

# **Understanding Chinese Foreign Direct Investment in the United States**

by

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## **Abstract**

This paper aims to identify the general pattern of Chinese FDIs in the U.S. in recent years and to examine factors affecting the surge of M&As by private Chinese firms. The central question explored in the paper is whether there is evidence that Chinese firms are overpaying for the M&A deals. Ordinary least squares regression results show that the economic environment and government policy in China are associated with the change of Chinese firms' deal making in the U.S. T tests and equivalence test are applied to examine whether Chinese buyers are overpaying than U.S. firms for comparable deals. The tests for premium paid suggest no evidence of Chinese firms overpaying, while tests for EBITDA multiple show that Chinese buyers are paying for a higher multiple on average. In all the tests performed, there is much higher variability in Chinese buyers, indicating their wider range of motivations. Cumulative prediction errors are calculated for publicly listed Chinese buyers around the transaction time, and no evidence of abnormal returns is found. The results taken together suggest that while there is no compelling evidence of Chinese firms overpaying, they have rather different reasons and motivations in investing in U.S. firms both among themselves and as compared to U.S. buyers, which translates into a higher variability in the premium paid and higher multiples.

## 1. Introduction

Growing for the last decade and soaring to record high in 2016, Chinese Foreign Direct Investments (FDIs) in the U.S. has received heightened attention. The size of the U.S. market is certainly attractive to Chinese firms. Fuyao Glass Industry Group, the largest auto glass manufacturer in China, has invested heavily in establishing factories in Ohio to get closer to customers in its biggest overseas market. Though praised for creating jobs in the manufacturing sector, the Chinese firm encountered culture clashes. Globerman and Shapiro 2008 has noted that the relatively large cultural distance between China and the U.S. suggests acquisition may be a more favorable mode of FDI than greenfield investment for Chinese firms entering into U.S. market. Since 2008, mergers and acquisitions (M&As) have accounted for the majority of total Chinese investments in the U.S. by value. This is not surprising, since acquisitions have been found to be the primary mode of strategic asset seeking in developed markets (Anderson and Sutherland, 2015). Table 1 shows that M&A has been not only Chinese firms' primary entry mode but also the key driver of the rapid surge in deal making.

Meanwhile, Chinese state-owned enterprises (SOEs), with both commercial and non-commercial objectives, have been leading players in overall outbound investments for many years. This is partly because China's bank-dominated capital allocation has channeled savings disproportionately to SOEs (Morck, Young and Zhao 2008). Often furthering public policy goals, SOEs' overseas investments were encouraged by the government and relatively immune to financial losses. As Chinese government eased regulations on outbound investments over the years, there has been a notable rise of private investors: they have undertaken most of the large deals and become the major force behind the boom of Chinese M&As in the U.S. In 2017,

private firms accounted for 96% of the deal value. For this reason, I will focus my research on private Chinese firms' M&A transactions in the U.S.

Table 1. Summary of Chinese M&A transactions in the U.S.

(Data below is obtained from Chinese Investment Monitor (CIM) by Rhodium Group, an independent research provider that compiled data from "a wide range of different channels, including commercial databases, online search algorithms, media reports, regulatory filings, company reports, industry associations, official statistics, investment promotion agencies, industry contacts, and other sources." The numbers from CIM tend to be higher than official report and data from S&P Capital IQ, where the data for my hypothesis testing comes from.)

	<b>Number of Deals</b>	<b>Total Value in \$mil</b>	<b>Government in \$mil</b>	<b>Private in \$mil (% of Total)</b>	<b>% of Total Deals*</b>	<b>% of Total Deal Value**</b>
<b>2006</b>	9	91	0	91 (100%)	22%	46%
<b>2007</b>	11	129	0	129 (100%)	16%	36%
<b>2008</b>	15	648	0	648 (100%)	23%	85%
<b>2009</b>	18	412	337	75 (18%)	22%	60%
<b>2010</b>	35	4,329	3,627	702 (16%)	32%	94%
<b>2011</b>	53	4,026	2,252	1,774 (44%)	42%	82%
<b>2012</b>	35	6,676	2,657	4,018 (60%)	37%	88%
<b>2013</b>	51	13,462	3,211	10,251 (76%)	44%	94%
<b>2014</b>	105	11,286	2,441	8,846 (78%)	63%	88%
<b>2015</b>	101	13,546	2,859	10,687 (79%)	60%	91%
<b>2016</b>	108	44,227	9,572	34,646 (78%)	61%	98%
<b>2017</b>	97	28,644	1,046	27,598 (96%)	69%	97%

\*Number of M&A deals as a percentage of total deals including both M&As and greenfield investments

\*\*Total M&A deal value as a percentage of total deal deal value including both M&As and greenfield investments

There are many factors behind expanding Chinese investments in the U.S. Chinese economic environment in the past decade, including massive accumulation of foreign reserve, robust growth in gross domestic product as compared to most countries, and relatively strong Chinese yuan, provides support for companies going abroad. In more recent years, Chinese firms want diversification in the U.S. because U.S. economy has been steadily improving, while the growth in China has slowed down and structural challenges loomed large. In pursuit of high-quality and efficient growth, Chinese companies need to acquire cutting-edge technology know-how and management skills in the U.S. Table 2 shows that before 2014, Chinese investment in the U.S. has a strong focus in Information Communication and Technology sectors, which

partially explains why a large number of targets are located in California. In 2012 and 2013, the highest number of deal making happened in the energy sector, which aligns with Chinese government's drive to sustain growth.

Table 2. U.S. Industries and States that Received the Highest Number of M&As and Greenfield Investment

(The data below also comes from Chinese Investment Monitor (CIM) by Rhodium Group and thus tend to be higher than official report and S&P Capital IQ)

	Industry with the Most Deals (Number of Deals)	Total Investment in the Industry in \$mil	State with the Most Deals (Number of Deals)	Total Investment in the State in \$mil
2006	ICT* (9)	96 (49%)**	CA*** (12)	55 (28%)****
2007	Automotive (11)	101 (28%)	CA (21)	86 (24%)
2008	ICT (14)	107 (14%)	CA (17)	118 (15%)
2009	Energy (13)	212 (30%)	CA (19)	33 (5%)
2010	ICT (19)	222 (5%)	CA (35)	446 (10%)
2011	ICT (22)	535 (11%)	CA (39)	690 (14%)
2012	Energy (14)	2957 (39%)	CA (17)	201 (3%)
2013	Energy (25)	3613 (25%)	CA (31)	1230 (9%)
2014	Real Estate & Hospitality (51)	3928 (31%)	CA (53)	2784 (22%)
2015	Real Estate & Hospitality (39)	4749 (32%)	CA (66)	3144 (21%)
2016	Real Estate & Hospitality (52)	16528 (37%)	CA (67)	16199 (36%)
2017	Real Estate & Hospitality (33)	10975 (37%)	CA (53)	4665 (16%)
Cumulative	Real Estate & Hospitality (218)	39771 (29%)	CA (418)	29651 (22%)

