>2</sup> According to the Lenovo's corporate website as of March 31, 2021. The Chinese Academy of Sciences owns a 29% equity stake in Legend Holdings Corporation according to its 2019 annual report.

Table 1  
Share of Market Capitalization

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Change [abs.]	Change [%]
China	0.2%	0.2%	0.3%	0.5%	0.6%	0.5%	0.6%	1.4%	2.1%	2.4%	2.3%	1436%
Gulf states	3.6%	4.3%	3.8%	4.7%	4.7%	5.8%	5.2%	4.9%	2.9%	2.5%	-1.1%	-30.9%
Other foreign	23.6%	26.4%	24.7%	23.7%	22.2%	22.8%	23.2%	24.2%	24.9%	24.2%	0.6%	2.5%
Domestic	72.7%	69.1%	71.2%	71.0%	72.5%	70.9%	71.0%	69.4%	70.2%	70.9%	-1.7%	-2.4%
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>		
Abs. [EUR bn]	287.7	352.6	309.4	386.9	468.7	485.6	504.3	528.2	614.5	497.8		

Notes: This table shows value-weighted shares of known market capitalization (>3% shareholding) of German listed companies by location of ultimate owner. The sample consists of all CDAX companies in the period 2009 to 2018. Changes in value-weighted shares of known market capitalization are calculated between 2009 and 2018.

and associated individuals (*Alvaredo/Assouad/Piketty* 2019). As a result, Gulf states directly control the investment funds. As shown in Table 2, 93.8% of the Gulf states' shareholdings can be directly attributed to the government or government-related individuals. An important strategic goal of Gulf states is to diversify their economies beyond oil. To achieve this objective, they build strategic partnerships with globally operating portfolio firms and strive to attract FDI in their home markets (*Xuan* 2016). The preferred target industries also reflect the strategic aspect of investments, with both Chinese and Gulf investors primarily focused on the manufacturing sector, which constitutes the key industry of German listed companies (*Achleitner et al.* 2019). In particular, the focus of Chinese investors on manufacturers of capital goods, such as machinery manufacturers, is in line with their objective to get access to more sophisticated industrial technology (*Kastner* 2019; *Luo/Tung* 2007; *Mathews* 2002). The acquisition of German robot producer Kuka by China's Midea provides a recent example for Chinese investments in this specific sector (*Reuters* 2016).

Table 2  
Owner Types and Target Industries

<i>Ultimate owner type</i>	<i>China</i>	<i>Gulf</i>	<i>Target industry</i>	<i>China</i>	<i>Gulf</i>
Bank	0.0%	0.0%	Agricultural, Forestry, Fishery	1.2%	0.0%
Corporate	78.8%	0.0%	Mining, Construction	0.0%	1.3%
Government	4.8%	93.8%	Manufacturing of Consumer Goods	3.1%	0.0%
Institutional	0.3%	0.7%	Manufacturing of Capital Goods	40.0%	92.3%
Insurance	0.0%	5.4%	Transportation, Public Utility	26.9%	1.3%
Private	16.0%	0.0%	Wholesale, Retail	12.4%	0.0%
<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>	Finance, Insurance and Real Estate	16.2%	5.0%
			Services	0.2%	0.0%
			<i>Total</i>	<i>100.0%</i>	<i>100.0%</i>

*Notes:* This table shows value-weighted shares of known investments of Chinese and Gulf state ultimate owners per investor type and industry of target company. Aggregated values are based on full sample from 2009 to 2018. Industry is classified by the first digit of the target company's standard industry classification (SIC) code. The sample consists of all CDAX companies in the period 2009 to 2018. Institutional investors include private equity/venture capital investors. Government investors include royal families of the Gulf states. Corporates also include enterprises with direct or indirect government shareholdings.

In sum, we expect FDI from China and the Gulf states to show idiosyncratic patterns as different economic and political goals influence investment decisions. To assess this hypothesis, we use the region as first dimension to differentiate between investor groups and control for investor type on a secondary level. This approach differs from other key research, which analyzes certain investor groups individually per country, such as sovereign wealth funds (*Bremmer* 2010) or state-owned enterprises (*Karolyi/Liao* 2017).

### III. Data and Sample Composition

#### 1. Data

Our initial dataset covers all companies included in the Composite DAX in the period of 2009 to 2018.<sup>3</sup> We use the historical list of annual CDAX compositions from the German Stock Exchange for identification. To obtain our final company list, we exclude all companies in the index not operating in the respective year, for example, companies that filed for insolvency but are not yet delisted. We mainly draw on press releases and company website information to identify which companies to exclude.

