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Economic Reasons of Chinese Merger and Acquisition in Germany:

A Takeover between Midea Group and KUKA AG

Wirtschaftliche Gründe für Chinesische Fusionen und Übernahmen in Deutschland:

Eine Übernahme zwischen der Midea Group und der KUKA AG

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AI	Artificial Intelligence
CCB	China Construction Bank
CEO	Chief Executive Officer
CICC	China International Capital Corporation Limited
CIPA	China International Promotion Agency
COGS	Cost of Goods Sold
CSF	China Securities Finance Co., Ltd
EBIT	Earnings before Interests and Taxes
EBTIDA	Earnings before Interest, Tax, Depreciation and Amortization
EDF	Expected Default Frequency
EU	European Union
FDI	Foreign Direct Investment
ICBC	Industrial and Commercial Bank of China
IFR	International Federation of Robotics
M&A	Merger and Acquisition
MIC 2025	Made in China 2025
OICA	International Organization of Motor Vehicle Manufacturers
ODI	Oversea Direct Investment
OECD	Organization for Economic Co-operation and Development
POEs	Private Owned Entities
ROA	Return on Assets
ROE	Return on Equities
R&D	Research and Development
SOEs	State Owned Enterprises
SRA	Senior Ratings Algorithm

ABSTRACT

The purpose of this assertation is to explore the drives of international transactions conducted between developing economy acquirer and developed economy target. Increasing premium assets in Germany have become the targets of the Chinese acquirers since 2010. The study is based upon the takeover between Midea Group (China) and KUKA AG (Germany) to discover M&A synergies from the perspectives of the target, and to explore the role of acquirer government played in oversea acquisitions.

The companies' financial reports, SWOT analysis, and the DuPont model were used to obtain companies' historical performances and future potentials. Three scenarios were created and analyzed through pro forma accounting statement. Also, shareholding structures of both acquirer and target were investigated from financial statements.

The study found determinants influencing Germany premium companies accepts takeover tender offered by Chinese acquirers include internal considerations, and external elements. Foreign transactions among Chinese companies are largely driven by politic makers' policies.

CHAPTER ONE: INTRODUCTION

Merger and acquisition (M&A) transaction is made for strategic purpose involving capital investment and integration of parts of a business (Lucks & Meckl, 2016). In a changing environment, M&A is considered as a critical instrument of reallocating company assets and capitals, which responses to redeploy all kinds of activities (MUL, 1996). Many companies have grown into icons in their industries through M&A activities, such as US Steel, J.P. Morgan.

Studies show M&As have been occurred in waves with so far in total six waves since the 19th century (Roberts et al., 2003; Lipton, 2006; Gaughan, 2010). The waves were originated from the United States when horizontal consolidation happened in industries of oil, mining and steel (Stigler, 1950). Afterward, developed countries have dominated M&A activities for centuries. The form of M&A extends from horizontal consolidation to vertical and conglomerate mergers. Contributed by growing multinational companies in advanced countries, transaction volume has surged to 4.6 trillion dollars in the sixth wave (2003-2008) (Dealogic data).

From the end of the 20th century, emerging countries started to engage in global transactions. Those latecomers' active performances in recent decades have influenced world M&As. The annual growth over the period from 2000 showed double digits. By 2013 deals in developing countries accounted for approximately 37 per cent of the world market for cross-border deals.

1.1 Chinese M&A Development

The unpredictable growth in the last four decades leads the country to become the second-largest economic entity. Among developing countries, it was the largest recipient of foreign direct investment (FDI) from western countries. Foreign invested enterprise and sino-foreign joint venture enterprise are two dominant kinds of foreign investment, accounting for more than 90 per cent of total FDI. Inbound M&As are increased by 39.2 per cent, climbing to 2,066 pieces in 2017. The number of Chinese targets take account of 5.8 per cent of the total transaction value. Targeting companies are firstly from manufacturing, then extend to sectors of auto, electrics, glass, rubber, and food.

Outbounds conducted by Chinese companies started from 1980s, they were initiated by state owned enterprises (SOEs) or state controlled companies in the first stage (1978-1990), developed with rising private owned entities (POEs) that stimulated by globalization and government policy in the second stage (2000-2006), rapidly grew in transaction value as growing mega deals in Europe countries in the third stage (2008-2016).

- First Stage (1978-1990)

Government regulations on abroad investment in this stage were not complete that all outbound investments in the first four years (1978-1982) were required to be approved by the State Council (Changhong & Wen, 2015). SOEs controlled the national economy. Local demands, in this period, were larger than supplies that firms had comparatively higher margin profits in the domestic market. Their primary focus was domestic consolidation. For example, Hebei Baoding Steel-Framed Window Factory purchased Baoding Knitting Equipment Factory in 1984 (Shuang & Rui, 2011). Few oversea transactions were managed between SOEs and targets from America, Canada, India in pursuit of resources and energy.

Compared to the total FDI of 4,455 million dollars, outbounds were limited in number and size with a value of 60.3 million dollars in 1990. Abroad takeovers were mostly conducted under the national plan. SOEs, such as CITIC Group[1], Sinopec Group, were only players with one main responsibility of implementing national or political strategies.

- Second stage (2000-2006)

Foreign exchange reserves surged from 11 to 1,066.3 billion dollars in 2006. Policy “Going Global Strategy”, aims to encourage private investors to participate in oversea investment, was implemented in 2000. Increasing SOEs and POEs participate in the oversea direct investment (ODI). SOEs continuously played a prominent role, contributing four-fifth value of Chinese outbounds (Bradsher & Merced, 2012).

[1] CITIC Group refers to China International Trust Investment Corporation, a state-owned investment company of China

Observed 141 typical M&A cases from the database of the University of International Business Economics, acquirers showed interest in sectors of natural resources and electronic information. The purpose of acquisition in this stage was not limited in obtaining natural resources, but also access to sectors of financial services, and communications (Alessia, 2012).

- Third Stage (2008-2016)

Influenced by the financial crisis triggered by America in 2008, many countries relaxed regulations on M&A transactions to release crisis impacts on economies. Chinese central government announced a four trillion-yuan stimulus to stimulate economic growth influenced by the crisis, afterward, China's central bank -- the People's Bank of China -- has initiated a broad monetary policy. Acquisition cost remains declining as appreciated yuan against currencies of dollar and euro (one dollar can be exchanged to 8.3 yuan in 2000, 6.6 in 2016; one euro equals to 9.9 yuan in 2010, 7.2 in 2016). Oversea M&A value has surged from 42.5 to 67.4 billion dollars between 2010 and 2015 (PwC Report on Chinese M&A, 2016).

POEs have embarked on globalization actively based on their own capabilities (Peng, 2001). The report reveals 72 per cent of foreign deals in 2015 were conducted by POEs, nearly threefold than SOEs. Private investment (64 per cent) first time overpassed state-owned investment (35.7 per cent) in the Europe market. Investors purchased large portfolio stakes like Volvo, Logicor. Geely purchased Volvo Cars at a price of 1.8 billion dollars.

The value of China's outbound to Europe in 2013 overpassed the amount of Europe to China, reached the peak of 37.2 billion euro in 2016. The United Kingdom (4.2 billion euros), Germany (2.1 billion euros) and France (1.6 billion euros) are top three attracting the most Chinese entities. Deals of investment size with more than 500 million euros are growing since 2011. Some deals finished in recent three years are even reached to nearly 5,000 million and 10,000 million euros.

1.2 Regulations on Foreign Acquirers

Regardless of the global trend of economic liberalization and barriers reduction to FDI, countries

across the world reserve the right of “National Security” to restrict foreign investment (Graham & Marchick, 2006; Jackson, 2013; Wehrlé & Pohl, 2016). They either partially or wholly prohibit foreign investment in specified sectors, review proposed investments if they belong to the “legally defined” categories, or involve “scrutiny systems to identify individual, and potentially problematic acquisitions” (Wehrlé & Pohl, 2016).

Economies may select or combine one or more above mentioned approaches. To prevent external investors from controlling critical sectors of the economy and to protect Chinese time-honored products, foreign companies were not allowed to directly acquire private companies until government issuing provisions in 2003. Before 2017, restrictions and prohibitions in foreign M&A were maintained as many as 180 pieces (“Catalogue for the Guidance of Industries for Foreign Investment”). “Measures for Administration of the Takeover of Listed Companies (‘Takeover Code’)” which is issued in 2002 requires the foreign acquisition of shares in a Chinese listed company actually or potentially giving the purchaser control over the company should not more than 30 per cent of the issued shares (Manfred, 2006).

Germany adopts two different audit programs in inbound transactions: a. acquisitions involved sensitive sectors: when foreign acquirers purchase companies from sensitive sectors[1], they have to report to the German Federal Ministry of Economy; b. acquisitions in the general sector: the acquirers who are either EU countries or European Free Trade Association members are required to report to the German Federal Ministry of Economy. If transactions are of above 25 per cent stakes, investors in both situations have to be audited. Deals less than this figure will be approved directly without government investigation, for instance, Geely purchased 10 per cent shares of Daimler.

1.3 Purposes of M&A between Chinese and Germany Companies

According to the China International Promotion Agency (CIPA) report regarding Germany investments in China, greenfield, and M&A are two common forms when German companies enter

[1] sensitive sectors refer to industries involved national security, such as “electricity, gas, drinking water, telecommunications" (Federal Minister Peter Altmaier, 2018)

into the Chinese market. The report indicated Germany investment witnessed a noticeable growth over the period between 2013 and 2018. Greenfield accounts for 83 per cent of total FDI. Because of signs of progress in manufacturing technologies, and reduced restrictions (by 77 pieces) introduced by latest "Catalogue for the Guidance of Industries for Foreign Investment" in 2017, German's M&As in China increased from 6 to 28 pieces.

Fiducia Management Consultants summarized motivations that drive German acquirers to purchase Chinese firms are access the local market, reduce production and/or marketing expenses, diversify the business, obtain regulatory and commercial advantages. Chinese targets are extended from traditional industries, such as textile, clothing manufacturing, to certain high-edge industries, such as electronic machinery, transport manufacturing.

Two transactions dealt in 2002: Waldrich Coburg acquired Fairchild-Dornier, TCL acquired Schneider Electronic, were considered as the beginning of Chinese acquisition in Germany. Till 2009, the number of merges was accumulated 48 pieces. Three of them were conducted over ten-million-euro[1]. The government's decision of using foreign exchange reserves accelerate abroad acquisition (Vikram & Chua, 2012): in two years period (2010 and 2011), more than 20 pieces of transactions were completed; six of them dealt with value exceeded 100 million euros.

Since 2015, oversea M&A becomes one of the important instruments in implementing government policy of "Made in China 2025 (MIC 2025)". The policy aims to upgrade labor intensive to technology intensive. Because of German's large number of "hidden champions[2]", the country has become the second most popular destination of outbounds in Europe in 2016. The number of acquisitions dealt with hidden champions was up to 66 pieces (Juliance, 2018).

Ten cases (see appendix one) selected from six representative sectors and completed between 2010

[1] three transactions are Xinjiang Goldwind Sci & Tech purchased Vensys Energy AG, 63 million euros; Shanggong Group purchased Dürkopp Adler AG, 34 million euros; Bejing No.1 Machine Tool purchased Waldrich Coburg, 25 billion euros

[2] Hidden Champions: small size, but highly specialized world market, low public awareness German companies

and 2018 suggest China's concentration on German targets is more related to know-how and company reputation; examples like Dürkopp Adler AG and Putzmeister. This characteristic differs from investments in the United States (financial and business services), Asia, and the rest world (resource industries, such as gas, iron). Investors purchased the majority or full stake of German's targets to acquire a dominating control. Six out of ten deals are purchased 100 per cent stake; three transactions' stakes are between 30 and 40 per cent. Minority stakes are likely to be purchased among resource industries from emerging countries (Charles et. al, 2011).

1.4 Literature Review

Due to historical factor and economic performance, many researches are concerning M&A development and features in advanced countries. Cassiman Bruno and Colombo Massimo G (2006) in "Mergers & Acquisitions" illustrate factors driving the fifth M&A wave and recent trends of M&A in European Union (EU). Scott C. Whitaker (2016), the United States remains the most active player in the world M&A market. Because of the weakness of the home country's economy (Chang et al., 2009), few developing countries are probably purchase foreign targets at a huge amount value.