\*Information and Communications Technology    \*\*As a percentage of the total value of all investments    \*\*\*California  
\*\*\*\*As a percentage of the total value of all investments

Chinese firms seeking advanced technologies have invested in a wide variety of tech firms, from gaming to deep learning, from robotics to artificial intelligence. China's tech titans Baidu, Alibaba and Tencent, together known as BAT, have invested billions of dollars in various technology businesses (Table 3). With its investments in KITT.AI and TigerGraph, Baidu has been at the forefront of machine learning and artificial intelligence development. Alibaba has

extended its presence in the U.S. in all directions, boosting not only its software and hardware capabilities but also China's soft power. The biggest gaming company in the world by revenue, Tencent has been branching out to biotech startups. Moreover, many firms including BAT, JD.com, Huawei, and Xiaomi, have opened offices and R&D facilities in Silicon Valley. There are also times when the deal's priority is expanding advanced technology developed in China to the large, sophisticated U.S. market rather than acquiring U.S. know-how. Ant Financial, owned by the biggest Chinese internet conglomerate Alibaba, wanted to takeover the large U.S. provider of money transfers MoneyGram, with the objective of growing its own technology outside of China.

Table 3. Investments in Technology Business by BAT  
(data collected from S&P Capital IQ)

Buyer	Target	Size (\$mm)	Closed Date	Transaction Type	Target Industry
Baidu	Uber Technologies, Inc.	2,800.00	Feb-18-2015	Private Placement	Transportation Technology Service
	KITT.AI	N/A	Jul-04-2017	Merger/Acquisition	Artificial Intelligence
	TigerGraph Inc.	31.00	Sep-19-2017	Private Placement	Data Link Analytics
Alibaba	Magic Leap, Inc.	793.50	Feb-02-2016	Private Placement	Augmented Reality
	Barefoot Networks, Inc.	80.00	Nov-22-2016	Private Placement	Networking Chip
	NVXL Technology, Inc.	20.00	Nov-13-2017	Private Placement	Cloud Computing
Tencent	Karius, Inc.	50.00	Aug-07-2017	Private Placement	Disease Detection
	VoxelCloud Inc.	15.02	Sep-28-2017	Private Placement	Medical Artificial Intelligence
	Uber Technologies, Inc.	8,000.00	Jan-18-2018	Merger/Acquisition	Transportation Technology Service

An important part of the structural reform in China that influences outbound FDIs is deleveraging and risk containment. In 2017, asset acquisitions abroad have been obstructed by a recent massive deleveraging of Chinese state owned enterprises and other business interests, as well as increased government scrutiny of debt-fueled expansion overseas. This is partially a response to the skyrocketing investments from 2014 to 2017 in real estate and hospitality (Table 2), as Chinese government becomes concerned that many large deals are debt-fueled, outside of the buyer's core business and thus imprudent. Some argue that the increased overseas investments are capital flight, a response to mounting inflation as well as uncertainty about exchange rates and economic outlook. From 2017, capital control and debt crackdown of Chinese conglomerates have restricted the spending spree of some biggest acquisitive private firms investing in the U.S., including HNA Group and Dalian Wanda. In the interest of financial and social stability, the tightened regulatory screws centered on Chinese acquirers' complex ownership structure and opaque sources of funding. Borrowing for its expansion, HNA Group has accumulated big loads of debts and is now under the pressure to liquidate assets in the U.S. Alternatively, companies can maintain the pace of acquisition through aligning with government efforts. Another big buyer of U.S. assets Fosun International, who acquired One Chase Manhattan Plaza for \$725 million in 2013, continued its development overseas by promoting government's high-tech and domestic-consumption driven objectives. The structural challenges of balancing debt reduction and economic growth that Chinese government is facing pose uncertainties to Chinese outbound FDIs in the U.S.

Because Chinese firms invest in the U.S. mainly through M&As rather than greenfield projects, it is questionable whether Chinese investments provide spillover efficiency to the U.S. Nonetheless, there are some identifiable benefits that the U.S. can receive, including accessing

Chinese market and having more trades and capital flows with the rapidly growing economy. Whether the U.S. benefits from Chinese investment or not, the scale of the investment has been relative small until very recently. The drastic increase in both number and size of the Chinese investments raised serious concern about national security and economic competitiveness in the U.S. Some argue that Chinese M&As transfer know-how to Chinese firms without contributing much to the U.S. economy. A large amount of Chinese investments in high-tech industries, though encouraged by Beijing, has been perceived as posing economic risks as well as threats to U.S. defense capabilities. Table 2 has illustrated that California is the state with the highest number of Chinese investments, and many investments in relatively small tech startups are difficult to track.

Reciprocity is a topic frequently brought up. Chinese acquisitions of critical technologies in the U.S. have been criticized on the grounds that China would never countenance similar deals in reverse. Google and Snap have opened offices in China, and Facebook is trying to set one up; but all three's platforms are still blocked in the mainland. Another risk associated with Chinese investments is the lack of clarity about the party's role in the transactions. The party's intervention is more visible when the buyers are state-owned enterprises or publicly listed companies with considerable government stake. But sometimes private companies have relationship with the authority that has gone unreported: Dalian Wanda, the big-spending Chinese firm in U.S. entertainment, is one of them. As Chinese government seeks to ensure both growth and stability, there is also uncertainties with the party's involvement in private companies. In February 2018, the state, cracking down on financial risks, has taken control over the private insurer Anbang Insurance Group, the biggest Chinese spender in the U.S from 2014 to 2016.



Rather than nationalizing Anbang or selling its assets, the government will manage the company via a special committee organized by various regulators.

Despite its openness to inward foreign investments, the U.S. has a government body reviewing and gatekeeping foreign investments to protect its national interests: Committee on Foreign Investments in the United States (CFIUS). CFIUS was founded in 1975, in response to congressional unease with the inward investments by OPEC countries. It was not empowered with significant authority to fend off certain transactions until 1980s, with the surge of fears that Japanese companies' expansion in the U.S. impairs national security. From 2013 to 2015, acquisitions by Chinese investors accounted for 19% of the notices filed, the largest share among all countries (Appendix). On top of that, congress has proposed to strengthen and expand the power of CFIUS.