For our analysis, we use information on corporate ownership structure, company financials, and stock market data. We rely on Bureau van Dijk's Orbis database as a primary source to obtain information on corporate ownership. We always focus on the global ultimate owner of the specific investment (*Faccio/Lang* 2002; *La Porta/Lopez-de-Silanes/Shleifer* 1999). Next to the size of shareholding, we include information about the ultimate owner type and geographic location. Our initial list comprises 15,904 individual shareholdings between 2009 and 2018. We took several steps to obtain our final list of 12,157 shareholdings.

First, we excluded all shareholdings below three percent to mitigate biases in our analyses. Shareholdings above three percent must be publicly reported pursuant to section 33 of the German Securities Trading Act. Even though the Orbis database includes data for ownership below the three percent threshold, this might lead to skewed results as this information is only available for certain investor groups, such as institutional investors from the US, and not for the full sample. Next, we manually validated shareholder locations and types with published annual reports, press releases, and publicly available shareholder information. We conducted additional checks to validate our dataset further. We verified missing shareholdings by validating gaps for each country-owner type com-

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<sup>3</sup> The CDAX comprises all companies listed in the Prime Standard and General Standard of the Frankfurt Stock Exchange.



ination per company over our observation period (i.e. if a company has a shareholder of a specific type and country of origin only in the first and last of three consecutive years). We also corrected duplicate values based on shareholder name per company-year and made sure that aggregate shareholding per company-year ranges between zero and one. For China and the Gulf states, we manually validated all investments with publicly available information. Lastly, we conducted extensive random checks.

We used Thomson Reuters Datastream as our primary source of company financials and stock market data. We drew on annual company financial data and year-end stock market data (e.g., market value, share price). An extensive overview of all variables, including their definitions and sources, is found in the appendix. In addition, we collected daily total return data for the CDAX index and companies with investors from China and the Gulf states to analyze market reactions to foreign investment from these regions. For these new investments, we manually researched publication dates of ad hoc announcements of Chinese and Gulf investors surpassing voting rights thresholds pursuant to section 33 of the German Securities Trading Act.

After obtaining our final sample, we clustered countries of ultimate owners into three distinct groups: Chinese investments (including Hong Kong), Gulf investments (including investments from the Gulf Cooperation Council, namely Saudi Arabia, Kuwait, Qatar, United Arab Emirates, Bahrain, and Oman), and a third group including all other investments.

For our analysis, we use different aggregation levels with our data. For our descriptive statistics, we use an individual investment level (one observation per investor-company-year combination). For analysis of investment patterns, we also aggregate our data on a company-year level, including dummy variables for the involvement of Chinese investors or investors from the Gulf states.

## *2. Sample Composition*

Table 3 provides an overview of our final sample on a company and an investment level. The number of companies and investments have decreased over our observation period. The total number of listed companies declined substantially by 24% between 2009 and 2018. Our final sample consists of 12,157 individual investments and 4,000 company-years. Throughout our observation period, Chinese investments notably increased in both number of investments and number of companies with Chinese investors. In 2018, 6.1% of all companies in our sample reported a Chinese shareholder. For investments from the Gulf states, the overall number of investments and companies with Gulf investors peaked in 2015/16 and has declined since then. In 2018, 1.9% of all companies reported a shareholder from this region.

Table 3  
Sample Overview

Year	Total sample			Chinese investments			Gulf investments				
	#companies	#investments	%total	#companies	%total	#investments	%total	#companies	%total	#investments	%total
2009	474	1285		7	1.5%	9	0.7%	3	0.6%	4	0.3%
2010	459	1349		7	1.5%	10	0.7%	4	0.9%	6	0.4%
2011	455	1369		13	2.9%	19	1.4%	4	0.9%	6	0.4%
2012	432	1327		19	4.4%	31	2.3%	6	1.4%	9	0.7%
2013	398	1201		15	3.8%	20	1.7%	4	1.0%	5	0.4%
2014	371	1120		17	4.6%	22	2.0%	8	2.2%	9	0.8%
2015	352	1067		18	5.1%	20	1.9%	8	2.3%	10	0.9%
2016	351	1139		21	6.0%	23	2.0%	8	2.3%	10	0.9%
2017	348	1113		20	5.7%	21	1.9%	6	1.7%	8	0.7%
2018	360	1187		22	6.1%	24	2.0%	7	1.9%	9	0.8%
Sum	4000	12157		159	4.0%	199	1.6%	58	1.5%	76	0.6%

Notes: This table shows the number of companies and individual investments per year for the full sample and for Chinese and Gulf investments. The percentage of companies with at least one shareholder from China or the Gulf states and the proportion of Chinese and Gulf investments on all individual investments are reported accordingly. The sample consists of all CDAX companies in the period 2009 to 2018.