But emerging economies represent a strong eagerness of internationalization and attempt to catch up world leaders from advanced economies via the shortcut of M&As (Mathews, 2002). Investments from Chinese international entities flowed into developed counties are extra ordinately faster than their peers from other developing countries (Athreye & Kapur, 2009). Patrick A. Gaughan (2015) presents traditional motives, which are growth and synergy, in M&A and benefits brought by different kinds of mergers. Researches from Buckely et al. (2007), Fortanier and Tulder (2009) indicate the synergies of firms from developing regions to globalization are radically varied with those from developed economies. Emerging economies consider oversea M&As as an efficient way to capture the world's resources and improve their competitiveness (Charles et al., 2011). Therefore, companies in emerging countries prefer M&A targets with quality resources in developed economy to access their high edged techniques (Gubbi et al., 2010).

The principal purposes of oversea M&As among Chinese acquirers is not only to realize

internationalization, business diversification, but more importantly to obtain strategic resources (Wang et al., 2012) which include appropriable capabilities that are difficult to be purchased and imitated, like research and development (R&D), brand awareness, specific technology (Amit & Schoemaker, 1993; Wu et al., 2012). German scholar Cora Francisca Jungbluth (2019) displays relations between China's policy MIC 2025 and Chinese M&As in Germany, and suggests political supports in domestic companies' globalization realization when they acquiring strategic resources from other countries. Consequently, those domestic companies are able to, on one hand, compete successfully in the global game, on the other hand, offset their latecomer disadvantage to defense fierce competitions in home market by adopting the method of "springboard" (Luo & Tung, 2007).

1.5 Research Objectives

Observing M&A examples in appendix one, the author summarized following findings regarding transaction determinants in perspective of German targets:

A. Undercapitalization: the company confronts financial problems in terms of company financing and fiscal deficit, such as Dürkopp Adler AG suffered years' financial loss;

B. Retirement and Estate Planning: some targets are expected to challenge continuous operation when the founder is retired from the company, such as the owner of Putzmeister, Karl Schlecht, who was born in 1932, cannot able to manage company due to aging problem and failed to find a qualified family successor to overcome negative influences brought by the financial crisis;

C. Inadequate Distribution System: targets are likely to fail if they cannot benefit from the existing market and emerging countries. Firms like Kion Group AG are willing to collaborate with a local leading company via selling partial stakes to expand their strategic development to a broader area, or to survive in the firer competition.

The appendix also presents 90 per cent of Chinese companies' priority is to take forms of horizontal and vertical merges with an attempt of acquiring firms from similar industries or controlling over upstream/downstream. Considering higher risk and cost of the transaction between different sectors, few companies, unless they have abundant funds and rich transaction experience, would choose the conglomerate merger to diversify the business portfolio. Examples like China's AVIC (aero

industry) acquired Hilite GmbH (auto industry) in 2014 at a price of 473 million euros, HNA Group spent 750 million euros on purchasing nearly 10 per cent stake of Deutsche Bank in 2017.

Takeover between Chinese acquirer Midea Group and German target KUKA AG finished at a price of approximately 3.7 billion euros, the largest transaction conducted by Chinese private buyer since 2017. The deal indirectly pushes the German government to issue “Außenwirtschaftsverordnung – AWV” (the ninth version) in 2017 to prevent domestic high-tech companies in key sectors from being controlled by outsiders. The new regulations suggest purchaser’s control over the German public company should not exceed 25 per cent of stakes, stricter than China’s threshold of 30 per cent.

KUKA is one of the world’s leading industrial robot manufacturers. It is thought of as the pillar corporation of German implementing strategic policy Industrial 4.0. As a public company, it does not confront problems of retirement and estate planning described above. The company accepted Midea’s offer in 2016, 94.55 per cent of stakes sold to Midea, a Chinese private manufacturer of household appliances.

The combination of premium resources in the developed countries and less expensive capabilities in developing countries would generate unique market valuation (Harrison et al., 2001).

Second, cross border transaction occurred between an efficient acquirer and a relatively inefficient target can improve the target’s efficiency through takeover (Cary, et al., 2013).

Third, empirical evidences from Denis & Sarin (1999) and Maksimovic & Phillips (2000), the possibility that firms with poor performance becoming takeover targets is high. But control transfers will improve poorly performed targets’ profitability and productivity (Köke, 2000).

Fourth, block acquisition conducted by strategic investors results in significant returns for target shareholders (Mark & Dirk, 2016). The study organized by Isil & Basak (2016) based on global samples of 263,461 acquisitions across 47 countries presents, targets in developed economies are benefited higher returns than those in emerging economies.

Few researches argued transactions between premium assets in developed economy and acquirers from developing economy. This study aims to analyze drivers of transaction between Midea and KUKA from above mentioned aspects, and innovatively taking acquirer's political back into account.

1.6 Structure of the Dissertation

The paper is consisted of six parts. Part one introduced the Chinese international acquisitions, briefly summarized regulations and features of acquisitions between China and Germany. The literature review and research objectives are discussed in the first part as well. The methodologies and data resources employed in this study would be concluded in part two; while in part three, the study systematically analyzed the case of Midea's takeover by glancing at KUKA's strengths and weaknesses, its confronted opportunities, threats, and comparing its financial performances with peers from Asia and Europe. In chapter four, three scenarios were made upon four variables that are concluded from chapter three to explore determinants from prospective of target management. Drivers that the target shareholders eventually accepted Midea' offer, and approaches of fund financing adopted by acquirer would be demonstrated in part five; part six is the conclusion of the whole paper, including the findings, limitations, and future study.

CHAPTER TWO: METHODOLOGY AND DATA RESOURCE

The financial statement is considered as an official file that listed companies interactive with publics in regular period (Hines, 1988; Tilt, 1994). This study mainly employed research instrument of content analysis of the annual reports of entities that are published via companies' websites. Annual reports comprehensively outline an entity's operating performances in the previous period, also provide shareholders and management team a reliable source of information to future projection. Midea made a tender offer to KUKA on 16 June of 2016, thus the longitudinal study is supposed to analyze five years' period of annual reports of KUKA, from 2011 to 2015.

Annual reports are analyzed through the DuPont model and compared with peers of FANUC,

YASKAWA, and ABB. Peers are selected by four main criteria which are the fund time, achievements in the industrial robot, business segments, and market shares in China. In price comparison, prices of two types of industrial robots from four companies and servomotor with an output of at least two kilowatts are chosen from professional agencies in the Chinese market. The agencies should have more than five years' experience in the automation field through the local largest online business platform Alibaba.com[1]. The robots are featured with a light payload of 20 kg and medium payload from 165 to 200 kg, reaching areas between 1,650 and 3,200 mm. Detailed analysis on variables of costs of key spare parts and labor force, developments of automobile and general industries in both developed and less developed countries, which directly affect industrial robot makers' potential revenues, is made in this study to receive insights of KUKA profitability and future growth.

Before employing an instrument of pro forma financial reports, this study adopts the method of SWOT analysis to obtain an understanding of the target's strategic options, then create three scenarios based upon historical figures (from 2011 to 2015) from four main dimensions (sales revenues, production capacity, costs of material and labor, and government supports). Other variables of expenses of selling, R&D, administrative are treated as the same per cent of sales as of 2015 in the first two scenarios; but adjusted based on grants and sales in strong demand market in the third scenario. In reference to Robert's methods on financial forecasting (2015), forecasts of annual growth rate, cost of goods sold (COGS), selling, R&D, and administrative expenses in sales are predicted upon combination of KUKA's history records, increasing capacities and orders from the Chinese market. Since long term debts were around 400 million dollars in 2011 and 2012 and fluctuated between 450 and 550 million dollars after 2013, this amount is assumed to keep constantly at 550 million in three scenarios. Thus, ten calculation formulas with seven formulas classified into net income statement, rest three belongs to the balance sheet, are employed when computing pro forma financial reports. These formulas are listed as below:

1. Net sales = actual sales * (1+ predicted sales growth rate)
2. COGS = COGS/actual sales * predicted sales

[1] the largest online business platform in China

3. Gross income = net sales – COGS
4. Expenses of selling, R&D, administration = Expenses of selling, R&D, administration/net sales * predicted sales
5. Earnings after tax = gross income – expenses of selling, R&D, administration, interest, and taxes
6. Dividend paid = dividend/actual earnings after tax * predicted earnings after tax
7. Additions to retained earnings = earnings after tax – dividend paid
8. Equity = actual equity + additions to retained earnings
9. Net fixed assets = actual asset value – actual accumulated depreciation/net sales * predicted sales
10. Total assets = current assets/net sales * predicted sales + net fixed assets

Midea is publicly listed in Shenzhen Stock Exchange in 2013, the financial statement of before 2013 can be also found from the company website. While credit evaluations draw from Moody's[1] is not available until September 18, 2013 when analyzing entity's EDF used in bank loan financing. The study of government funds flowed to Midea is mainly via contrasting changes in the number of shares held by stated owned organizations before and after making the tender offer. Samples of M&As between German targets and Chinese acquirers used in this study are defined by the transaction time after 2010, countries and features of acquiring and targeting entities, and sectors. Related financial data and entities' information are collected through companies' websites, filings, and platforms of Bloomberg, Wind, and Moody's. Media reports and data from Handelsblatt, Reuters, government websites also provide clues when analyzing the robot industry and strong demanding sectors, KUKA's stakes composition before the acquisition, and Midea's political connection. Whereas, grant policies from regional governments are restricted by the Chinese language; conference news prior to the year of 2018 in English is expired within three years' period.

[1] Moody's, also Moody's Corporation, is one of three notable credit rating agencies in the United States, providing credit ratings, research, and analysis to the capital markets.

CHAPTER THREE: SWOT ANALYSIS ON TARGETING COMPANY

There are many factors influencing the decision of a premium target when facing a tender offer. The SWOT framework is a widely used strategic management tool to categorize crucial factors to the organization. In the international conglomerate consolidation, the executive team tends to be motivated by economy of scale and scope, increase market power, business diversification, financial goal, or managerial interest (Giovanna, 2017).

3.1 Strengths

3.1.1 Market Share

KUKA is a listed German company founded in 1989. It has 25 subsidiaries in Europe, the United States, Canada, South America, Middle East, and Asia. The market coverage is nearly 70 per cent across the European countries. As of 2015, KUKA (Germany), FANUC (Japan), YASKAWA (Japan), and ABB (Switzerland) occupy two fifth global market.

3.1.2 Technology and Product

The corporation is the first manufacturer producing welding machines for automobile companies in 1956, initially brings robots into the market by introducing the world's first robot "FAMULUS" with six electromechanically driven axes in 1973. KUKA is one of the few initials applying the PC controller on the robot. Advanced technologies and innovations facilitate KUKA becomes the first choice among premium automotive makers.

The products in KUKA include industrial robots, and automated manufacturing systems. The industrial robots are served for industry field, control systems, and software solutions; systems division provides individually automated production processes, such as assembly lines for automobiles. After acquiring Swisslog in 2014, the products are extended to logistics, health care, and e-business. The company also provides engineering services to the customers from electronics, food, and aviation sectors.

3.1.3 Company Customers

The automobile industry is an important pillar in KUKA decades' development, which has contributed approximately 50 per cent of total revenues over the observed years. Many critical customers are world notable automobile icons, such as Volkswagen, AUDI, BMW, General Motors.

3.2 Opportunities

3.2.1 Growing Industrial Robot Market

World industrial robot market witnessed continuous growth after the financial crisis. 254,000 sets of robots were sold around the world in 2015, against to 6,000 sets in 2009. Sales value rose from 3.8 to 11.1 billion dollars. Demands from China, South Korea, Japan, America, and Germany are the main engines of global growth.