Overall, the bilateral engagement between these two world's largest economies carries great significance to globalization. The structural changes in both China and the U.S. play critical roles in the bottom-up process of restoring global demand and rebalancing sustained growth. Understanding the dynamics of Chinese FDIs in the U.S. can help shed light on the national growth-oriented strategies and global cooperation.

## **2. Literature Review**

Many researches have discussed Chinese outward FDIs, but few have focused on Chinese investments in the U.S. specifically. Koltad and Wiig (2012) found that Chinese outward FDIs are attracted to large markets, and to countries with large natural resources and poor institutions. OECD in 2008 identified five major motivations behind Chinese outward FDIs: they seek 1) natural resources; 2) product markets; 3) strategic assets including advanced technology, brand

names and customer/distribution networks; 4) diversification; 5) efficiency. The rapidly expanding Chinese investments in the U.S. in recent years exhibit abovementioned motivations. Chinese buyers have strong urge to obtain know-how and brands and boost their competitive position through acquiring U.S. targets. Globerman and Shapiro (2008) argued that Chinese FDI in the United States is more likely to take the form of acquisitions than greenfield investments, for reasons including gaining access to U.S. managers' skills. Such preferred mode of entry by Chinese firms was perceived unfavorably by the U.S. Tingley, Xu, Chilton and Milner (2015) found that there is more likely to be opposition to Chinese M&A attempts in security sensitive industries, economically distressed industries, and sectors in which U.S. companies faced restrictions in China's M&A markets.

In sum, previous researches have centered on the costs and benefits that inward FDI from China present to the U.S. economy. Frye and Pinto 2009 has concluded that FDI from China in the U.S. is as much a political as an economic issue. Notably, Milhaupt's work in 2009 examines political controversies surrounding Japanese FDI in the U.S. in 1980s, which parallel Chinese FDI to a great extent. First, reciprocity is the largest underlying cause of friction, as the U.S. welcomed Japanese investments and yet faced substantial barriers to trade and investment in Japan. Similarly, the one-way surge of Chinese FDI in the U.S. has triggered criticisms. Second, Japanese and Chinese FDI in the U.S. are both colored by trade imbalance. China's competitive advantage intimidates the U.S., and many blame undervalued Chinese yuan for the large U.S. deficit. Third, critics in the U.S. complained about Japanese unfair trade and investment practices and promoted the view that Japan's economic rise poses threats to the U.S. economy. Chinese firms are now criticized on the similar grounds. Fourth, concerns about national security were raised towards Japanese companies, and are likely to be amplified for Chinese firms, as China

presents the U.S. with significant military challenges. Lastly, Japanese firms faced negative perception about their employment practices, and I have found that controversies about Chinese labor practices also arise in recent years. For instance, the Chinese glassmaker Fuyao was attacked for its management style and has been undergoing unionization fight. Despite the assortment of concerns from the U.S., it was found that alleged costs to the U.S. economy from Chinese FDIs have been anticipated by existing laws and regulations in the U.S. (Globerman and Shapiro 2008). Milhaupt has expressed optimism in a normalization of investment relationship between China and the U.S., as Japanese affiliates now thrive in the U.S. despite turbulence in early years. One question that many people wonder yet remains unanswered is then whether Chinese companies overall are strategic in making considerable acquisitions in the U.S. The surge of mega-deals makes people question whether Chinese companies are overpaying for some of the deals.

### **3. The Factors behind Increased Chinese Acquisitions in the U.S.**

There are many potential factors associated with increased Chinese acquisitions in the U.S. When the U.S. was still in a downturn caused by financial crisis in 2008, China was able to maintain stable overseas investments, which helped boost demand and alleviate unemployment in the U.S. Hanemann and Lysenko (2012) found that Chinese investments both create new jobs and sustain existing ones. Table 4 shows that there are 43.8 thousand people employed by Chinese majority-owned affiliates in the U.S. in 2015. About 32% of those employments are in manufacturing sector, an important part of the U.S. economy that needs to be revitalized. Commerce Department has also found that U.S. manufacturing sector benefits greatly from

inbound FDIs. In 2015, Chinese majority-owned affiliates in the U.S. contributed about \$1.2 billion value-added to U.S. manufacturing industries (Table 4).

Table 4. Chinese Majority-Owned Affiliates in the U.S.

	Total Employment (in thousands)	Employment in Manufacturing	Total Value Added (in \$mil)	Value Added in Manufacturing
2012	33.9	12.1	2510	863
2013	37.9	12.7	3194	1091
2014	41.4	14.7	5551	1426
2015	43.8	13.8	5157	1167

However, the rapid surge of Chinese FDIs in the U.S. in 2016 triggered political concern about national security, including loss of competitive edge in technological and military capabilities. The U.S. congress seeks to expand the power of Committee on Foreign Investment in the United States (CFIUS) to block Chinese investment in the U.S. In the midst of escalating trade tensions with China, Trump has expressed tough stance on foreign takeovers of American know-how and serious concerns about Chinese money. In March 2018, Trump administration announced plans to limit Chinese investments in response to Chinese firms' unfair trade practices. The opposition from the U.S. is most pronounced in high-tech sectors like semiconductors and artificial intelligence. Though Jack Ma, the CEO of Alibaba has been on good terms with President Trump, the firm's affiliate company Ant Financial failed to acquire MoneyGram due to perceived potential threats to consumer's private financial data in the U.S. The obstacle to technology acquisitions is even larger for companies suspected of having close ties with Beijing. Huawei, one of the biggest telecommunication company in the world, has been tagged as threats to U.S. national security because of the alleged ties the CEO has with the Communist Party. In 2008, Huawei dropped its acquisition of the networking equipment company 3Com under pressures from the U.S. government, which feared national security risks

and intellectual property theft. Also failed for similar reasons was Huawei's bid to supply equipment to Sprint Nextel, a telecommunication device and service provider for both public and private sectors in the U.S. In 2011, Huawei's another attempt to invest in the server technology company 3Leaf Systems fell foul of the CFIUS, which suggested Huawei to divest its assets in 3Leaf in view of national security concerns. Though determined to expand its presence in the U.S., Huawei has faced setbacks in launching its products through major U.S. carriers. Another Chinese telecom equipment giant ZTE, with alleged ties to the Party, also faced U.S. scrutiny for privacy protection and cybersecurity issues.

There are also important factors from the Chinese side, which my hypothesis will focus on. At any time, individual companies have various strategic and financial considerations to invest abroad, such as diversification and high-tech innovation. Until well into the year of 2016, firms have much autonomy in such deal making. But as the number and size of the deals mounted and companies' decisions on investing in the U.S. converged, I can not help but wonder the role played by macroeconomic factors and government policies in companies' overseas expansion.