## IV. Empirical Results

To investigate FDI patterns related to Chinese and Gulf investors, we first conduct univariate analyses based on ANOVA tests (section 4.1). We also use logistic and OLS regressions based on explanatory variables lagged by one fiscal year to assess the investment preferences of Chinese and Gulf investors (section 4.2). Additionally, we conduct an event study analysis to investigate shareholder value effects associated with Chinese and Gulf investments (section 4.3).

### 1. Univariate Analyses

To obtain a more granular understanding of Chinese and Gulf investments, Table 4 shows an extensive descriptive analysis of key investment dimensions: shareholding characteristics, company characteristics, financing & investment practices, and company performance. For each variable, we also report ANOVA results testing for differences in means.

Overall, Chinese investors take large stakes in companies. Mean shareholdings of Chinese investments are 44.88 % compared to 18.40 % of other investments. Hence, Chinese investors very often take controlling stakes in the companies in which they invest. In contrast, Gulf investors tend to take relatively smaller stakes with a mean of 9.63 %. The differences in means are significant at the 1 % level.

With regard to company characteristics, Chinese investors are invested in relatively small companies. The average market value of Chinese portfolio companies is EUR 1.26 billion, compared to EUR 2.41 billion for other investments. As the distribution of market values is skewed, we additionally consider the median values for our comparison. As a result, the differences in market value show the same pattern with a median value of EUR 54.21 million for Chinese portfolio companies compared to EUR 181.21 million for other investments. Results for revenue and employees also indicate that Chinese investors invest in smaller companies. However, with regard to age, Chinese portfolio companies do not appear to be notably younger, with a mean age of 56.28 years compared to 52.83 years for other investments. Results for the degree of internationalization, measured by foreign sales ratio, remain inconclusive for Chinese investments. In contrast, investors from the Gulf states are invested in larger, older, and more mature companies. The average market value of Gulf portfolio companies is EUR 25.46 billion. Revenue and employee numbers are comparatively larger. Companies in this group are also significantly older, with an average age of 83.05 years compared to 52.83 years for other investments. The foreign sales ratio is significantly larger, with a mean of 77.65 % compared to 43.07 %. Hence, Gulf investors are invested in firms that are more international. For Gulf investments, all mentioned differences in means are significant at the 1 % level.

Table 4  
Descriptive Statistics

	Chinese investments			Gulf investments			Other investments			ANOVA results		
	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	China vs. other	Gulf vs. other	China vs. Gulf
<i>Shareholding characteristics</i>												
Shareholding (in %)	44.88 %	46.81 %	199	9.63 %	8.28 %	76	18.40 %	8.58 %	11,882	26.48 %***	-8.77 %***	35.25 %***
<i>Company characteristics</i>												
Market value (in EUR million)	1,261	54.21	199	25,461	23,799	76	2,405	181.21	11,882	-1,145**	23,056***	-24,201***
Revenue (in EUR million)	2,455	89.54	193	43,132	42,498	74	3,306	199.82	11,788	-850.64	39,826***	-40,677***
Age (abs.)	56.28	26.00	197	83.05	108.00	75	52.83	29	11,063	3.45	30.22***	-26.77***
Employees (in thousands)	5.86	0.71	181	147.17	98.94	72	10.87	0.856	11,487	-5.01*	136.30***	-141.31***
Foreign sales ratio (in %)	45.86 %	39.95 %	144	77.65 %	82.86 %	74	43.07 %	45.49 %	9,507	2.79 %	34.58 %***	-31.79 %***
<i>Financing &amp; investment practices</i>												
Leverage (in %)	35.54 %	12.38 %	177	167.30 %	156.90 %	73	82.64 %	38.44 %	11,474	-47.10 %***	84.66 %***	-131.76 %***
R&D ratio (in %)	4.35 %	0.56 %	199	6.23 %	2.71 %	76	4.95 %	0.00 %	11,882	-0.60 %	1.28 %	-1.88 %
Payout ratio (in %)	15.32 %	0.00 %	158	28.12 %	32.17 %	74	30.97 %	11.69 %	10,754	-15.65 %***	-2.85 %	-12.80 %
<i>Company performance</i>												
Return on assets (in %)	2.53 %	4.33 %	179	2.99 %	5.13 %	73	3.78 %	5.66 %	11,412	-1.25 %	-0.79 %	-0.46 %

Notes: This table reports descriptive statistics and ANOVA results on differences in means for Chinese investments, investments of investors from the Gulf states, and shareholdings of other investors. Descriptive statistics are provided for the full sample of 12,157 individual shareholdings above 3 % in CDAX companies for the period 2009 to 2018. All variables are winsorized at the 1st and 99th percentiles. \*\*\*, \*\*, and \* denote statistical significance at the 1 %, 5 %, and 10 %-level, respectively.