For a long time, developed countries were major consumers of industrial robots. Japan consumed the largest number of robots in 2011 (28 thousand) and 2012 (29 thousand). After 2013, its dominating role was replaced by fast growing China. From 2009 to 2015, the Chinese market experienced an average growth of nearly 200 per cent, 52 per cent higher than global. The number of robots purchased by Chinese consumers was only 5,500 sets in 2009 but constantly increased to 69,000 in 2015. The robots sold to China were nearly two times more than South Korea, Japan; 2.5 times more than the United States; 3.5 times more than Germany. The proportion in the global robot market climbed from nine to 27 per cent.

3.2.1 Chinese Strong Demand

1) Automobile Industry in China

Automobile manufacturers are the biggest customers of the industrial robot. 40 per cent of robots consumed by auto manufactures. Automobile in developed economies is in the stage of maturity, but in emerging countries, it is still in the trend of rising. Chinese motorization rate is lower than developed economies: 118 units autos are used in every 1,000 people, compared to 821 units in the United States, 591 units in German, and 555 units in Japan.

Private car ownership is growing at a rapid rate turning China into the global largest market. The number of automobiles consumed in this region was jumped to 24.6 million by 2015, the largest number of global auto sales. Regardless of recent slowdown growth, a report made by McKinsey & Company (2019), “China remains the world’s largest automobile market, and shows strong demand from both potential and existing car owners.”

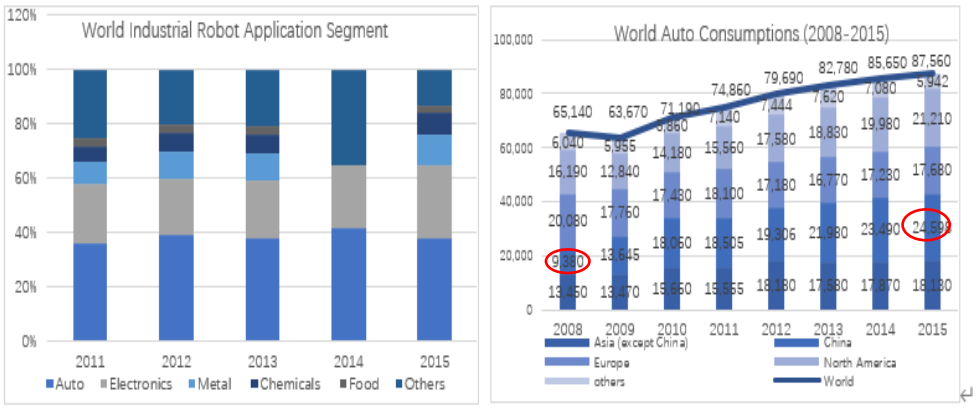

Figure 1: Consumers of Industrial Robot
Source: International Federation of Robotics (IFR)

The world auto market is mainly driven by growing Chinese consumers. The country saw a rise of 160 per cent between 2008 and 2015, contributing 68 per cent of world auto sales increase. Data from Reuters, Chinese auto consumption grew from 9.38 to 24.6 million sets, which contributes a 27 per cent share of world market of 87 million sets in 2015.

Multinational auto manufacturers in developed countries shift some of their production plants in mature markets to emerging markets to gain competitive advantage (Bhagaban & Sathya, 2009). Like Daimler CEO Dieter Zetsche argued in 2011 “Wir fahren noch nicht im höchsten Gang, wir können noch mehr” (RP online, 2011). As of February 2015, Volkswagen has invested 36 programs. The investment value is 18.5 billion dollars, accounting for 54 per cent of total Germany auto companies’ investments in China. Daimler has invested 20 programs with 8.6 billion dollars.

2) General Industry in China

For industrial robot, general industry[1] is an emerging market in developed and developing countries. Automation degree in this sector is extremely lower than the sector of automobile. Its density ratio in Japan is 15 per cent of the automobile robot density. 161 units and 89 units robots are used among every 10,000 German and American workers; only 17 units and one unit in China and India. Demand in electronics industries pushes sales of robots in this industry grow to nearly 3,000 million dollars in 2015 with shares in the world robot market growing from 22 to 27 per cent. In China, the electronics is the second largest industrial robot consumer, which accounts for 20 per cent shares of the robot market in region, next to the automobiles 33 per cent.

From 2011, Chinese electronics remains a fast growth. Productions of personal computers, television, and mobile phone increased from 2,050 million to 5,950 million units. As of 2015, the country has become the biggest supplier of personal computers, mobile phones, and air conditions in the world, according to China Daily. Data from China customs indicates, since 2004, air conditions have occupied the largest market share in the world, the proportion rising from 20 to 33 per cent in 2015.

The sector of electronics is a critical economic pillar in Guangdong, southern province of China, which contributes 291 billion dollars, the largest part (26.7 per cent) of total revenues from provincial enterprises above designated size[2]. Shunde, an electronics industry city in Guangdong province, is the cluster of Chinese household appliances with more than 3,000 related companies and 680 million electronics practitioners. It is the headquarter of domestic prominent household appliance companies, such as “Ronshen”, “Midea” “Galanz” “KELON” “Wanghe”.

From 2011, electronics manufacturers in Shunde started building “smart factory” to gradually replace human being labors by robots. Midea Group has invested approximately 960 million dollars on factory upgrade in the period between 2012 and 2014 with a total of 800 units of robots as of 2015. Glanz introduced automotive production lines for dish washing machine, washing machine, and micro wave from Italy, and Germany.

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[1] definition from KUKA, general industry refers to electronics, consumer goods, and service industry

[2] enterprises above designated size refers to the companies whose yearly revenues are more than three million dollars

3.2.3 Changes in Labor Structure

Chinese labor market structure sees an obvious change as the relationship between labor supply and demand has been altered with improving education level among workers. From the view of demand, China is still in the middle stage of industrialization but mid-low of industrial chain. Most newly posted positions come from sectors of manufacture and service. But half of the young labor force are graduated from colleagues and universities.

A survey organized by the Guangzhou government suggests, 71 per cent of workers in Guangzhou are migrant workers, rest are residents. To date, workers who were born in the 1980s and 1990s dominate the migrant group. Those young employees care more about self-career development and value realization. The difference between employers' requirement and employees' desire lead the labor participation rate to drop every year from 2010, which declined to the lowest point at 69.9 per cent in 2015. Besides, the voluntary turnover is as high as 50 per cent among production workers.

National statistics suggested, the Chinese labor force experienced a fall of roughly 30 million. The percentage in the total population declined from 70 to 66. The number of people aged above 60 increased to 222 million, people aged above 65 increased to 144 million, accounting for 16 per cent and 10 per cent of national population. While, culture transfer, country's urbanization, and policy of One Child One Family have resulted in China's average birth rate below those in developed countries like America (Adam Minter, 2015). People aged below 14 occupied 16.5 per cent, against the world's average 27 per cent.

China's young generation which is between 20 and 24 years old is expected to go down from 100 million in 2015 to 65 million in 2030; the old generation, age over 65 years, is supposed to rise from 125 to 235 million, predictions from the Brookings Institute. This means the gap between those two generations of population tends to expand from 25 to 170 million in a dozen years.

3.2.4 Salary Inflation

A goal to have at least 13 per cent of the average annual growth of minimum wages for the five-year

period through 2015 has been set by policymaker in 2010. Afterward, the average annual wage in the manufacturing industry rise from 4,614 to 8,257 dollars, almost 80 per cent growth in a five-year period. “Salary inflation is the driving force behind robot demand in China,” said Michel Demare[1] on February of 2012. In 2011, Foxconn, the global largest contract manufacturer for Apple company, announced that the company was embarking on a three-year program to replace partial human being labors by using as many as one million robots. Midea Group stated in March of 2015 that the company attempts to continue reducing 20 per cent of its workers in the following years to pave the way of company intelligent development.

80 per cent of Chinese companies showed in the interview which was conducted by McKiney & Company in 2008 that globalization is their strategic focus. More than half of them wish to realize this goal in the subsequent ten years. Though those companies have a competitive edge in production cost, their brands and technologies pull their legs when competing with foreign counterparts. Domestic companies, on the one hand, have to increase R&D investment so as to upgrade products and brand values, on the other hand, they attempt to control production costs as increasing labor costs and manufacturing updates.

Many traditional household appliance manufacturers pursuit to optimize the production process and product grade by cooperating with foreign robot makers. Changhong, a Chinese well-known household appliance manufacturer in southwest China, set up a first robot application laboratory in the west of China with ABB, aiming to develop, produce robots used in electronics, and continuously explore Chinese market, news from Phoenix. In 2016, Glanz cooperated with FANUC in the aspect of robot applications in the household appliance industry. Midea took over Germany’s largest robot manufacturer KUKA with 94.55 per cent stakes in the same year.

3.2.5 Political Supports on Automation Intelligence

To accelerate countries’ automation, developed economies have issued supportive policies as early as 2009 when the European Union (EU) initially published a plan of “Future and Emerging

[1] Michel Demare is the industrial robot company ABB chief financial officer.

Technologies". In five years' period from 2012 to 2017, advanced economies (mainly German, America, Britain, and French) issued 11 artificial intelligence (AI) plans. For instance, "Industry 4.0 (2012)", "Human Brain Plan (2013)" in Germany; "Robot and AI" in Britain. America also made "Robot Plan" in 2013, and "Preparing for the Future of AI and National AI Research Development Strategic Plan" in 2016.

Since 2015, the Chinese government distributes seven plans or policies to encourage automation development with purpose of shifting the country's labor-intensive products toward technology intensive ones, such as autos, electronics, and household appliances, which require intelligent machines. Seven plans or polices are carried out by different central government, more than other developed economies. Those plans and policies are mainly referred to "Made in China 2025" (2015), "Guiding Opinions of the Internet plus Initiative" "Robot Industry Development Plan (2016-2020)", "Implementation for International plus Artificial Intelligence Three-Year Plan", "Report on the Work of the Government (2017)", and "Implementation for Three-Year Plan of Promoting Development on the New Generation of AI". Involved products and programs are smart devices and products, automation factories, industrial robots, service robots, medical robots, big data, and AI resource platforms.

Country	2012	2013	2014	2015	2016	2017
	1	1				
					1	1
						1
		2			4	
				2	2	3

Table 1: Government Policies on Intelligent Development by Countries
Source: Deloitte

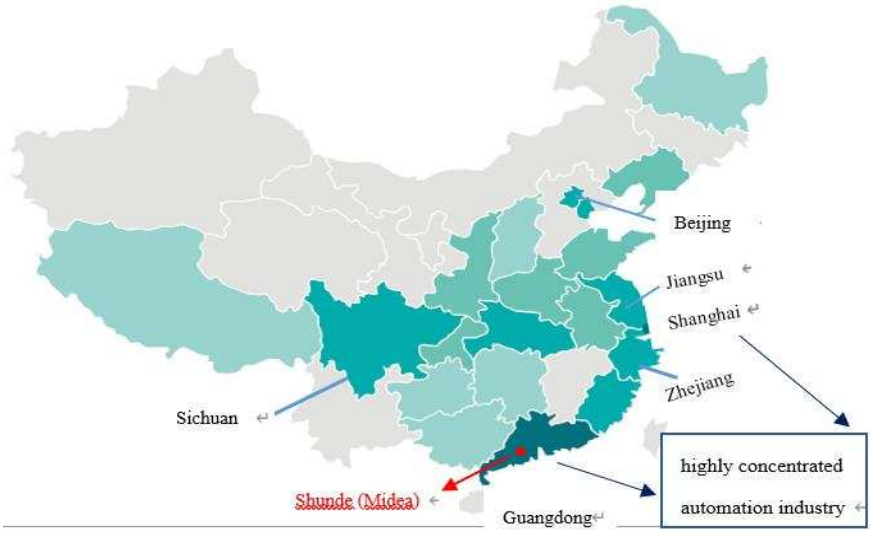
Policy implementation is supported by several national administrations and institutions, for instance, Administration of Science and Technology, National Development and Reform Commission, Chinese Academy of Engineering, Administration of Finance, in methods of providing funds for intelligent

projects, assisting certain critical corporations on attracting AI talents, innovative technologies. To promote automation applications, the Chinese government purchases intellectual products made by domestic manufacturers.