#### 1) Hypothesis, Data and Methodology

The general hypothesis is that macroeconomic factors, such as exchange rate, inflation, foreign reserve, consumption, GDP growth, as well as policies and company's borrowing from domestic bank can potentially affect Chinese M&As in the U.S.

Ordinary least squares regression is applied using number of announced M&A deals each quarter from 2006 to 2017 as the dependent variable. Quantity of the deals rather than the total size of the deals is chosen as the target variable because total transaction value is not available

for all the deals announced. The data for dependent variable is gathered from S&P Capital IQ. A major data limitation is that S&P Capital IQ does not source its data through a very comprehensive transactional approach like the one conducted by CIM. The long left-tail problems in the data for both dependent and independent variables are addressed through log transformation. I will try different models, select the best subset regression and report its regression results.

Potential predicting variables are:

- Exchange Rate (China / U.S. Foreign Exchange Rate, Chinese Yuan to One U.S. Dollar, Not Seasonally Adjusted), from Federal Reserve Economic Data (FRED)
- Foreign Reserve (Foreign Currency Reserves of China in billions, represent the amount of foreign currency held by a given country's central bank and monetary authority), from S&P Capital IQ
- CPI Growth (Consumer Price Index: All Items for China, Index 2010=100, Quarterly, Not Seasonally Adjusted), from FRED
- GDP Growth (Current Price Gross Domestic Product in China, Billions of Chinese Yuans, Quarterly, Seasonally Adjusted), from FRED
- GDP Growth squared (included in the model for a potential parabolic relationship)
- Log Domestic Debt (Amount Outstanding of Domestic Debt Securities for Non-Financial Corporations Issuers, All Maturities, Residence of Issuer in China, Millions of U.S. Dollars, Quarterly, Not Seasonally Adjusted), from FRED
- Log Retail Sales (a monthly measurement of retail performance based upon a sample of retail stores of various sizes and types, quarterly, unit in percentage), from S&P Capital IQ

- Policy Change 2013, an indicator variable created for an important move Chinese government made to encourage company's expansion abroad in the first half of 2013. All the quarters before that are assigned the value of 0, and after that the value of 1. In 2013, barriers for overseas investment were lowered considerably. First, the regulation and control for corporations shifted from approval to record- filing system, increasing company' autonomy in decision-making. Second, the reviewing procedure was simplified. Third, the overall process was made more transparent and efficient through methods including online record-filing.
- Policy Change 2015, an indicator variable separating the quarters before the mid-2015 (0) and after (1). Since 2014, Chinese government had been further liberating outbound investments, leading to the *Circular on Further Simplifying and Improving Direct Investment-related Foreign Exchange Administration Policies* that went into effect on June 1, 2015. Such change made investing overseas much easier for Chinese companies.
- Indicator variable Policy Change 2017, which takes the value of 1 to indicate quarters after August 2017 and the value of 0 for quarters before. In August 2017, the state council released the *Guidelines on Further Guiding and Regulating Overseas Investments*, which categorized overseas investments as to be encouraged, limited or prohibited. Notably, investing in real estate, hotels, film studios and entertainments are to be restricted.

## 2) Results

Table 5. Best Subset Regression Results

R-Sq	R-Sq (adj)	Mallows Cp	S	Exchange Rate	Foreign Reserve	CPI Growth	GDP Growth	GDP Growth sq	Log Domestic Debt	Log Retail Sales	1 3	1 5	1 7
24.9	23.2	31.9	0.15789								X		
22.9	21.1	34.0	0.16004									X	
34.0	30.9	25.0	0.14978			X					X		
30.0	26.8	28.9	0.15421	X							X		
41.4	37.3	19.7	0.14274			X	X				X		
38.3	33.8	22.8	0.14658	X		X					X		
46.8	41.6	16.4	0.13770	X	X					X	X		
45.5	40.1	17.7	0.13943			X	X				X	X	
51.9	45.9	13.4	0.13254	X					X	X	X		X
50.8	44.7	14.4	0.13403	X	X	X				X	X		
57.0	50.4	10.4	0.12695	X		X			X	X	X		X
54.7	47.7	12.6	0.13029	X	X				X	X	X		X
61.0	53.9	8.4	0.12242	X		X	X		X	X	X		X
58.7	51.1	10.7	0.12598	X	X	X			X	X	X		X
62.9	54.9	8.5	0.12100	X		X	X	X	X	X	X		X
62.3	54.1	9.1	0.12204	X	X	X	X		X	X	X		X
64.3	55.4*	9.2	0.12040	X	X	X	X	X	X	X	X		X
63.2	54.0	10.3	0.12226	X	X	X	X	X		X	X	X	X
64.5	54.3	11.0	0.12180	X	X	X	X	X	X	X	X	X	X

\*This model has the highest R-sq adjusted, but the multicollinearity between Exchange Rate and Foreign Reserve is extremely high.

In Table 5 the regression of the highest R-sq adjusted with low Mallows Cp and small standard error of the estimate provided by the best subsets selection suggests the following model in Table 6.

Table 6. Regression Output (adjusted for outliers, leverage points and influential points)

	Coef	SE Coef	T-Value**	P-Value	VIF
Exchange Rate	0.3513	0.0881	3.99	0.000	6.98
CPI Growth	7.28	2.40	3.03	0.004	1.75
GDP Growth	0.569	0.237	2.40	0.022	2.01
GDP Growth_sq	3.91	2.84	1.38	0.177	1.38
Log_Domestic Debt	0.414	0.118	3.51	0.001	12.51*
Log_Retail Sales	1.060	0.359	2.96	0.005	4.35
Policy Change 2013	0.2528	0.0698	3.62	0.001	3.56
Policy Change 2017	-0.314	0.135	-2.33	0.026	1.21

Regression F-statistic: 7.85 (P-Value: 0.000)

R-sq: 62.93%\*\*\*

\*\*\*\*

\*Indication of multicollinearity.

\*\*The T-statistics can be deflated.

\*\*\*Overall measures of fit is less affected.

\*\*\*\*There is no autocorrelation in the ACF of the standardized residuals plot.



Despite the decent fit with R-sq of 62.93% and very significant F-statistic, there is an instability in the coefficients because of multicollinearity. It would also be unwise to use the regression model for prediction. But overall the model gives us some insight about factors related to deal making. Except GDP Growth\_sq, all the coefficients are significant at 0.05 level. This suggests that economic development, growth in inflation, domestic debt outstanding, and rise of consumption-driven growth are positively associated with the number of announced M&A deals by Chinese companies investing in the U.S. The positive relationship between domestic debt level and number of deals corroborates Chinese authority's concern that large-sized deals funded by domestic banks may expose financial sectors to losses. Coefficients for Policy Change 2013 and 2017 suggest that the government's liberation and restriction of outbound foreign investments could have been effective in affecting the quantity of deals. Naturally, there is a large portion of variability in the number of deals that the independent variables do not account for. Such variability can be attributed to commercial and strategic reasons perceived by individual companies' management teams for pursuing the deals.