Investments also vary with regard to financing and investment practices. Chinese portfolio companies have a lower leverage, R&D, and dividend payout ratio.<sup>4</sup> The mean leverage is 35.54% compared to 82.64% for other investments; the mean R&D ratio is 4.35% compared to 4.95%; the mean payout ratio is 15.32% compared to 30.97%. Differences in means for leverage and payout ratio are significant at the 1% level. In contrast, Gulf portfolio companies have a higher leverage. Mean leverage is notably larger with 167.30% compared to 82.64% for other investments, which is significant at the 1% level. The results for R&D ratio and payout ratio point in the same direction, even though the means are not significantly different.

Lastly, portfolio companies in both groups tend to perform worse than other firms, with Chinese portfolio companies reporting the lowest mean and median return on assets. However, the differences are not statistically significant.

## 2. Multivariate Analyses

Even though the univariate analyses provide a first indication that investment patterns of Chinese and Gulf investors significantly differ from the rest of the sample, as well as from one another, the explanatory power of such analyses remains limited. Following prior academic literature, we employ OLS and logit models based on lagged explanatory variables to get more robust insights on investment propensities (Erel/Liao/Weisbach 2012; Fuest et al. 2019; Karolyi/Liao 2017). Therefore, we take all shareholdings and estimate the probability that the ultimate investment owner is from China or the Gulf states. Tables 5 and 6 show the results for Chinese and Gulf investments, respectively. Due to multicollinearity issues, we only include market value as a firm size measure.<sup>5</sup> As our goal is to differentiate effects inherent to the owner's region of origin from those related to specific owner types, we run the regressions on investment level – i. e., using individual shareholdings above 3% – without (regressions (1) and (2)) and with (regressions (3) and (4)) owner type controls.<sup>6</sup> Our aim is to crystalize the

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<sup>4</sup> For companies with missing R&D ratio (e.g. service companies), the missing values are replaced by the value 0. In the multivariate regressions, an additional dummy is included as control variable to account for this replacement.

<sup>5</sup> Including all three variables, market value, revenue and number of employees, yielded an average variance inflation factor of 35 for the logit regression.

<sup>6</sup> For our logistic regressions, total number of observations notably decreases to between 5,946 and 4,928 for Chinese investments and between 4,382 and 3,252 for Gulf investments. The main reason for this is that Chinese and Gulf investments do not cover every industry and investor type. As a result, the dummy variables for these industries and investor types would perfectly predict the model and overall explanatory value is lost. Observations with such industries and investor types (without any Chinese/Gulf investment) are therefore excluded (e.g., mining and construction industry for Chinese investments). Results excluding the dummy variables are also discussed in this section.

Table 5  
 Characteristics of Chinese Investments

Dependent variable: Chinese investment dummy	Investment level			Company level			New investment		
	(1) OLS	(2) Logit	(3) OLS	(4) Logit	(5) OLS	(6) Logit	(7) OLS	(7) OLS	
ln(Market value) t-1	-0.003** (-1.979)	-0.245* (-1.922)	-0.003** (-2.035)	-0.222* (-1.652)	-0.007* (-1.721)	-0.203 (-1.415)	-0.013* (-1.802)	-0.013* (-1.802)	
ln(Age since incorporation) t-1	0.001 (0.248)	0.068 (0.195)	0.001 (0.267)	-0.016 (-0.051)	0.013 (1.159)	0.337 (1.096)	0.033* (1.828)	0.033* (1.828)	
Foreign sales ratio t-1	-0.012 (-0.719)	-0.475 (-0.354)	-0.010 (-0.575)	-0.502 (-0.357)	-0.032 (-0.994)	-0.715 (-0.703)	-0.106 (-1.437)	-0.106 (-1.437)	
Leverage t-1	-0.003 (-1.519)	-0.271 (-1.570)	-0.002 (-1.319)	-0.310 (-1.507)	-0.007 (-1.543)	-0.286 (-1.576)	-0.011 (-0.766)	-0.011 (-0.766)	
R&D ratio t-1	-0.045** (-2.399)	-25.066** (-2.244)	-0.048** (-2.524)	-23.118* (-1.916)	-0.117** (-2.504)	-18.325* (-1.884)	-0.337* (-1.936)	-0.337* (-1.936)	
Payout ratio t-1	-0.003 (-1.170)	-0.258 (-0.963)	-0.003 (-1.519)	-0.292 (-1.468)	-0.004 (-0.809)	-0.163 (-0.772)	0.002 (0.095)	0.002 (0.095)	
Return on assets t-1	-0.004 (-0.160)	-0.422 (-0.267)	0.000 (0.013)	-0.729 (-0.466)	-0.061 (-1.089)	-1.598 (-1.043)	-0.105 (-1.124)	-0.105 (-1.124)	
Constant	0.026 (0.819)	-3.256 (-1.470)	-0.000 (-0.004)	-3.795 (-1.546)	0.004 (0.060)	-3.630 (-1.589)	0.298*** (3.177)	0.298*** (3.177)	