Central government supports stimulate regional policy makers to compete for talents, and premium enterprises by publishing preferential policies. In the year of 2015, regional administrative departments have issued 77 various policies which contain tax reduction, refund to robot procurement, according to statistics from China Robot Industry Alliance (CRIA). As of 2017, accumulated regional polices climb to 792 pieces. Allowances from surveyed cities are extensively allocated to robot makers, end users, critical spare parts manufacturers, universities, and research institutions. Grants from 12 out of 24 cities cover the complete process from research, key spare parts development, production, and application.

Cities in the east of China, attracting tremendous FDI and traditional industries, have more desires to embark on technology upgrade. Guangdong province has issued the largest number of policies with a total of 66 pieces; followed by Zhejiang province 44 pieces. Shanghai is the only city publishing as many as 44 pieces in the same period. Their focuses are varied with characteristics of economic development as well. Guangdong province are concerned more on robot application, which consists of smart manufacture, robot industry, and related infrastructure. Whereas, policies in Zhejiang and Shanghai are more related to talent, innovation, and financing market.

Policies on financings and grants for robot industry are also different in regions in terms of forms and values. Zhejiang provincial government establishes a special fund with a total value of approximately 154 million dollars for intelligent industry development. Besides discount loan, entities in Shenzhen, a south city of Guangdong province, can receive government grants of up to seven million dollars for automation project. Companies in Guangzhou, the capital of Guangdong province, who purchase robots for manufacture upgrade, can apply for 10 to 20 per cent refund.



Province	Policies	Patents	Talents	Industrial Area	Companies
Guangdong	66	1,013	10%	7	126
Zhejiang	44	1,360	10%	5	63
Shanghai	44	680	12.1%	6	110

Figure 2: Regional Policies and Automation Industry in China
Source: Author Graphic based on Public Sources

More than 60 industrial areas were built across the country, most of them located in the east of China. Clusters are appeared with several different forms, but sharing with a common feature that clustered companies are supposed to benefit from localization economies and various levels of interaction with competitors, customers, and suppliers. Most automation industrial clusters are built upon the original high-tech industrial areas which have been assembled with complete infrastructure and a certain number of manufacturing companies, intelligent corporations can access closely to customers by providing technical services. Guangdong has built the largest number of clusters which attracts 126 intelligent corporations, that include the spare parts manufacturers, robot assembly, and research institutions.

3.3 Weaknesses

3.3.1 Business Diversification

Outstanding multinational companies, at an earlier stage, put emphasis on diminishing the volatility of cash flows and risks via diversified businesses, and attempting to benefit from different industry lifecycles (Scott, 2016). KUKA concentrates on the robot midstream and downstream processes. Divisions of systems and robotics are the entity's mainstream revenues. Apart from products in midstream and downstream, competitors FANUC, YASKAWA, and ABB produce the spare parts in the upstream.

The robot manufacturers have invested R&D activities to compete for emerging markets' growth opportunities. Expenses spent on the R&D section accounted for three per cent of KUKA total revenues, just over 110 million dollars in 2015. R&D investment in FANUC accounted for six per cent of sales revenues, reaching to 306 million dollars. YASKAWA spent 159 million on product research. The amount of R&D expenditure in ABB even climbed to more than one thousand million.

3.3.2 Product Price

Robots listed on table 2 are selected from two companies: Shanghai Zhongping Science & Technology Co., Ltd., an authorized agent of FANUC, YASKAWA, ABB, KUKA, and KAWASAKI for six years; Guangdong Songqing Intelligent Technology Co.,Ltd., provides robots of FANUC, YASKAWA, ABB, and KUKA, also produces automatic machines for 12 years.

On the whole, robots from Japanese suppliers are cheaper than European counterparts. Under the same payload of 20kg, the maximum reaching areas of FANUC M-20iA and YASKAWA HP50-20 are 1,811 and 3,106 mm. The unit prices of the two models are 20,064 and 22,472 dollars. KUKA KR20R1810 is the most expensive, 29, 695 dollars per set with 1,810 mm reaching area.

Prices of robots with payload between 165 and 200kg are similar among four companies. European robot manufacturers ABB and KUKA have more competitive advantages in heavy robots than FANUC and YASKAWA. Under the same price (40,128 dollars per set), the payload of FANUC R-

2000ic is 165kg, with a maximum 2,655 mm reaching area. ABB's robot can load 200kg; reaching area is of 2,600 mm. 180kg payload and 3,195mm reaching area are features of KUKA KR180 robot.

	Model	Payload (kg)	Reaching Area (mm)	Price (dollar/set)
FANUC	M-20iA	20	1811	20,064
YASKAWA	HP50-20	20	3106	22,472
ABB	IRB2600	20	1650	28,250
KUKA	KR20R1810	20	1810	29,695
	Model	**Payload (kg)**	**Reaching Area (mm)**	**Price (dollar/set)**
FANUC	R-2000ic	165	2,655	40,128
YASKAWA	ES165D	165	2,651	39,326
ABB	IRB6700	200	2,600	40,128
KUKA	KR180	180	3,195	40,128

Table 2:Industrial Robot Prices among FANUC, YASKAWA, ABB, and KUKA
Source: Author Collection from Alibaba.com

3.3.3 Operation Performance

KUKA revenues have been heavily relied on orders from automobiles in America and European countries. Influenced by the world financial crisis, sales revenue decreased by 16.8 per cent as the received order reduced by 15 per cent. The company net income dropped by 107.3 per cent from 117.9 to negative 8.6 million euros. What is more, the corporation debt increased by more than 20 per cent between 2007 and 2010.

Though sales in recent years surged to nearly three thousand million euros in 2015, the corporation's efficiency of resource management and cost control was the lowest among the four. The rate of return on assets (ROA) in KUKA remains at below four per cent except the year of 2012. Counterpart FANUC performed the best, a 13 per cent of ROA by 2015. YASKAWA's capability of operating expense control improved to six per cent. ABB was at five per cent over the period.

Return on equity (ROE) is by far the most popular method to evaluate a company's financial performance among investors and managers. It equals net income divided by shareholder's equity. ROE is also used to measure how efficiently a company employing capital. ABB's 2011 ROE was 19.4 per cent, and reduced to 13.7 per cent in 2015. YASKAWA's ROE increased from 8.4 to 14.2 per cent. KUKA's 2015 ROE was the lowest (11.8 per cent) among the four in observed period.

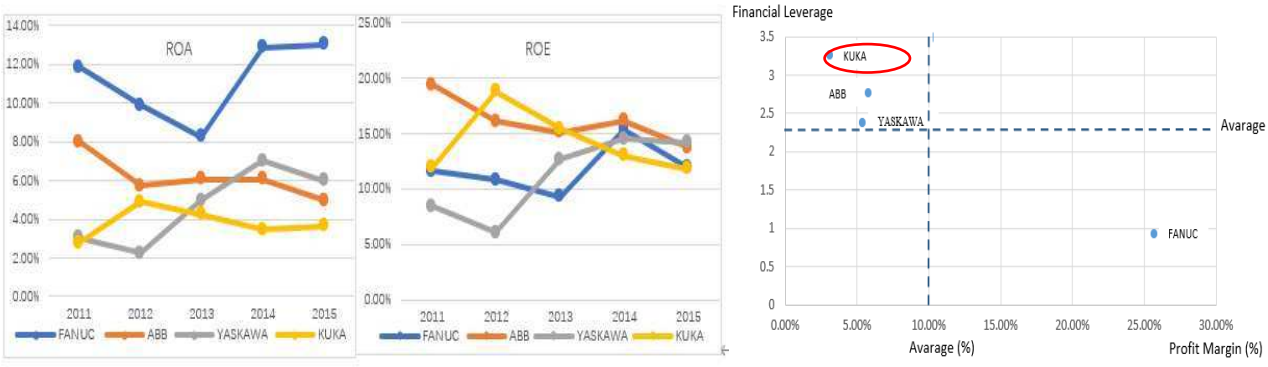


Figure 3: ROA, ROE and ROE Matrics
Source: Author Collection and Calculation based on Financial Reports

In the DuPont Model, profit margin, asset turnover, and financial leverage are three major metrics driving the corporation's operating efficiency. Profit margin is used to evaluate a corporation's profitability, it is the result of net income divided by total sales revenues; asset turnover ratio measures corporation's efficiency of using assets, which equals sales divided by assets; financial leverage assesses abilities to meet financial obligations, it represented by assets divided by equities.

1) Profit Margin

The profit margin reflects a company's pricing strategy and the ability of operating costs control. FANUC's profitability is at the highest level of 25.7 per cent. The other three companies are below the average of 10 per cent. KUKA profit margin slightly increased to approximately three, but it was the lowest among its peers.

Competitiveness of a technology intensive company, on certain degrees, lies upon profitability which is decided by production costs (Frank T. Rothaermel, 2008) that are affected by product variety and production volume (Fujita, 2006). The production volume is closely relative to the costs of material, manufacture, and assembly.

➢ Production Material

The robot production includes three processes: upstream, midstream, and downstream. Reduction gear, controller and servo motor used in the upstream process are the most crucial spare parts in robot manufacture, accounting for 70 per cent of robot cost, the largest amount in total. Different from normal gear, the gear used in a robot is characterized with short transfer chain, small size but with much power, lightweight and easy control. Therefore, it is the most expensive part in robot manufacture, taking up 35 per cent. Followed by servo motor with 20 per cent, controller 15 per cent. Robot body costs 15 per cent in robot production.

Reduction Gear	Servo Motor	Controler
Nabtesco (Japan)	**FANUC (Japan)**	**FANUC (Japan)**
Harmonic (Japan)	**ABB (Swiss)**	**ABB (Swiss)**
Mitsubishi (Japan)	**YASKAWA(Japan)**	**YASKAWA (Japan)**
SEJIN (Korea)	Panasonic (Japan)	**KUKA (Germany)**
Spinea (Slovaki)	Siemens (Germany)	Panasonic (Japan)
Bonfiglioli (Italy)	Mitsubishi (Japan)	NACHI (Japan)

Table 3: Main Suppliers of Industrial Robot Spare-parts
Source: Author Collection from Public Resources and Company Reports

From designing RV reduction gear to mass production, Nabtesco, the world's largest gear maker, spends between six and seven years. High requirements and investments prevent most manufacturers from entering this market. As a result, the market is monopolized by Japanese suppliers. Robot companies have to purchase reduction gears from Japan when producing upgrade robots.

Nabtesco is the world's largest supplier, occupying 60 per cent of global market. Another two Japanese manufactures Harmonic and Mitsubishi occupy 15 per cent and ten per cent of the global market separately. Total 85 per cent of the global reduction gears are controlled by those three companies.

Market monopoly and industrial robot demands' grow lead robot manufacturers have few bargaining powers. Prices of the same type of Nabtesco product and delivery time are based upon the importance of customer. Regardless of restrictions from customs, and price difference, FANUC and YASKAWA are benefited from transportation cost and time consumed.

Nabtesco is located in Tokyo, Japan, 120 kilometers (km) to Yamanashi, location of FANUC; 1,050 kilometers to Kitakyushu, location of YASKAWA. It takes two hours and 13 hours to transport goods from Nabtesco to FANUC and YASKAWA by truck. Suppose a truck loading 20 tons cargo consumes 0.3-liter diesel per kilometer, one-liter diesel costs one dollar, the transportation costs (excluding labor expenditure and other service fees) of one truck loading fully from Nabtesco to FANUC and YASKAWA are 40 and 347 dollars separately.