#### **4. Whether Chinese Companies Are Overpaying**

##### *a. Differences paid by Chinese and U.S. buyers in comparable M&As*

###### 1) Hypothesis, Data and Methodology:

The hypothesis is that the average premium over market price Chinese buyers are paying is not significantly higher than what U.S. buyers pay in comparable deals. Data for China-U.S. M&A deals are gathered from S&P Capital IQ based on the criteria that the M&A Closed Date is between 12/31/2005 and 12/31/2017; the Geographic Location of Buyers/Investors is China (Primary); the Geographic Location of Target/Issuer is the United States of America (Primary);

the U.S. target is publicly listed. Comparable U.S.-U.S. transactions from the same period are then sorted according to target company's industry, deal size and transaction time. In the end there are 20 applicable comparable transactions for tests of premium paid. Note that buyers in most large-sized deals are private, while those deals are more often considered as being overpaid. Therefore, the average premium obtained may exhibit downward bias. The premium paid for the deal is calculated as the difference between total transaction value and the (target market capitalization  $\times$  percentage sought) divided by the latter. Tests are also performed for implied EV/EBITDA given by S&P Capital IQ, where there are 23 applicable transactions in total. Note that for tests for implied EV/EBITDA, some transactions included have targets that are private.

## 2) Results

Table 7. T Tests for China-U.S. and U.S.-U.S., Premium Paid

The One-Sample T tests for China-U.S. and U.S.-U.S.:

Sample	N	Mean	StDev	SE Mean
China-U.S.	20	0.789	1.56	0.35
U.S.-U.S.	20	0.761	0.827	0.18

China-U.S.

U.S.-U.S.

China-U.S.		U.S.-U.S.	
Null hypothesis	$H_0: \mu_1 = 0.789$	Null hypothesis	$H_0: \mu_2 = 0.761$
Alternative hypothesis	$H_1: \mu_1 \neq 0.789$	Alternative hypothesis	$H_1: \mu_2 \neq 0.761$
T-Value	P-Value	T-Value	P-Value
-0.00	1.000	-0.00	0.998

The Two-Sample T tests for China-U.S. and U.S.-U.S.:

Null hypothesis			$H_0: \mu_1 - \mu_2 = 0$
Alternative hypothesis			$H_1: \mu_1 - \mu_2 \neq 0$
T-Value	DF	P-Value	
0.07	28	0.943	

Results in Table 7 show the average premiums paid by Chinese and U.S. buyers for comparable deals are 78.9% and 76.1%, respectively. The standard deviation for China-U.S. is much higher than that for U.S.-U.S., which suggests a greater variability in Chinese companies' deal-making. This is not surprising, since there is a wider range of reasons attracting Chinese firms to invest in U.S. targets, and the amount they are willing to pay can vary greatly depending on motivation.

Table 7 also suggests that at least for publicly listed targets, there is no evidence that Chinese companies are paying a premium over the market value of the target significantly higher than U.S. companies for comparable M&A transactions. One possible reason is that when the target is public, there is more information and valuation mechanism available. Buyers are less likely to pay excessive premiums. Another potential reason is that the deals for which people suspect Chinese companies of overpaying are usually headline-grabbing mega deals, while those deals are not representative of the transactions in general. Evidence of overpaying certainly exists: one of the most eye-catching deals is Anbang's \$1.95 billion acquisition of Waldorf Astoria New York in 2014, the highest price ever paid for a single existing U.S. hotel. With the dampened pricing for hotels, Anbang officially filed its plan to convert Waldorf Astoria to luxury condos about three years after its acquisition. HNA group bought 245 Park Avenue for \$2.21 billion in March 2017, one of the highest prices ever paid for an office tower in Manhattan. It becomes quite challenging for the company to sell without a loss a year later. However, the median deal size from 2006 to 2017 is \$30 million. Many fairly-valued small to medium sized deals are just not receiving as much attention. Lastly, the reason why some deals really do appear to be overpaid for could be that the intention, objective, funding and decision-making of Chinese

buyers are more complex and less transparent. Since a full understanding of Chinese buyers is difficult, their spending spree tends to be interpreted as irrational.

Table 8. T Tests and Equivalence Test for China-U.S. and U.S.-U.S., Implied EV/EBITDA

T Tests for China-U.S. and U.S.-U.S., Implied EV/EBITDA  
 ( $\mu_1$ : mean of China-U.S.;  $\mu_2$ : mean of U.S.-U.S.; Difference:  $\mu_1 - \mu_2$ )

Sample	N	Mean	StDev	SE Mean
China-U.S.	23	16.9	12.4	2.6
U.S.-U.S.	23	11.94	5.56	1.2

Difference	95% CI for Difference
4.99	(-0.82, 10.79)

Null hypothesis		$H_0: \mu_1 - \mu_2 = 0$
Alternative hypothesis		$H_1: \mu_1 - \mu_2 \neq 0$
T-Value	DF	P-Value
1.75	30	0.089

Two-Sample Equivalence Test: China-U.S., U.S.-U.S., Implied EV/EBITDA  
 (Test mean = mean of China-U.S.; Reference mean = mean of U.S.-U.S.;  
 Equal variances were not assumed for the analysis)

Null hypothesis:	$\text{Mean}(\text{China-U.S.}) - \text{Mean}(\text{U.S.-U.S.}) \leq 0$	
Alternative hypothesis:	$\text{Mean}(\text{China-U.S.}) - \text{Mean}(\text{U.S.-U.S.}) > 0$	
$\alpha$ level:	0.05	
DF	T-Value	P-Value
30	1.7550	0.045

$P\text{-Value} \leq 0.05$ . Can claim  $\text{Mean}(\text{China-U.S.}) > \text{Mean}(\text{U.S.-U.S.})$ .