Dependent variable: Chinese investment dummy	Investment level			Company level			New investment		
	(1) OLS	(2) Logit	(3) OLS	(4) Logit	(5) OLS	(6) Logit	(7) OLS	(8) Logit	(9) OLS
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Owner Type Controls	No	No	Yes	Yes	No	No	No	No	No
Year*Industry Controls	No	No	No	No	No	No	No	No	Yes
Observations	7,445	5,946	7,445	4,928	2,374	1,929	538		
Adjusted/Pseudo R-squared	0.015	0.130	0.042	0.237	0.037	0.145	0.184		

Notes: This table reports OLS and logistic regression results on the characteristics of Chinese investments in German firms for the period 2009 to 2018. The results are obtained 1) at the investment level using individual shareholdings above 3% in CDAX companies, 2) at the company level using firm-year observations, and 3) from new (or additional) Chinese investments using a matched sample approach. At the investment level (columns 1 to 4), Chinese investment dummy as dependent variable equals one if the specific investment has a Chinese ultimate owner, and 0 otherwise. At the company level (columns 5 to 6), Chinese investment dummy is equal to one if the company has an investor from China in the respective year, and 0 otherwise. Using matched sample (column 7), Chinese investment dummy equals one if Chinese investment in the company exceeds the 3% threshold for the first time or if an existing stake above 3% has been increased, and 0 otherwise. With the latter analysis, the control sample covers only firms with the same year\*industry (2-digit SIC code) combination as the companies with the new (or additional) Chinese investments. All independent variables are lagged by one year and are winsorized at the 1st and 99th percentiles. The variable definitions and data sources are provided in the appendix. In columns 1, 2, 5, and 6, regressions include year and industry (1-digit SIC code) fixed effects. The regression specifications in columns 3 and 4 additionally control for type of ultimate owner per investment, i.e., Bank, Corporate, Government, Insurance, Institutional Investor, Private Individual and Miscellaneous. In column 7, the regression specification includes year\*industry fixed effects. Robust standard errors are clustered at the firm level with regressions in columns 1 to 6 and at the year\*industry level in column 7. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10%-level, respectively.

effects produced purely by the region of origin. In addition, we aggregate our analysis on a company level, employing a Chinese/Gulf state investment dummy equal to one if the company has an investor from China/a Gulf state in the respective year, and zero otherwise (regressions (5) and (6)). Lastly, we use a matched sample (column 7), where the Chinese/Gulf state investment dummy equals one if the Chinese/Gulf state investment in the company exceeds the 3% threshold for the first time or if an existing stake above 3% has been increased, and zero otherwise. With the latter analysis, the control sample covers only CDAX firms with the same year-industry combination as the companies with the new (or additional) Chinese/Gulf state investments.

As shown in Table 5, many of the descriptive results regarding Chinese investments are confirmed. Regression results without and with owner type controls are overall very similar. Therefore, it appears that the specific owner types provide only a limited explanation of Chinese investment preferences. Companies with Chinese investors are comparably smaller but not significantly younger. In regression (7), we even find indications that Chinese investors target relatively older companies. R&D ratio is significantly lower for Chinese portfolio companies. One potential explanation is that Chinese investors are simply less interested in R&D expenditures than other investor groups. *Schmid et al. (2014)* provide an alternative explanation, finding that family firms report R&D expenditures too conservatively. Therefore, families as prior blockholders in Chinese target firms could be another driver for significantly lower R&D ratios. The reported payout ratio appears to be lower for Chinese investors, although not statistically significant. Additionally, we have a weak indication that Chinese portfolio companies have a comparably lower return on assets and a lower degree of internationalization.

Gulf investment characteristics, as shown in Table 6, are notably different. Gulf investors prefer relatively larger companies. The results regarding company age are inconclusive. The degree of internationalization (i. e., the foreign sales ratio) of companies targeted by investors from the Gulf states is significantly higher. The results also indicate that leverage and R&D ratio of portfolio firms are higher, particularly when we additionally control for owner types (regression (4)). Throughout regressions (1) to (6), we find that Gulf investments appear to be in poorer-performing companies compared to other investors, as indicated by significantly lower return on assets.

We also conducted robustness checks to validate our results. First, we replicated the logistic regressions in Tables 5 and 6, excluding controls for industry and investor type, thereby increasing the number of observations. Further robustness tests are based on clustering regions more granularly, including additional dummies for North American, German, and other European ultimate owners. All untabulated results support the findings from our main regressions.