Company	Transportation Time (from Nabtesco)	Transportation Expense (dollar)
FANUC	2 hours	40 USD (FANUC) (20 tons truck)
YASKAWA	13 hours	347 USD (YASKAWA) (20 tons truck)
ABB, KUKA	30-40 days	1,350 USD (20 feet container ocean freight)

Table 4: Cost and Time Consumption of Importing Robot Spare-part
Source: Author Calculation based on Websites of Nabtesco and Shipping Company CMA CGM

ABB and KUKA are located in Swiss and Germany, neighboring countries in Europe with an hour difference driving from Hamburg to Zurich (ABB location) and from Hamburg to Augsburg (KUKA location). Here, take KUKA as a representative comparing with their Japanese counterparts in aspects of transportation cost and time consuming. Information from CMA CGM, one of the world top five shipping companies, indicates the sea freight of a 20 feet container (the smallest) can load total gross weight of 17.5 tons with a size of total 25 cub meters cargos from Tokyo, to the Hamburg, the port in Germany. The sea freight, which excludes expenses of container trailer between port and factory, custom clearance and labor expenditure, costs 1,350 dollars per 20 feet container, higher

than FANUC (40 dollars) and YASKAWA (347 dollars). The diameter of one reduction gear is 0.4 meter, hence, the size of one packed gear is 0.3 cub meters. A 20 inches container can load 80 sets gears. The average cost of transportation of one gear from Japan to Europe countries is 17 dollars higher. Despite complexity of import and export procedures, the time consumption by ocean freight from Japan to Europe is over 30 times longer.

Table 3 shows FANUC, ABB, and YASKAWA have their own servo division. Servo motors used in KUKA robot are purchased from SIEMENS. Information offered by SIEMENS sales suggests servomotors purchased by KUKA are customized products. One type of servomotor that KUKA purchased is the model IFK6100-8AF91-1ZZ9-ZS09 with 2.83kw output. But more details like price are not allowed to disclose due to confidential contracts with KUKA. Similar servomotors searched through Alibaba.com reveal FANUC servomotor is the cheapest among four companies, costing 960 dollars per set, against YASKAWA 980 dollars, and ABB 1,090 dollars. SIEMENS servomotor is the most expensive, with a unit price of 1,170 dollars. Consequently, expenses of KUKA's key spare parts used in one robot are the highest, averagely 225 dollars more than FANUC, 200 dollars more than YASKAWA, and 80 dollars more than ABB.

- Employee Expenditure

Average annual salaries in Europe and North America countries are higher than in developing countries. Switzerland was ranked at the top three of the list made by Business Insider, with 83,580 dollars in 2015, 20,730 higher than the United States (62,850 dollars). Followed by Germany 47,450 dollars, which was roughly 6,000 higher than Japan (41,340). Chinese annual salary was 9,470 dollars on average, ranked at the 21st in the list. It was one-fifth of German's average.

In 2015, 12,300 employees served in KUKA, expending a total of 1,030 million dollars. Employees from European and North American countries took up as high as 86 per cent of the company's total. Then, the average cost in KUKA was 83,740 dollars per head. Because of broadly diversified businesses, ABB has 135,800 employees, over ten times more than KUKA. More than 30 per cent of employees come from developing countries, the capital cost was controlled at 3,704 million dollars

with an average of 27,300 dollars per head.

	Capital Expenditure (million dollars)	No. of Employees	Average Personnel Expense (dollars)
FANUC	277	5,469	50,600
YASKAWA	129	11,810	10,900
ABB	3,704	135,800	27,280
KUKA	1,030	12,300	83,740

Table 5: Personnel Expenditure
Source: Author Collection and Calculation based on Financial Statements

FANUC services are scattered around the world, over 50 per centage located in emerging economies. Nine of total 16 YASKAWA production plants (including headquarter) were located in emerging economies of Asia, and South Africa. The personnel expenditures in FANUC and YASKAWA were 50,600 and 10,900 dollars per head.

Asia has nine out of the top 10 world's longest average working time, with more than 45 hours per week. Japanese workers are considered as the most industrious in the world. Data from the Organization for Economic Co-operation and Development (OECD), the average working time of Japanese labor force is 1,713 hours per year, 350 hours more than Germany.

Labor laws regulate the weekly working time should be controlled within 40 hours, 30 per cent Japanese employees work more than 49 hours per week, against 15 per cent among Germany employees in 2016. A survey from the China Federation of Trade Unions suggests 22 per cent of Chinese employees work more than 48 hours weekly.

Paid off holiday among Chinese employees is the shortest. Full time employees serving the same company at least one year but within ten years have 5 days paid off. When constantly working there over ten but less than 20 years, their paid off period is extended to ten days. Up to 15 paid off days are offered to staff who continuously serve more than 20 years. Public holiday in China amounts to

11 days, thus the total paid off holiday is maximum of 31 days after employees serve the same company for at least 20 years.

Full time employees in Japan are entitled a minimum of 10 days paid annual leave when they finish the initial 6 months of employment. Additional two days of paid vacation time are added for the next subsequent year. 20 days for 6.5 or more years of service. Besides, full time employees have total of 16 days public holiday. A full-time employee after serving seven years in the same employer can enjoy maximum of 36 paid days' holiday.

Workers, not only full time, but also part time employees, trainees, in Germany are guaranteed minimum of 20 paid days of vacation per year. Part-time employees' paid holiday would be calculated upon their weekly working hours. Many employers offer more paid off days, the holiday period is between 25 and 30 days excluding public holidays. Each state has a regional holiday, but the difference is not more than three days. Then, additional public holiday generally is nine days annually. Employees enjoy the benefit of paid sick leave for three days one time. After serving four weeks of employment, they are entitled to six weeks' sick pay. In most Asian countries, if employees ask for sick leave, they cannot get payment from employers. In conclusion, German employees, working full time one year in the company, have at least 39 paid days (excluding the sick paid days).

2) Financial Leverage

Financial leverage reveals a company's financial structure, in other words, it indicates the debt proportion of a company's total assets. A company with higher financial leverage has more debts, which has to pay more related costs. Liabilities including short-term and long term accounted for 69 per cent of KUKA's total assets in 2015. KUKA saw 105.7 million and 11.4 million dollars loss in 2009 and 2010. The accumulated free cash flow was negative 229 million dollars in 2014. KUKA's 2015 equity multiplier was 3.25, higher than ABB (2.76), and YASKAWA (2.37). Most of assets in FANUC are financed by shareholders. The equity multiplier was the smallest of 0.92.

3.4 Threats

3.4.1 Slowdown of Automobile in European Countries

Ernst & Young consultancy report stated, “the 16 largest auto manufacturers invested about 52 billion euros in expanding and renewing their factories in 2015, an increase of over 45 per cent compared with the previous year.” One important reason is the new records of automobile sales made by America and China.

The traditional auto producer center Europe is one of the most important areas of automobile industry in the world, which represents more than 30 per cent of global share prior to 2005. The position has been gradually replaced by fast growing emerging economy of China. 21 million autos were produced in Europe countries in 2015, 23 per cent of global production. European auto market decreased from 20.1 in 2008 to 17.7 million sets in 2015 with CAGR of negative two per cent.

Germany by far is the largest player in Europe’s automobile industry, and is the world’s third largest car producer. More than 800,00 workers (20 per cent of the total German labor force) work in 43 factories (Milan & Ales, 2017). The country is the home of many world well-known auto manufacturers, such as Audi (1909), BMW (1916), Mercedes Benz (1926), Volkswagen (1937). Many of them have more than a hundred years’ history. Nevertheless, the production capacity in Germany stays at six million automobiles from 2008 to 2015, which suggests the share in global production shrank from 10 to 6.6 per cent as the global market keeps growing.

3.4.2 Competitors from Emerging Market

China’s protectionism is considered as one of the top ten business challenges for German companies entering into Chinese market (German Chamber of Commerce in China, 2016). Foreign companies confront plenty of restrictions on carrying out business activities in China. Many strategic businesses are restricted for Chinese companies and more than one hundred categories are only allowed as joint ventures with local companies. Developed economies multinational companies, in the earlier stage, adopted a similar but more efficient method to realize profit expansion in the Chinese market, which is to establish a joint venture with a national state-owned company or to

cooperate with research institutions or local international organizations.

Domestic corporations, particularly SOEs and POEs in sectors influencing economic growth, irregularly receive governmental supports. Encouraged by the country's automation policies, more than 36 cities have taken robots as their development focus. The number of robot manufactures was surged to between 700 and 800, according to People's Daily. Guangdong province announces a three years' program to subsidize companies' automation development. The government returns 10 to 20 per cent of purchasing price to the companies who purchase industrial robots from domestic makers.

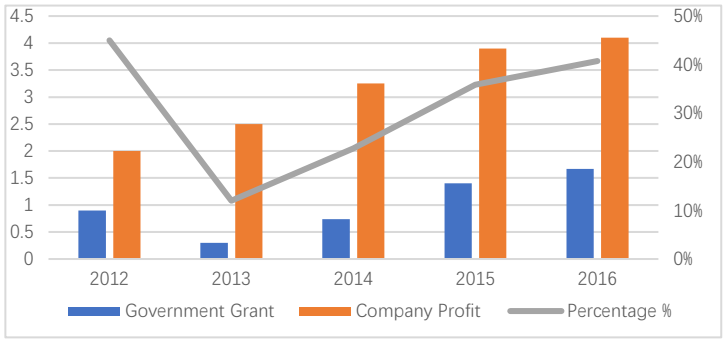


Figure 4: Relation between Government Grant and Company Profit in Siason Robotics (100 mil. Chinese yuan)
Source: Author Calculation based on Financial Reports

Government grant is an important income in some corporates' development. Profits of Siason Robotics, a leading domestic robot manufacturer, are increased as growing grants received from government. In 2016, Siason's profit was 410 million yuan, 40 per cent contributed by government grants. Amount of accumulated grants the company received from the government is 501 million yuan, around 77 million dollars.

A senior manager from one robot manufacture argued that although domestic robot makers have drawbacks in brand and technology, the unit price is 1,200 dollars on average, far less than foreign brands. As a result, Guangzhou Shenlong Machinery Co., Ltd sold 314 units of robots in 2014, three times than sales in previous year. Sales from Dingfeng Robot Co., Ltd. were 480, 000 dollars at the year of company establishment. It multiplies ten times to 4.8 million dollars in the subsequent year of 2013 and jumps to more than 8 million dollars in 2014. Sales of domestic industrial robot rose by

30 per cent, reaching to 22,257 sets.

3.4.3 Competitors from Advanced Countries

FANUC entered into the Chinese market by establishing a first joint venture Beijing FANUC Mechanical and Electrical Co, Ltd. with state-owned Beijing Machine Tool Research Institute in 1992. The company is specialized in NC machine production, sales, and maintenance. After five years (1997), the FANUC joint ventured with another Chinese state-owned company Shanghai Mechanical & Electric Industrial Investment Corp., to establish Shanghai FANUC Robotics Co, Ltd. The second venture develops, manufactures robot systems, provides installation, acceptances, and maintenance services. From 2005 to 2014, Shanghai FANUC has developed into a total of around 60,000 square meters production plant. FANUC built six branches in the south, east and middle of China over the period from 2007 to 2010. In 2015, another new production subsidiary was constructed in Guangzhou, aiming to explore electronics market. As of 2015, it occupied 15.5 per cent shares in Chinese market, highest in all foreign robotics manufacturers.

YASKAWA is the first foreign company investing Chinese robot market by establishing YASKAWA Shougang Robot Co., Ltd with state-owned entity Shougang Group (China) in Beijing (1996). The joint company is responsible for designing, manufacturing, selling, installing intelligent production line. In 1999, YASKAWA founded a first complete subsidiary YASKAWA Electric (China) Co., Ltd. in Shanghai. This subsidiary focuses on robots and related spare parts production, such as servo motor, and controller. The second subsidiary, which is located in Changzhou, 180km west to Shanghai, has an annual 18,000-unit capacity to meet local strong demand.

Time of ABB entering into Chinese robot market dated back to 1994. The company built the first robot production line and a global robot R&D center in the year of 2005. R&D center has built a long-term cooperation with local notable universities and institutions to prompt intelligent development. The factory and R&D center are located in Shanghai with a total area of 72,000 square meters. ABB moved its global robot business headquarter to Shanghai in 2006, and built another subsidiary in Zhuhai in 2015, a city in south of China, to access the largest electronics market (90km to Shunde,

120km to Shenzhen). China has become ABB's strategic market with 44 local subsidiaries and approximately 20,000 employees in 131 cities across the country.