Tests of implied EV/EBITDA for China-U.S. and U.S.-U.S. transactions give a different result (Table 8). The average implied EV/EBITDA for China-U.S. transactions is 16.9%, about 5% higher than U.S.-U.S. counterparts. Equivalence test suggests that the average implied EV/EBITDA for China-U.S. transactions is significantly higher than that for their U.S.-U.S. counterparts at 0.05 level. I would like to offer several potential explanations here. First, it could

be that profitability of the target is not a critical factor Chinese buyers consider. Szamosszegi (2012) has noted that there are many instances of Chinese companies investing in distressed U.S. firms, especially taking advantage of the recession after financial crisis to increase their presence in the U.S.; meanwhile, there is modest evidence supporting the view that Chinese affiliates are not driven by profitability. Second, Chinese buyers tend to favor growth firms and brand names. Third, it could be that Chinese acquirers are less sophisticated and experienced in identifying appropriate targets, due to information asymmetry relative to indigenous U.S. acquirers. Chinese firms may end up buying less profitable and less viable targets than would a U.S. buyer. Fourth, it could be about adverse selection: the pool of targets willing to consider or allowed by U.S. government to be acquired by Chinese companies may not be the best possible. Fifth, Chinese buyers have more knowledge about what specific product variations will appear, and better access to the huge Chinese market than U.S. firms for policy reasons. As a result, the intangible asset in the U.S. target are more valuable in Chinese buyers' hands, and Chinese firms may choose to deliver some of the "valuation differential" to the acquired. Similar to the tests for premium paid, the implied EV/EBITDA for China-U.S. deals have much higher variability than U.S.-U.S., indicating the variety of motivations for Chinese buyers. The overall result suggests that though there is insufficient evidence to say that Chinese companies are overpaying a premium, they are paying a higher EBITDA multiple for similar deals.

On a side note, Mann Whitney test is performed to see whether U.S.-U.S. acquisitions perform better in terms of profitability after acquisition. Adjusted for outliers there is only 17 comparable transactions, and the result is not significant. Due to the limited power of Mann Whitney test and uncertainty about whether the target's performance results from organic growth or change of ownership, the test result is not very useful here (included in the Appendix). It is

debatable whether U.S. targets invested by Chinese firms tend to have suboptimal post-acquisition performance.

*b. Wealth Gains to the Shareholders of Chinese Buyers*

1) Hypothesis, Data and Methodology:

The hypothesis is that Chinese companies' equity investments in the U.S. exhibit neither wealth gains nor losses to the shareholders, namely, there is no abnormal return. To test this hypothesis, I will use the event study methodology similar to the one in the paper Japanese Foreign Direct Investment: Wealth Effects from Purchases and Sales of US Assets (Pettway, Sicherman and Spiess, 1993). In particular, I am trying to look at the cumulative prediction errors (adjusting return for general market conditions) of the stock prices of buying companies around the transaction time, that is, over the announcement date (AD-1 to AD), effective date (ED-1 to ED) and overall period (AD-21 to ED+20).

The data is collected through “markets” Mergers & Acquisitions Transactions from S&P Capital IQ. The screening criteria includes: 1) Transaction Types: Merger/Acquisition 2) M&A Closed Date: [12/31/2005-12/31/2017] 3) Geographic Locations (Buyers/Investors): China (Primary) 4) Geographic Locations (Target/Issuer): United States of America (Primary). This screening results in 633 transactions. Note that the data gathered from S&P Capital IQ is different from CIM by Rhodium Group, as the latter implements comprehensive transactional approach. Though CIM has a more comprehensive overview of transactions, S&P Capital IQ provides more detailed information about the transactions. Based on data from S&P Capital IQ, sectors attracting the highest number of acquisitions are consumer discretionary and information

technology, which implies that Chinese investments in the U.S. are partly triggered by the country's transition into high-tech and consumption-led economy.

The most active investors by transaction size consist of many large, heavily-leveraged private firms (Table 9). The more than \$7 billion acquisition of Strategic Hotels and Resorts and the \$1.95 billion acquisition of Waldorf Astoria New York made Anbang Insurance Group the most active investor in the U.S. by transactions size. Henan Luohe Shuanghui Industry Group is a private meat and food processing firm that acquired Smithfield Food for over \$7 billion in 2013. The third active buyer Tianhai Investment Co. is a subsidiary of HNA Group, which owns HNA Tourism Group, the fifth active investor. With its subsidiaries investing in a wide array of industries, HNA Group was on a spending binge that eventually led to its struggle of paying back mounting pile of debts. Another major buyer, though now under the pressure of selling off assets, is the famous dealmaker in Hollywood, Dalian Wanda, who acquired the movie producer Legendary Entertainment for \$3.5 billion and the cinema chain AMC Entertainment for \$2.9 billion. Note that the data could be biased because the majority of the deals have undisclosed transaction value. Among the deals with transaction value disclosed, 12 of the 17 deals over \$1 billion are strategic investments (highly related to buyer's core business).

Table 9. Characteristic of Chinese M&As in the U.S. Over the Period 12/31/2005 to 12/31/2017. (Note that the sector classification and transaction numbers and values here (from S&P Capital IQ) differ from Table 1 and Table 2 (from CIM by Rhodium Group) due to their sources with different data compilation method. Data from S&P Capital IQ may be less comprehensive but more conservative)

<b><u>Number of Transactions by Sector</u></b>	
Energy	13
Real Estate	55
Materials	36
Industrials	80
Consumer Discretionary	131
Consumer Staples	31
Healthcare	64

Financials	69
Information Technology	102
Telecommunication Services	3
Utilities	6
No Primary Industry Assigned	43

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**Most Active Buyers/Investors by Total Transaction Size**

<b>Company Name</b>	<b>Total Transaction Size (\$mm)</b>
Anbang Insurance Group Co., Ltd.	9,224.91
Henan Luohe Shuanghui Industry Group Limited Liability Company	7,276.24
Tianjin Tianhai Investment Co., Ltd. (SHSE:900938)	7,250.38
Dalian Wanda Group Co Ltd	7,208.75
HNA Tourism Group Co., Ltd	6,496.88

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**Number of Deals by Transaction Ranges**

Greater than \$1 billion	17
\$500 - \$999.9mm	14
\$100 - \$499.9mm	49
Less than \$100mm	170
Undisclosed	383

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The list is further narrowed down based on following criteria: the buying company is publicly listed either in mainland China, Hong Kong, Taiwan, or the U.S.; the announced total transaction value is greater than or equal to \$20 million; the announcement date and the closed date is available (since the effective date is unavailable for almost all the transactions); there is no extended suspension of trading around the transaction time. In the end there are 25 transactions: Taiwan Stock Exchange: 1; Hong Kong Stock Exchange: 12; Shanghai Stock Exchange: 2; Shenzhen Stock Exchange: 6; Nasdaq: 2; New York Stock Exchange: 2. The sample includes transactions in a variety of industries: information technology, telecommunications, real estate, healthcare, Similar to the overall trend, targets in 8 of the 25 transactions are in information and communications technology sectors. There are only 3 transactions with targets in Real Estate, for the reason that many Chinese buyers in those transactions are private.