Table 6  
 Characteristics of Gulf State Investments

Dependent variable: Gulf state investment dummy	Investment level				Company level		New investment	
	(1) OLS	(2) Logit	(3) OLS	(4) Logit	(5) OLS	(6) Logit	(7) OLS	(7) OLS
ln(Market value) t-1	0.006** (2.224)	1.217*** (3.989)	0.003* (1.792)	0.957*** (2.611)	0.014** (2.326)	1.219*** (3.514)	0.038** (2.643)	
ln(Age since incorporation) t-1	-0.001 (-0.153)	0.215 (0.480)	-0.001 (-0.326)	0.796 (1.411)	0.003 (0.307)	0.593 (0.984)	-0.017 (-0.741)	
Foreign sales ratio t-1	0.017** (2.185)	7.236*** (3.706)	0.017** (2.339)	10.453*** (4.299)	0.039** (2.223)	8.662*** (3.154)	0.293 (1.500)	
Leverage t-1	0.003 (1.557)	0.284 (1.518)	0.003 (1.625)	0.383* (1.876)	0.006 (1.642)	0.375 (1.536)	-0.016 (-0.874)	
R&D ratio t-1	0.010 (0.535)	3.534 (1.437)	0.015 (0.857)	6.285** (2.043)	0.045 (0.653)	4.880* (1.759)	-0.326 (-0.533)	
Payout ratio t-1	-0.001 (-1.156)	-0.190 (-1.147)	-0.002 (-1.353)	-0.046 (-0.151)	-0.002 (-0.748)	-0.123 (-0.690)	-0.018 (-1.168)	
Return on assets t-1	-0.039** (-2.497)	-10.447*** (-3.623)	-0.026** (-2.427)	-12.939*** (-2.810)	-0.109*** (-2.588)	-11.868*** (-2.907)	-0.209 (-1.291)	
Constant	0.011 (0.185)	-19.019*** (-6.136)	0.027 (0.465)	-24.706*** (-4.221)	-0.052 (-0.526)	-21.434*** (-4.526)	-0.035 (-0.227)	

(continue next page)

(Table 6 continued)

Dependent variable: Gulf state investment dummy	Investment level			Company level			New investment		
	(1) OLS	(2) Logit	(3) OLS	(4) Logit	(5) OLS	(6) Logit	(7) OLS	(8) Logit	(9) OLS
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Owner Type Controls	No	No	Yes	Yes	No	No	No	No	No
Year*Industry Controls	No	No	No	No	No	No	No	No	Yes
Observations	7,445	4,382	7,445	3,252	2,374	1,423	1,423	1,423	120
Adjusted/Presudo R-squared	0.037	0.407	0.166	0.685	0.076	0.498	0.498	0.498	0.198

Notes: This table reports OLS and logistic regression results on the characteristics of Gulf state investments in German firms for the period 2009 to 2018. The results are obtained 1) at the investment level using individual shareholdings above 3% in CDAX companies, 2) at the company level using firm-year observations, and 3) from new (or additional) Gulf state investments using a matched sample approach. At the investment level (columns 1 to 4), Gulf state investment dummy as dependent variable equals one if the specific investment has a Gulf state ultimate owner, and 0 otherwise. At the company level (columns 5 to 6), Gulf state investment dummy is equal to one if the company has an investor from a Gulf state in the respective year, and 0 otherwise. Using matched sample (column 7), Gulf state investment dummy equals one if Gulf state investment in the company exceeds the 3% threshold for the first time or if an existing stake above 3% has been increased, and 0 otherwise. With the latter analysis, the control sample covers only firms with the same year\*industry (2-digit SIC code) combination as the companies with the new (or additional) Gulf state investments. All independent variables are lagged by one year and are winsorized at the 1st and 99th percentiles. The variable definitions and data sources are provided in the appendix. In columns 1, 2, 5, and 6, regressions include year and industry (1-digit SIC code) fixed effects. The regression specifications in columns 3 and 4 additionally control for type of ultimate owner per investment, i.e., Bank, Corporate, Government, Insurance, Institutional Investor, Private Individual and Miscellaneous. In column 7, the regression specification includes year\*industry fixed effects. Robust standard errors are clustered at the firm level with regressions in columns 1 to 6 and at the year\*industry level in column 7. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10%-level, respectively.

### 3. Event Study Analysis

In addition to our uni- and multivariate analyses, we conduct an event study analysis to investigate shareholder value effects associated with Chinese and Gulf investments. Therefore, we assess the average abnormal stock price reaction to 43 announcements of new or additional investments by Chinese and Gulf investors between 2009 to 2018. The information on event dates is obtained from ad hoc announcements of Chinese and Gulf investors surpassing voting rights thresholds pursuant to section 33 of the German Securities Trading Act.