Though KUKA entered into Chinese market in 1986 by offering the robot sample to an automobile maker, from 1994 to 2010, robots sold to the Chinese market were accumulated nearly 5,000 units. The company established a first wholly controlled subsidiary KUKA Robots (Shanghai) Co., Ltd. in 2000, which is responsible for sales and product maintenance. The second subsidiary KUKA Systems (Shanghai) Co., Ltd., founded in 2004, produces and assembles automatic systems. In 2014, it built the first foreign robotics production plant in Shanghai. KUKA's localization is proved less aggressive than competitors. Its annual capacity in China was around 5,000 units robots by 2015, against 26,500 units of FANUC, 18,000 units of YASKAWA.

Other international rivals are also benefited from Chinese strong demand. Kawasaki Heavy Industries Ltd. (a Japanese robot maker) sees sales of automotive robots, which were made in Suzhou plant, an eastern city in China, increasing by 75 per cent to 7,000 units. Strategic products include robots used by automobile makers in China, also smart automotive machines for electronics manufactures. Another factory, located in Chongqing, a southwest city in China, is targeting mobile-phone manufactories and food manufactures. Kawasaki's medical robotics play a key role in competing the world's leading robot manufacturers including FANUC, ABB and KUKA, stated by Kawasaki President Yoshinori Kanehana.

3.5 Findings

As Dr. Till Reuter, the former CEO of KUKA, explained the reasons for the Chinese strong demand of industrial robot are rising labor costs, growing quality requirements, the focus on increasing efficiency and the previously low robot density. Political grants, and local strong demand speed up robot manufacturers' growth in China. Influenced by competitors from strong demand economy and developed economies, shares of Chinese industrial robot among big four companies are narrowed from more than 60 per cent to 52 per cent.

CHAPTER FOUR: DRIVERS FROM PERSPECTIVE OF TARGET MANAGEMENT

The commonly pursued strategic objectives in corporations are autonomy of management, technical innovation, company survival, and growth (Baumol & Williamson, 1967; Marris, 1971). Strategic management would compare two or more strategic options when estimating value creation (Peter, 2010). Therefore, three scenarios are created in this section by taking four main variables summarized in chapter three into account, so as to analyze motivations of target management.

4.1 Overview of Midea Group

Midea was established in 1968, publicly listed in Shenzhen Stock Exchange Market in 2013. It is one of fortune 500 companies from 2015. Two decades' horizontal and vertical acquisitions at home and abroad facilitate the entity develop into an only company which has a complete household electronics chain in China with total ten independent divisions[1]. Hot selling product – air conditioning machine – takes up the 18 per cent of the domestic market, 33 per cent of the foreign market, the largest among competitors (ChinaIOL, 2015). The oversea market is focused on developing markets in South Asia, Africa, and South America.

The group has 200 subsidiaries, and 10 strategic partners across the world. Six of 20 manufacturers are scattered in six different emerging countries[2]. Company's total revenue was 22.22 billion dollars, 92 per cent from the white goods manufacturing division. The domestic market is an important pillar of the group's development. Revenues from local customers rose to 12.7 billion dollars.

Under the circumstances of fierce competition and growing purchasing power, little room has been left for profit rises in traditional electronics. After temporary rises in 2013 and 2014, revenues from company's most popular product -- air conditions -- returned back to the level of around 10 billion

[1] Ten divisions are domestic air conditioning machine, central air conditioner, washing machine, refrigeration machine, kitchen appliance, household electrical appliance, water heating machine, environmental appliance, cleaning appliance, and compressor & motor division;

[2] the Socialist Republic of Vietnam, Republic of Belarus, Egypt, Brazil, Argentina, and India

dollars in 2015. Household appliance is still a labor-intensive industry. Financial statement reveals raw material costs account for more than 80 per cent of total production costs; over 80 per cent of staff are work in the production line.

Midea Wuhan Refrigeration Equipment Co., Ltd., one of group's air conditioning machine plants in China, firstly applied robots on production in 2011. In one traditional factory, 11,000 employees produced 500,000 units air conditions; in smart one, 5,700 workers are saved, but the factory's capacity is increased to 630,000 units, stated Wu Wenxin, the President of Midea Group Air-condition Division.

In light of the Midea Group development strategy, the number of employees should be controlled within 20,000 in three years through 2018, said Wu Shoubao, the Vice President of Midea Group Air Conditioner Division. Production employees in Midea Group were 78,731 as of 2015, which means 58,731 employees are expected to be replaced by robots. Four workers' workload can be done by one robot (George & Eric, 1987), then the robot demand is 14,683 units, an average of 4,900 units each year.

4.2 Operation Performances in Three Scenarios

Insight of a corporation's strategic position helps management to make important operating decisions. The corporation, at least, needs to understand its potential growths as an independent entity and in the circumstance of an acquisition. Suppose political and economic conditions in main markets are stable, changes in currency rates among countries are tiny before and after acquisition, three scenarios are created as below.

4.2.1 The First Scenario

After two years' sustainable growth of 18 per cent, the sales in KUKA is expected to decline to 15 per cent as demand from developed economies continuously declining, slowdown appeared among emerging economies. Percentage of costs of goods sold (COGS) in sales in the last two years raised from 75 to 76 per cent, it is expected to grow to 77 per cent. Percentages of selling expenses, R&D costs, and administration expenses in sales are stayed at eight per cent, four per cent, and seven

per cent in recent three years, thus, they are expected to be the same in following years in the first scenario.

Revenues in 2020e are predicted to arrive at the level of 6,622 million dollars. After deducting costs of goods sold in sales 5,099 million dollars, gross profit comes to 1,523 million. Expenses of selling, R&D, administration, and other operating expenses in total are 1,222 million. Earnings before interests and taxes (EBIT) are 301 million dollars by 2020e.

4.2.2 The Second Scenario

The annual capacity in the emerging economy is 5,000 units robots as of 2015, which is less than its sales of 6,900 units there. Supply shortage from local plant is expected to enlarge to over ten thousand units by 2020e. It takes between 30 and 40 days to import robot from Germany, KUKA headquarter, to China. The gross weight of one-unit KUKA KR180 robot with package is around 1,500 kg. A 20 feet container can load 17.5 tons of goods with an expenditure of 1,280 dollars[1]. Thus, the cost of one robot delivered from Germany will be more than 115 dollars than robots produced at the site of the targeting market.

The largest shareholder Voith Group has suffered years' negative growth and profit loss since 2011. The financial leverage of KUKA was as high as 3.25, nearly 70 per cent of total group assets coming from liabilities in 2015. Therefore, a feasible solution is to increase current one work shift to three shifts per day to meet the strong demand from the local market. The maximum capacity of KUKA Shanghai plant can be reached to 15,000 sets per year. The number of existing employees in one work shift in Shanghai plant is 1,050, after adding employees hired for three shifts, it rises to 3,150. Seeing information from 51job, the largest human resource service supplier in China, the average annual salary of employees in the mechanical sector in the region is 16,000 dollars. Personnel cost is expected to reduce from:83,740 to 73,861 dollars[2] per head after hiring increasing local employees.

[1] calculation is based on rates from shipping company CMA CGM

[2] 73,861 dollars = (1,030 million+16,000*2,100) / (12,300+2,100)

In this scenario, sales growth is maintained at the same level of 18 per cent because of the continued prosperity of emerging market and increasing capacity. Revenues are estimated to climb to 7,532 million dollars. Personnel expense in sales revenues continuously grew from 17 to 20 per cent in 2015. This percentage is predicted to 21 per cent in the following years through 2020e. At that instant, total personnel expense arrives at 1,582 million dollars, but downs to 1,400 million after being hedged by growing Asian employees. COGS see a reduction of 36 million to 5,765 million dollars. The percentage of COGS in sales will be slightly decreased to 76.5 per cent. Gross earnings are 1,767 million. Expenses of selling, R&D, administration, and other operating expenses are calculated under the same percentage as in the first scenario, total expenses are 1,390 million dollars. EBIT are 376 million by 2020.

4.2.3 The Third Scenario

The tender offer to KUKA provides senior managers the third option. Midea's financial statement reveals, the group has positive performances in free cash flow and financial structure. Free cash flow steadily increased to 4,296 million dollars in 2015. The average equity multiplier is controlled at 2.6. KUKA may receive funds and orders through Midea, also appreciate regulatory supports after accepting takeover offer. After 2018, the yearly production capacity is strengthened to at least 20,000 units robots via building a new factory. Thus, the projection of sales growth is 20 per cent, instead of 15 per cent and 18 per cent in previous two scenarios. The average personnel cost will be further optimized to 69,929 dollars[1] when hiring additional 3,150 local employees for the increasing work shifts and new plant.

4.2.4 Discussion

- Production Costs

As discussed in chapter three, key spare parts, such as servo motor and reduction gear, used in up-stream process are purchased from SIEMENS and Nabotesco. Costs of material are the largest part in COGS, averagely 70 per cent in KUKA. Midea has more than 20 years' experience in developing

[1] 69,929 dollars = (1,030 million+16,000*3,150) / (12,300+3,150)

and producing motor, and it has acquired Servotronix Motion Control Ltd. in recent years. Servotronix is an Israel entity which is specialized in motion control and servo motor for 33 years. Expense of servomotor tends to be at least 170 dollars less per set, 14.5 per cent off the original cost, then the cost of materials is estimated to three per cent off[1]. Eventually, COGS would be 5,967 million dollars as of 2020e, accounting for 75 per cent of total sales.

- Supports from Policy Makers

Management draws an outline when considering transaction offer. The team pursues a more sustainable growth and identifies if acquiring company will bring synergistic benefits. The Chinese market turns out to be fiercer in recent years, especially between local and foreign companies. Though cross border companies have advantages in brand and technology, it is tough to compete in aspects of cheap labor sources, raw materials, political priorities, and sales networks.

Criteria (robot manufacturer)	Subsidy (dollars)	Criteria (system integrator)	Subsidy (dollars)
R&D (million dollars)			
<= 3.2	100% refund		
> 3.2	3.2 million		
Sales Volume (unit)		**Purchase Volume (unit)**	
<= 500	Up to 480,000	<= 300	Up to 320,000
500 - <= 1,000	Up to 960,000	> 300	Up to 800,000
1,000 - <= 2,000	Up to 1,600,000		
> 2,000	Up to 3,200,000		

Table 6: Summary of Government Grants for Automation Industry
Source: Author Collection from Government Website

After being acquired by Midea, KUKA tends to be benefited from the local government's supports

[1] 0.29 = 0.145*0.2

when conducting robot businesses in the region. Shunde government (the location of Midea headquarter) has issued a series of policies in aspects of robot production, R&D, marketing to encourage automation development. According to *Implementation Plan of Automation Development in Shunde Area* published in government website, KUKA (Guangdong) company is listed at the top of the leading robot manufacturer, which means the company may priority receive government supports. Apart from the benefits of land use, tax reduction, the corporation will receive government grants up to three million dollars every year. Gross income turns out to be 1,957 million dollars after adding grants.

Furthermore, the government offers certain grants to encourage robot manufacturers' marketing activities. The amount of grant is dependent upon sales volume (as table 6 shows), up to 3.2 million dollars in that year. The subsidizing period is three years, which means the investor can continuously receive three years' grants from the government if meeting above mentioned conditions.

Regional assembly enterprise and robot system integrator purchase robotics from regional robot manufacture have 10 pe cent refund of purchase price, up to total 800,000 dollars. For example, if one assembly firm plans to purchase robotics with 20kg payload from FANUC, YASKAWA, ABB, and KUKA. The unit prices (see table 2 in chapter three) are 20,064, 22,472,28,250, and 29,695 dollars per set separately. The buyer has a grant of 2,970 dollars from government if he purchases KUKA robots. The actual expense of one robot is declined from 29,695 to 26,725 dollars. Consequently, selling expenses in the third scenario are likely to decline from eight per cent to seven per cent by taking advantage of Midea's sales network and policy support.

Costs of R&D and administration are expected to rise to five per cent and eight per cent due to development of robot in new applications in healthcare, electronics, and investment of new plant. Government allowance in R&D is depended upon actual expense, but up to three million dollars. Therefore, expenses of selling, R&D, and administration are amounted to 1,539 million dollars; EBIT are rose to 418 million dollars in 2020e.