A market model is applied to buying firms' daily stock returns over an estimating period beginning 201 days and ending 22 days before the announcement date of the M&A. The daily return index used in the market model is Hang Seng Index, Taiwan Stock Exchange Weighted Index, SSE Composite Index, Shenzhen Stock Exchange Composite Index, Nasdaq Composite Index, and S&P 500 Index, depending on where the buyer is listed. The prediction error of the common stock the buyer  $j$  is then calculated as:

$$PE_{j,t} = R_{j,t} - (\alpha_j + \beta_j R_{m,t})$$

where  $R_{j,t}$  is the rate of return for the common stock of firm  $j$  on day  $t$ , and  $R_{m,t}$  is the rate of return for the respective market index on day  $t$ . The coefficients  $\alpha_j$  and  $\beta_j$  are estimates of firm  $j$ 's market model parameters from ordinary least squares regression. Prediction errors are calculated for each day from AD-21 to ED+20 as event period, which varies for each transaction. The cumulative average prediction error for a sample size  $N$  will be:

$$CPE_i = \sum_{k=T_1}^i \frac{1}{N} \sum_{j=1}^N PE_{j,t}$$

where  $i$  can be the event period of time for AD-1 to AD, ED-1 to ED or AD-21 to ED+20. The test of significance is calculated based on standardized prediction errors (Mikkelsen and Partch, 1985) (Choong, Hutton, Richardson and Rinaldo, 2017). The standardized prediction error for stock  $j$  on day  $t$  is calculated as:

$$SPE_{j,t} = \frac{PE_{j,t}}{\left\{ \left( \sigma_j^2 \left( 1 + \frac{1}{T} + \frac{(R_{m,t} - \bar{R}_m)^2}{\sum_{k=1}^T (R_{m,k} - \bar{R}_m)^2} \right) \right) \right\}^{\frac{1}{2}}}$$

where  $\sigma_j^2$  is the residual variance from the market model estimation for stock  $j$ ;  $T$  is the number of days in the estimation period;  $\bar{R}_m$  is the mean market return in the estimation period.

The cumulative, normalized, average standardized prediction error is the  $Z$ -statistic:

$$Z = \sqrt{N} \left( \frac{1}{N} \right) \frac{\sum_{t=T_1}^{T_2} \sum_{j=1}^N SPE_{j,t}}{\sqrt{T_2 - T_1 + 1}}$$

Where  $T_1$  and  $T_2$  mark the beginning and ending of the period being tested.

## 2) Results

Table 10. Cumulative Prediction Errors for China-U.S. around Transaction Time

Period		Cumulative Prediction Errors	Percentage Positive
Announcement	AD-1 to AD	0.71%	
	z-value	1.46	68%
	p-value	0.14	
Effective	ED-1 to ED	-0.77%	
	z-value	-1.47	44%
	p-value	0.14	
Overall	AD-21 to ED+20	-1.34%	
	z-value	-0.17	48%
	p-value	0.87	

The average two-day announcement effect is 0.71% with a p-value 0.14, and 68% of the CPEs are positive. There is no evidence that Chinese buyers of U.S. firms gain significant wealth at announcement. The average CPE for the two days around the effective date of the merger and the overall CPE from 21 days prior to announcement to 20 days after the effective date of the merger are negative, but they are not statistically significant. Over the entire period tested, about half of the CPEs are negative. However, there is no evidence that Chinese buyers have a loss either.

I would like to offer several explanations for what happened here. First, due to the wide variety of motivations, which may or may not be reported, for Chinese firms to invest in the U.S., the implications of the transactions may not be fully priced in. Second, as noted, closed date rather than effective date is used here given the availability of the data, which reduced the effectiveness of the overall prediction error results. Third, my sample of 25 transactions are biased in the way that most of the public Chinese buyers are listed on Shanghai and Shenzhen stock exchange, while the majority of the buyers in the sample are listed outside of mainland China. This is because a large number of the stocks listed in mainland China suspended trading around the transaction period and thus cannot be included in my prediction error calculation. Compared to other countries, Chinese market has too many long-period and arbitrary suspensions of trading, and companies tend to resort to trading halts to avert price crash. It could be the case that my sample excluded many companies that would have had significant abnormal returns. Fourth, this result fails to explain whether those striking mega deals often suspected of being overpaid for resulted in wealth gains or losses to the stockholders. Most of the active buyers by transaction size are private, and for the ones that are public, many are listed in mainland China. In fact, among the top ten most active investors by transaction size, only three of them are public and they are all listed in mainland China.

## **5. Conclusion**

In recent years, Chinese investments in the U.S. primarily take the form of mergers and acquisition. In addition to Chinese firms' strategic and financial reasons to acquire stakes in U.S. firms, the overall environment in China, including economic development, inflation, increased financing through domestic debt, and transition into consumption-driven growth, are also driving

the surge of number of Chinese M&A deal making in the U.S. Though private companies have autonomy in decision-making and have been dominating expansion in the U.S. for the past five years, the state's policy has strong influence on outbound investments. Policies liberating expansion abroad facilitated the growth of Chinese acquisitions in the U.S., while regulations limiting overseas deal making effectively put the brakes on the boom. Based on the hypothesis tests performed, there is no evidence of Chinese buyers overpaying in terms of the premium paid over the deal or the returns of the buyers' stocks over the transaction period, but some evidence that Chinese buyers pay a higher EBITDA multiple. On the one hand, at least for publicly listed targets, Chinese companies do not seem to be paying a premium over the market value of the target significantly higher than U.S. companies for comparable M&A transactions, and there is no significant abnormal return on Chinese buyers' stock prices around the transaction time. On the other hand, Chinese companies pay more given the profitability of the target. It is tenable that Chinese companies value target's growth and intangible differently, face information asymmetry and adverse selection, or deliver a valuation differential derived from its access to the huge Chinese market.

This paper provides several implications for future Chinese investments in the U.S. First, as Chinese governmental policies and macroeconomic environment significantly impact firms' deal making, the future trend of Chinese M&As in the U.S. will largely depend on the new rules and regulations, in spite of commercial forces. Policy interventions and transaction screening from the U.S. will also shift the composition of U.S. industries receiving Chinese investments. In the next few years, the blockage from both Chinese and U.S. side will likely increase and will be sector-specific: investments in real estate and hospitality have already been restricted by the Chinese government, and deals related to technology and cybersecurity now face strong

opposition from the U.S. Second, while some Chinese firms appear to be on an irrational buying spree, the results for tests of their overpayment are mixed. Though there is no compelling evidence of Chinese buyers overpaying, the evidence of higher multiples paid do exist, indicating that Chinese buyers' motivations differ from U.S. firms. Future work can focus on Chinese buyers divesting their U.S. assets to see whether those deals were overpaid for, but so far we cannot be sure. Nonetheless, overpayment will be less of a concern for deals happening in the near future, as Beijing cracks down heavily-leveraged private conglomerates, tightens control on large-sized deals and limits overseas investments in certain sectors.