Daily abnormal returns for each firm and day in the event window are calculated as the difference between the realized stock return and the expected stock return. We use the market model to approximate the expected return, i.e., the normal return in the absence of a purchase announcement (*Brown/Warner* 1980, 1985). The CDAX index covering all stocks listed in the main German market segments is used as the benchmark market portfolio. We rely on an estimation window of 220 days (i.e., from day -241 to day -21 relative to the event day 0) to estimate the market model's parameters.

As we are interested in the average shareholder value effects related to stock acquisitions by two substantially different investor groups, we calculate the average abnormal returns for Chinese and Gulf investments separately. To account for issues associated with information leakage and event date uncertainty (*MacKinlay* 1997), we additionally cumulate average abnormal returns for different event windows around the announcement date (i.e., -5 to 5, -3 to 3, -1 to 1, 0 to 1).

The significance of (cumulated) average abnormal returns is assessed using the cross-sectional t-test (*Brown/Warner* 1980) and the standardized cross-sectional test of *Boehmer/Musumeci/Poulsen* (1991). The latter is superior to the simple t-test since it is robust to the event-induced increase of stock return variance.

According to our previous results, Chinese investors tend to acquire large shares in listed German firms, presumably to gain control and to get access to their (intangible) assets. To assess whether the market reaction to announcements of new or additional Chinese investments differs depending on the ultimate shareholding, we conduct a sample split based on the 25% threshold. We investigate the announcements with an ultimate equity stake above and below 25% because the share of voting rights above this critical threshold is essential for fundamental corporate decisions at shareholder meetings of listed German firms.

Table 7 shows the event study results. We find that announcements of new or additional investments by Chinese investors are associated with positive and significant abnormal returns. The average abnormal stock price reaction on the event day equals 3.24%. Besides economic significance, this effect is also statistically significant at the 5% level according to both the cross-sectional t-test and the *Boehmer et al.* test. The results based on broader event windows support the latter finding and indicate even more significant shareholder value effects (e. g., 4.28% and 8.37% with the 3- and 7-day event windows, respectively).

When splitting the sample using the 25% threshold, we find that Chinese investments related to an ultimate ownership stake above 25% are associated with much higher positive abnormal returns than those with an ultimate equity stake below the 25% threshold (for instance, 4.01% vs. 2.28% on the announcement day and 14.84% vs. 0.03% with the 7-day event window). The results for the latter subsample are only significant for the 1-day event window. These findings indicate that Chinese investors seem to pay higher premiums when acquiring large equity stakes and are thus seeking control.

In contrast, we do not find any significant abnormal returns for the sample of Gulf investments. However, this result is in line with the fact that the ultimate shareholdings of Gulf investors in our sample are all far below 25%, indicating that investors from the Gulf states are not looking for control associated with acquisition premiums.

*Table 7*  
**Event Study – New Investments**

<i>New Chinese investments (N = 36)</i>			
<u>Event window</u>	<u>CAAR</u>	<u>T-test cross-sectional</u>	<u>Boehmer et al.</u>
(-5...5)	7.29%	1.925*	1.958*
(-3...3)	8.37%	2.011**	2.016**
(-1...1)	4.28%	1.902*	1.868*
(0...0)	3.24%	2.012**	2.320**
(0...1)	2.78%	1.800*	1.898*
<i>New Chinese investments above 25% (N = 20)</i>			
<u>Event window</u>	<u>CAAR</u>	<u>T-test cross-sectional</u>	<u>Boehmer et al.</u>
(-5...5)	13.77%	2.284**	2.488**
(-3...3)	14.84%	2.188**	2.437**
(-1...1)	7.04%	1.885*	1.842*
(0...0)	4.01%	1.464	1.626
(0...1)	4.25%	1.822*	1.762*

*New Chinese investments below 25% (N = 16)*

<u>Event window</u>	<u>CAAR</u>	<u>T-test cross-sectional</u>	<u>Boehmer et al.</u>
(-5...5)	-1.09%	-0.404	-0.130
(-3...3)	0.03%	0.011	-0.089
(-1...1)	0.82%	0.472	0.506
(0...0)	2.28%	1.787*	1.875*
(0...1)	0.96%	0.507	0.747

*New Gulf state investments (N = 7)*

<u>Event window</u>	<u>CAAR</u>	<u>T-test cross-sectional</u>	<u>Boehmer et al.</u>
(-5...5)	-0.08%	-0.075	1.093
(-3...3)	1.18%	1.175	1.566
(-1...1)	1.68%	0.747	0.898
(0...0)	1.25%	0.723	0.463
(0...1)	1.18%	0.659	0.752