- Geographic Complementary

Sales network is a valuable resource to control an entity's efficiency. It is closely related to sales management, including sales systems, information technology capabilities, sales penetrate, relationship with customers (Robert, Miao & Fang, 2007; Novick, 1995).

As of 2015, Midea has 2,200 flag-ship stores, covering all provinces across the China, with 100 per cent market coverage in first and second tier cities, more than 90 per cent in third and fourth tier markets. Midea has cooperated with mainstream online platforms[1] since 2014. Online revenues saw an increase of 44 per cent to 36 billion dollars in 2016. KUKA market is concentrated on developed economies, establishing 121 branches in 30 different countries, a market coverage of 70 per cent in European. The combination of sales distributions facilitates KUKA to strengthen the emerging market to as many as 90 per cent.

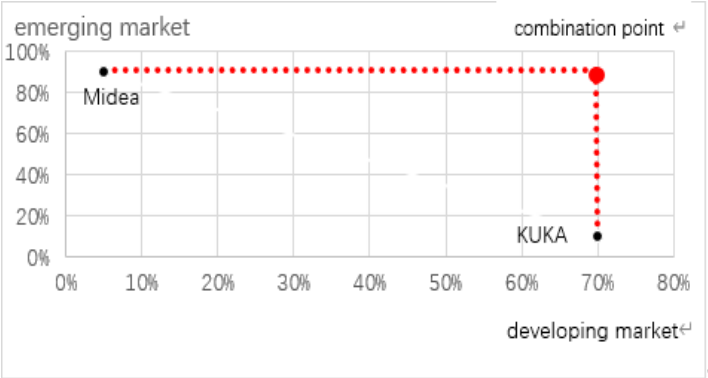


Figure 5: Market Power Growth after Takeover
Source: Author Graphic based on Financial Reports

- Business Diversification and Profitability

Swisslog is an international provider of warehouse and distribution solutions. Major customers are from sectors of healthcare, and pharmaceuticals. It is forecasting that KUKA's Swisslog and Robotics divisions will be more diversified and more catered by Chinese customers through cooperating with Midea's subsidiaries in aspects of logistics, e-business, healthcare and electronics. Annto Logistics, Midea's exclusive subsidiary, is specialized in providing a complete chain of various delivery in the

[1] mainstream online platforms in China -- Tmail (an online platform of Alibaba), Jindong, and Suning -- dominated 93.7 per cent of total business to customer (B2C) trades, statistics from Ministry of Commerce of China

first, second and even third-tier cities across the country. Business integration between Swisslog and Annto is supposed to develop AGV handling robot in material transport, and automatic warehouse solutions.

“Financial forecasting is a crucial element in understanding the historical and future profits of one business” (Andrew, 2010, p75). Before being acquired by KUKA, the Swisslog profit margin maintained at three per cent and slightly reduced to two per cent owing to the high administrative expenses and material costs. Added the amortization caused by acquisition, earnings were negative 51 million dollars in 2015. Sales of Swisslog were 689 million dollars, if EBTIDA growth is kept at three per cent, then EBTIDA is 23 million dollars. The financial report indicates, the final profit was negative 51 million, owning to the deduction of amortization 72 million out of acquisition value 396 million dollars. Sales saw a two years’ rise after merging with KUKA, it is expected to grow to 1,617 million dollars when growth continuously rises to 18.5 per cent.

Suppose the amortization is maintained at the same level in the following years’ through to 2020. EBTIDA is anticipated to negative 23 million. The division will turn from loss to profit of 25 million dollars when sales continuously increase in 2021.The time of converting negative situation is assumed to shorten around half a year if collaborating with Annto. Expecting revenue growth is three per cent higher as increasing orders from Annto and Chinese market, revenues will be rose to 2,127 million dollars. EBTIDA becomes negative 11 million in 2020, positive 41 million in 2021 when other variables are maintained the same.

KUKA China witnessed negative profits since establishment, which accumulated a loss of 465,000 dollars from 2006 to 2011. This is mainly because systems business has continuously suffered years’ loss with six million dollars. As auto manufacturers expanding productions there, the local demand of robotics is growing. The robotics division turns the loss of four million dollars in 2008 to the profit of 4.8 million in 2011. Orders from the automobile industry stably rose to 340 billion euros in 2015.

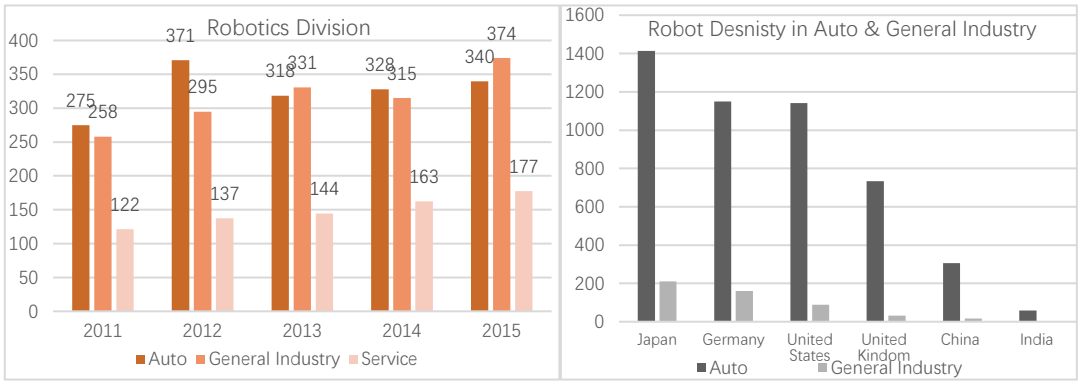


Figure 6: Industrial Robot in Sectors of Automobile and General Industry
Source: Author Collection, IFR

Potentials from general industry tend to be more promising than automotive in the future. In high automation country Japan, only 211 units robots in every 10,000 workers in the general industry. Orders from general industry was surged by 45 per cent to 374 million euros. The growth positively contributed KUKA robotics' profit margin growth of 1.3 per cent.

In 2015, Chinese robot consumption was 69,000 units. The government's goal of becoming the top 10 most intensively automated countries by 2020, and the robot density is targeted to grow 49 to 150 units in every 10,000 people. Thus, the robot demand by 2020 is expected to increase to 211,224 units. KUKA accounted for 10 per cent of the Chinese robot market as the end of 2015. If company maintains this market share continuously to 2020, orders from the Chinese market are estimated to be reached to 21,122 units.

Since group growth from 2014 is kept at 18 per cent, sales from the robotics division will climb to 2,512 million dollars as of 2020e if growth comes to 20 per cent as increasing order from China. Midea's robot demand in core businesses is on average 4,900 units per year. The market share will rise to at least 12 per cent after adding orders from Midea and its business partners. Then the revenues of robotics division will climb to 2,772 million dollars. The proportion of the electronics sector was 35 per cent in 2016, if plus Midea's order, orders from the general industry are expected to rise to 12,293 units, roughly 50 per cent of total estimated group's sales.

To conclude, sales from three main divisions are rose by around 400 million dollars after the takeover.

Due to proportion of robotics division which has higher profit margin is optimized from 33 to 35 per cent, EBITDA are anticipated to increase to 693 million dollars.

4.2.5 Results

In light of formulations mentioned in chapter three, total assets in the first scenario grow to 4,569 million dollars. Assets in the second and third scenarios are 5,197 million, 5,490 million dollars because of higher growth, expanded capacities. Considering a new factory invested in the third scenario, additional depreciation produced from new machinery and plant, the expense of depreciation, and amortization in sales is expected to increase from four to six per cent; the percentage of this part expense in the first and second scenarios keeps the same as previous. Tax rate and interest rates in three scenarios are counted under the same ratios of 30 per cent and nine per cent separately.

After calculation, earnings in the third scenario are the highest, 415 million dollars. 301 and 378 million dollars are generated in the first and the second scenarios. Thus, the corporation profit margin in the third scenario is optimized to 3.5 per cent after cooperating with Midea. Resources management efficiency in the third scenario performs better than the other two. As of 2020e, ROAs in three scenarios are 3.9 per cent, 4.4 per cent, and 5.0 per cent separately.

In the last three years, the percentage of dividend in earnings is maintained at 20 per cent. It is predicted to keep at this level. Influenced by corporation earnings, equities in three scenarios are expected to arrive at 1,317 million, 1,453 million, 1,625 million dollars. Operation efficiency in the third scenario is strengthened as production cost further controlled by producing key spare part and hiring more cheaper employees from developing countries. ROE in the third scenario is 17.0 per cent, higher than 13.4 per cent and 15.8 per cent in the first two cases. Equity multipliers in all situations are similar with slight difference. Financial leverage in scenario three is optimized a bit better as rising equity.

	Scenario 1	Scenario 2	Scenario 3	
Sales revenue (mil. dollars)	6,622	7,532	7,921	1.selling expense in sales:8% in scenario 1&2, 7% in scenario 3; 2.R&D cost in sales: 4% in in scenario 1&2, 5% in scenario 3; 3.Administration cost in sales:7% in scenario 1&2, 8% in scenario 3; 4.tax rate 30%, 5.dividend/net income after tax:0.2 6.current liabilities/sales: 35%
-COGS (mil. dollars)	5,099	5,765	5,968	
COGS of Sales Revenue	77%	76.5%	75%	
Gross earnings (mil. dollars)	1,523	1,768	1,956	
-Selling expense (mil. dollars)	530	603	554	
-R&D expense (mil. dollars)	265	301	393	
-Administ. expense (mil. dollars)	464	527	634	
+other incomes (mil. dollars)	37	4	4	
EBIT (mil. dollars)	301	378	415	
Net income (mil. dollars)	176	230	276	
ROA	3.9%	4.4%	5.0%	
ROE	13.4%	15.8%	17.0%	
Profit margin	2.7%	3.1%	3.5%	
Financial leverage	3.5	3.6	3.4	

Table 7: Pro forma Statements of Three Scenarios

Source: Author Calculation

CHAPTER FIVE: DRIVERS FROM PERSPECTIVE OF TARGET SHAREHOLDERS

Management may emphasize personal aim through organization sustainability and operation performance, while, stockholders may concern their interest maximization through transaction. The board's structure, the offer price premium and the time shareholders intend to hold the stock influence a takeover's success.

5.1 Target Shareholding Structure

After acquiring 24.09 per cent voting rights from Grenzebach Maschinenbau GmbH on November

28 of 2014, adding initial financial instruments 1.01 per cent KUKA stakes, Voith GmbH[1] becomes the largest shareholder with total voting rights 25.1 per cent. According to German Corporate Law (Gesellschaftsrecht), the crucial decision, such as investment or divestment, should be approved on the condition of obtaining more than 75 per cent of voting rights from shareholders. A shareholder who possesses 25.1 per cent stakes of the company, he or she has the decision-making power of the company.

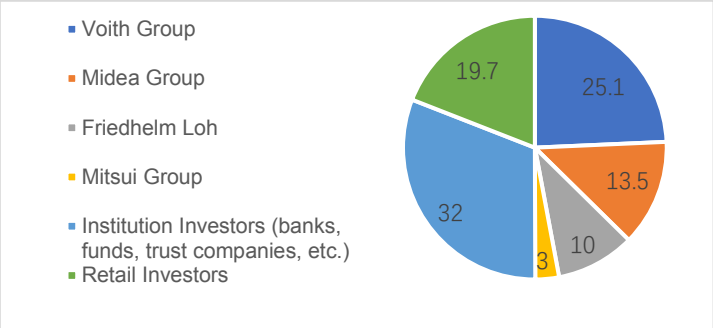


Table 8: KUKA Stake Composition before Takeover
Source: Author Collection from Reuters, and Company Website

KUKA stakes were mainly controlled by four shareholders: Voith (25.1 per cent), Midea (13.5 per cent), Friedhelm Loh (10 per cent), and Mitsui Group (three per cent). The rest 32 per cent and 19.7 per cent stakes were at the hands of institutional investors and retail investors. As Voith President and CEO Dr. Hubert Lienhard stated, Voith's stake in KUKA is a long-term strategic investment to facilitate Voith's computerization and automation. Voith would not low its stake to under 25.1 per cent in the short run. Also, few and even no other shareholder or investor would compete for its power, especially when the largest shareholder is a strategic investor. This is because strategic shareholder can provide company more supports and benefits, he can easily ally other shareholders to defense new competitors to maintain his power. Nevertheless, the second largest shareholder Midea made a tender offer on 16 June, 2016 for all outstanding KUKA shares with four-week validate, aiming to purchase at least 30 per cent stakes.