## Appendix

### Covered Transactions by China as Acquirer Home Country and Target Sector

	Manufacturing	Finance, Information, and Services	Mining, Utilities, and Construction	Wholesale, Retail, and Transportation	Total	% of Covered Transactions by All Countries
2007-2009	7	2	1	3	13	3.6%
2008-2010	8	3	4	1	16	5.1%
2009-2011	12	3	5	0	20	7.4%
2010-2012	20	7	12	0	39	12.3%
2011-2013	24	13	17	0	54	16.8%
2012-2014	33	13	19	3	68	19.0%
2013-2015	39	15	13	7	74	19.1%

### Mann Whitney Test for post-M&A EBITDA Margins of China-U.S. and U.S.-U.S.

As of May 2, 2018

(Mann Whitney test, rather than the more robust 2-sample t-test is performed here because the data is not reasonably normal and the test does not assume normality. The test does assume equal variances, which is satisfied in this case.

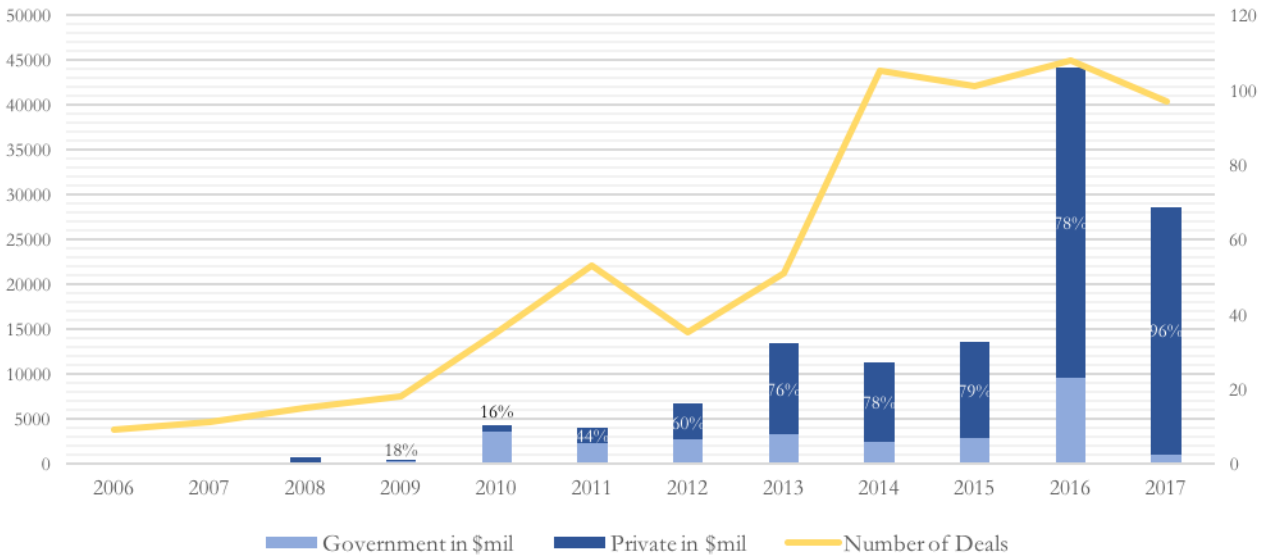
Note that 3 outliers have been excluded.)

	Sample	N	Median
CN-EBITDA MARGIN		17	0.080
U.S.-EBITDA MARGIN		17	0.118

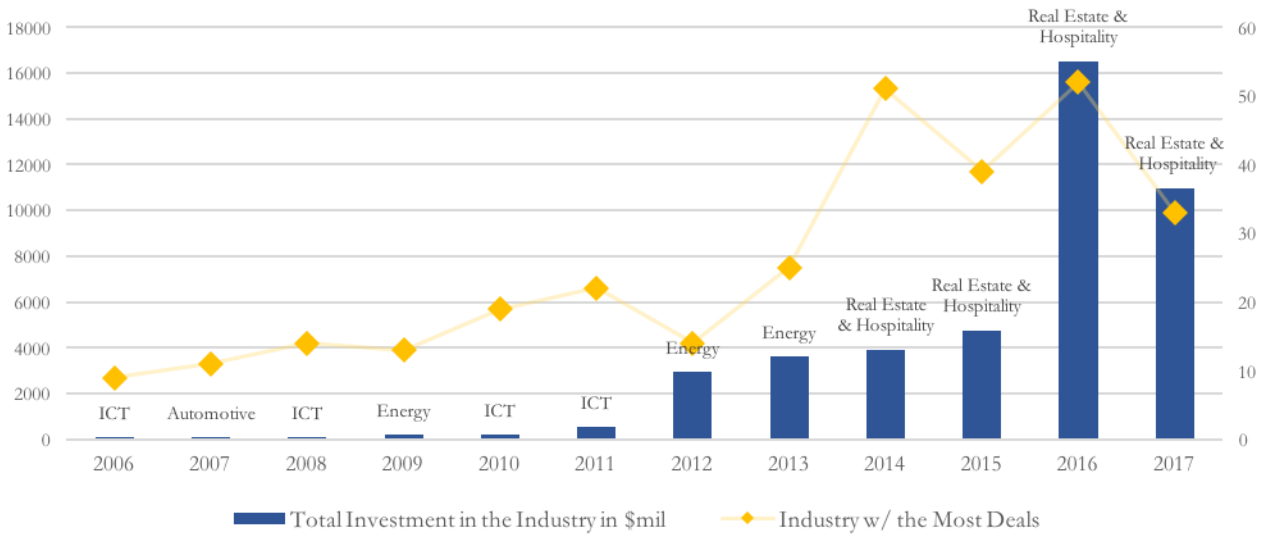
Difference	CI for Difference	Achieved Confidence
0.0220000	(-0.078, 0.133)	95.04%

Null hypothesis	$H_0: \eta_1 - \eta_2 = 0$	
Alternative hypothesis	$H_1: \eta_1 - \eta_2 \neq 0$	
Method	W-Value	P-Value
Not adjusted for ties	310.50	0.667
Adjusted for ties	310.50	0.667

### Summary of Chinese M&A transactions in the U.S.



### U.S. Industries that Received the Highest Number of M&As and Greenfield Investment



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