*Notes:* This table reports event study results for new (or additional) Chinese and Gulf state investments. For Chinese investments subsamples of announced shareholdings below and above 25% are further analyzed. The first date on which the transaction becomes public is used as the event day. Cumulative average abnormal returns (CAARs) are reported along with the results of the cross-sectional t-test and Boehmer et al. test to assess their significance. An abnormal return is calculated as the difference between the realized and the expected total return. Expected returns are calculated using the market model with an estimation window from -241 to -21 trading days and the CDAX index. Total returns are from the Refinitiv Datastream database. \*\*\*, \*\*, and \* denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

## V. Discussion

Our findings for Chinese and Gulf investors are in line with their respective industrial policies. The countries' influence on firms' outside FDI behavior manifests itself in notably different investment approaches. We find the Chinese investment approach to be rather transactional. In contrast, the investment approach of the Gulf states can be characterized as more long-term oriented and relationship-driven.

In our observation period, Chinese FDI policies are largely influenced by China's strategic objective to update technology in their home market, preferably via mergers and acquisitions (Xuan 2016). To close the technology and know-how gap between China and more developed countries, controlling stakes in the target companies are essential. In line with this, we find Chinese shareholders to have control over their companies in the majority of the cases.<sup>7</sup> The strategic

<sup>7</sup> Since we note that Chinese FDI activities are to a large extent motivated by getting access to technology and in the case of German firms particularly to industrial technologies, which are typically centered in the manufacturing sector, we additionally assess the average equity stakes in the manufacturing and other industries separately. In untabulated

goal to gain control over their portfolio companies is also reflected in the stock premiums Chinese investors pay, particularly for investments targeting shareholdings above 25%. With regard to company characteristics, our most outstanding finding is the significantly lower R&D ratio of Chinese portfolio companies. As indicated above, the explanations are twofold: One potential reason emerges from the technology gap, in our observation period mainly with regard to industrial technology, between China and Germany (*Luo/Tung 2007; Mathews 2002*). As the existing knowledge and capabilities of their German targets are not yet established in China, Chinese investors potentially prioritize the existing (intangible) assets and technologies and are less interested in further investments into R&D by their portfolio companies. Our finding that Chinese portfolio companies are relatively older firms that likely have established technologies supports this notion. The other potential explanation lies in the nature of the portfolio companies. As Chinese investors often look to acquire majority stakes, existing blockholders in target firms become attractive transaction partners. In particular, family firms present a good fit, as they are generally relatively older and smaller companies that have been shown to report R&D expenses too conservatively (*Schmid et al. 2014*).

In contrast, the Gulf states follow a long-term, relationship-oriented investment approach. To establish and build relationships, they acquire minority stakes in large, established companies (*Reuters 2017*). They aim to diversify their economies beyond oil in the long run. Minority investments in German companies serve this strategy as Gulf states hope these companies will in turn invest in the Gulf region (*Cermak 2017*).<sup>8</sup> To accomplish this goal, they are not interested in controlling stakes but rather in “getting a foot in the door” and building relationships. Our findings that Gulf investors purchase small equity stakes in large companies support this notion. Furthermore, we find that Gulf investors target companies that are significantly more international. One potential explanation that Gulf investors actively seek more international firms is that they assume such firms can more easily expand into the Gulf region. Lastly, the significantly lower return on assets and higher R&D expenses of firms targeted by Gulf in-

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ed tests, we find that the average shareholding of Chinese investors in the manufacturing sector (incl. capital and consumer goods) is equal to 40.75%, while the mean shareholding in other industries is equal to 55.43%. This finding indicates that, while Chinese investors often seem to seek control over manufacturing firms to get access to their technologies, they may pursue further goals by acquisition of even larger average stakes in firms from other industries (e.g., the retail sector), such as fully taking over these companies to establish a strategic power position or to reduce competition.

<sup>8</sup> For instance, German blue-chip companies like Deutsche Bank, Volkswagen and Hochtief all invested into the Gulf state Qatar, while a priori having Qatari shareholders (*Cermak 2017*).

vestors underscore this investor group's long-term strategic motives rather than a short-term financial profit approach.

## VI. Conclusion

Our findings extend recent works by *Fuest et al. (2019)* and *Karolyi/Liao (2017)*. We provide insights on investment patterns while accounting for investor type and idiosyncratic particularities of investor regions. We find that FDI patterns of Chinese and Gulf investors largely differ in line with their respective industrial policies. These findings could potentially be extended and further validated. Most importantly, as we employ a dataset of German listed companies, additional research is required to generalize our findings to non-listed companies and other countries. Furthermore, our research mainly focuses on the investment patterns of these investor groups. Additional research is needed to understand their long-term impact on portfolio companies. That is particularly important for Chinese investments in Germany, which have been increasing sharply since 2016.

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