[1] Voith GmbH is a global family owned technology company. It provides systems, digital applications and services for sectors of energy, raw materials, transport and automotive.

5.2 Agency Problem

Corporate governance mechanism in German is a two-tier management: supervisory board and management board. The supervisory board is elected to regulate and supervise the management board. The management board is responsible for a corporation operating.

Voith President and CEO Dr. Hubert Lienhard was one of members in supervisory board when Voith becoming KUKA's largest shareholder. He is considered as critical figure in German chemical industry in his more than 20 years' management experiences. KUKA CEO Dr. Till Reuter before was a consultant in investment banks. Due to China's huge potential and fast growth, emphasis on the Chinese market by increasing Chinese investor's shares for him or even for the whole company is a less risky decision comparing to markets in other regions.

KUKA has attempted to diversify the business portfolio by shifting heavily relied automotive industry to broader areas in recent years. However, achievements were not noticeable. The company acquired Swisslog with the purpose of expanding the business to markets of logistics, e-commerce, and healthcare, but financial report suggested Swisslog suffered a loss of 45.9 million euros in 2015. Lienhard is expected to put more pressure and interfere with management's work if he was successfully selected to be the chairman of the supervisory board. It would not an exciting news for the management board since management dislikes interference from others (Ross, Westerfield & Jordan, 2008). If Midea acquires more stakes, it, on some degrees, would help management dilute Voith's power on controlling management team.

5.3 Transaction Offer Premium

Acquirers may choose either stock sale or merger assets when purchasing public targets (Christopher, 2016). Buyers offer the tender to acquire the stock of the targeting company from current shareholders. If the company's stocks are held by a few shareholders, the stock sale is comparatively simple. Instead, the acquisition possibility would be reduced when acquiring company receives takeover defenses from the target's managers (Alan, 1988).

If the offer price is lower than the managers' estimation of stock value, takeover defenses would be made by managers. The truth is, in many cases, most managers believe that their firms are undervalued by the market. Since uncertainties and expenses would be produced as acquisition consuming time, the acquirer is likely to offer a higher price than the market price of the stock to complete the transaction in a short time.

The transaction value is not purely related to the target's market capitalization, it is also the result of non-financial considerations, like target's capabilities (Bhagaban, Debdas & Sathya, 2009). Before 2014, KUKA share price had been maintained below the level of 25 euros per share, lower than its peers ABB and FANUC since issued (see figure 8). Share price keeps rising and jumps to the peak at over 110 euros when Midea making a 115 euros a share takeover offer in 2016. KUKA revenues and EBITDA in 2015 were 2,966 and 259 million euros. Midea paid 4,500 million euros for the acquisition, 17.4 times more than KUKA's EBITDA.

Figure 7: Share Prices of KUKA, ABB, and FANUC (2007-2017)
Source: KUKA Website

The price was roughly two folds than the Voith purchased shares in 2014[1]. The attractive price offer plays a critical role helping Midea successfully acquired 10 per cent stakes from shareholder Friedhelm Loh[2] on the first of July, 2016, which directly resulted in the largest shareholder Voith selling its critical 25.1 per cent stakes in the following week.

From 2011, Voith has experienced a continuous profit decline as a result of reduced orders from

[1] the price at that moment was approximately 58 euros

[2] a German billionaire, the founder of Friedhelm Loh Group

main businesses of turbo and hydro. To turn around the situation, Voith has reduced the number of employees by more than 50 per cent from 2011 to 2015. Nevertheless, the company failed to change its negative growth. Revenues were declined by a quarter, falling from 5.7 to 4.3 billion euros. Profits in 2015 first time appeared negative 92 million euros, against to positive 114 million in 2011. The company confronts increasing pressures from debt. Current liabilities were fluctuated at around 2.7 billion, long term liabilities rose from 1.85 billion to 1.93 billion euros. Figure 9 indicates Voith ROE fell by more than 20 per cent to negative 12.6 per cent in five years period.

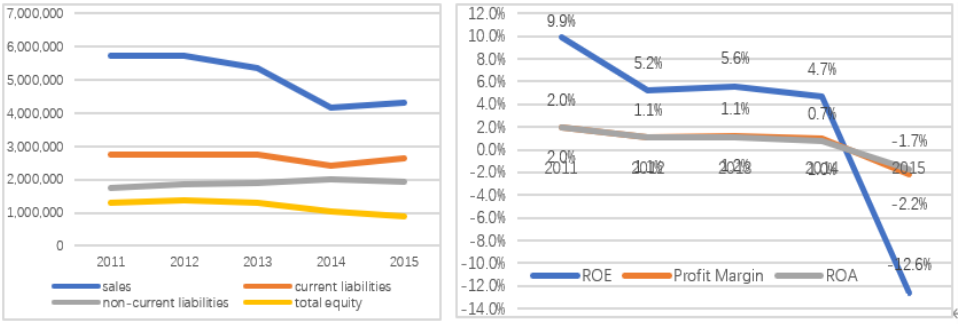


Figure 8: Operation Performance of Voith (2011-2015)
Source: Author Collection from Voith Financials

An ideal situation is a company's profit margin and asset turn go up simultaneously. But in most cases, profit margin and asset turn tend to behavior inversely (Robert, 2015). Because adding value to a product means more assets, conversely, if both go down, the company has high possibilities of bankruptcy. The figure presents profit margin and ROA in Voith appear in a decreasing trend: from two per cent to negative 2.2 per cent and negative 1.7 per cent respectively.

As stated previously, 25.1 per cent stakes with total 8,962,788 shares were held by Voith before takeover. Supposed share price of initial 1.01 per cent stakes is the same as 24.09 per cent, that is around 58 euro[1]. Despite tax deduction, net return Voith received from selling shares to Midea was 510, 879, 916 euros[2]. The positive abnormal return for Voith is a really attractive transaction especially when it facing a worsening financial situation and a serious downturn.

[1] as figure 8 presents the purchase price of 1.01 per cent was lower than that of 24.09 per cent

[2] 510, 879, 916 euros = (115-58) * 8,962,788

Around 52 per cent of KUKA stakes were held by institutional and retail investors. “Institutions are herding animals.” (Lakonishok, Shleifer, & Vishny, 1989). The effect of herding can be large if major investors sell the stock at the same time (Matthias Burghardt, 2011). When Friedhelm Loh and Voith sold their stakes to Midea, institutional investors and retail investors herded out: selling their stocks in the market. Midea eventually acquired 94.55 per cent stakes, far more its goal of at least 30 per cent.

More importantly, on the 28th of June, 2016, Midea signed an investor agreement to commit that Midea should reserve KUKA’s locations, employees, existing strategy, management board’s independence, and protect KUKA’s business partners’ data. The agreement not only eliminates management board’s suspicion that Midea would interfere with their work after the takeover, also, helps target shareholders reduce pressure from publics and politics as a result of selling stakes to a foreign investor.

5.3.1 Transaction Payment

In early acquisitions, means of payment are either equity or cash. 50 per cent of Britain acquisitions and more than 65 per cent of American acquisitions paid “all equity” or “all cash” in 1960s (Julian, et al., 1988). Payment methods are broadened as development of stock market and financial market. Acquiring company can choose traditional payments, optionally, pay by stock, junk bonds, and receive bank loans if the cash is insufficient.

Information from Bloomberg suggests from 1992 to 2015, 90 acquisitions have been accomplished by Berkshire Hathaway. 77 transactions are dealt with all cash, accounting for 86 per cent of all. Six deals are conducted by stock, the rest are dealt with a mixture of cash and stock, or cash and loan. Similarly, cash is a dominating payment tool among Chinese investors when conducting oversea transactions. The number of abroad acquisitions is accumulated to 1,464 pieces from 2012 till 2016. Of them, 1,318 deals are paid in cash, which involve 369 billion dollars, accounting for 90 per cent of whole transactions’ value, according to Wind, rest are paid by stock, or accomplished through the combination of cash and stock.

Warren Edward Buffett argued cash is significantly simple for both acquirer and target when calculating the paid value and acquired value. The buyer is probably suffered the loss from using undervalued stocks to purchase valued property, which means investors may sacrifice a higher opportunity cost. Take government regulations on cross border capital management into account, the listed company will confront complex approval procedures when issuing shares to the foreign targets. In practical cases, targets' assets are bought in by big shareholders or in the way of fund acquisition at the first stage. Afterward, domestic mother companies issue shares to collect funds, then purchase those assets.

From April of 2014, Chinese commercial banks relax conditions of loans to acquisitions; mother companies located in China's Pilot Free Trade Zone[1] are allowed to issue foreign debts directly. As a result, oversea transaction value generated from January to April of 2016 was surged to 96 billion dollars, outriding the previous year's whole value. After hitting the peak at 4,000 billion dollars in 2014, foreign exchange reserves fell to around 3,000 billion as the end of June in 2017.

5.3.2 Fund Sources

Acquiring company has a wide range of sources for transaction financing, from retained earnings to a mixture financing of equity and debt. Nevertheless, the mean of all cash requires acquiring company has abundant funds, significant borrowing capacity, and high credit rating (Donald, 2015). Deducting reserves used for daily management, the rest private funds accumulated through years' operations are probably insufficient to afford big scale oversea acquisitions. Apart from all or part private funds, acquirers tend to increase either liabilities by borrowing loans from banks, publishing bonds, or equities by issuing shares, absorbing direct investments. From the view of acquiring shareholders, debt financing is not likely to dilute their equity, and it facilitates companies to make full use of financial leverage. Furthermore, because dividends paid to investors are from companies' net profits, debt financing tends to be cheaper than equity financing.

[1] China's Pilot Free Trade Zone is officially launched on September 2013, which has total four zones located in Shanghai, Guangdong, Tianjin, and Fujian as of 2015.

In Midea, cash generated in 2015 was 1,828 million dollars, 9.2 per cent of total assets, increased by four per cent compared to the previous fiscal year; accounts receivable together with bill receivable were amounted to 2,451 million dollars; loans providing to business partners were 1,108 million. The value of all three parts was reached to 5,297 million dollars. If adding earnings of the same period, the amount is 7,255 million dollars.

The transaction between Midea and KUKA was finished at a price of 3,707 million euros (4,350 million dollars). The group's 2017 report indicates funds are from syndicated loans and company's own financing. Earlier in the same year, the group has purchased a Japanese white goods manufacturer Toshiba at a cost of 4,730 million dollars. Midea announced the transaction with Toshiba Corporation (Japan) is finished with the group's financing.

5.3.3 Acquirer's Credit Evaluation

Liabilities and equity in Midea witnessed a similar trend, rising to 12,271, and 8,633 million dollars in 2015. The loans from banks accounted for 28 per cent of total liabilities. To cope with seasonal needs, short term debts grows to 3,400 million dollars. Long term debts further reduced to 13.9 million dollars, less than one per cent of total liabilities. The working capital has climbed to 3,178 million dollars as of 2015. A positive sign is company's current ratio[1] goes up slightly to 128; quick ratio[2] grows from 96 to 114. Both ratios indicate the borrower has higher possibility of repayment.

In terms of long-term financial obligations, the size of total liabilities founded by creditors relative to assets and to equity is decreased to 64 per cent, and 45 per cent in four years' period through to 2015. The ability to meet the annual cash payments that the loan requires is strengthened as well. Times interest earned, also interest coverage ratio[3], surged from 7.37 to 19.89. The decreasing debt to asset ratio and increasing coverage ratio suggests the group's borrowing capacity is likely to be strengthened.

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[1] current ratio equals to current assets divided by current liabilities, measuring company asset liquidity, the higher the better, the company is able to reduce assets for cash to meet maturing obligations.

[2] Quick ratio = (current assets – inventory)/current liabilities

[3] times interest earned, also interest coverage ratio, = EBIT/interest expense

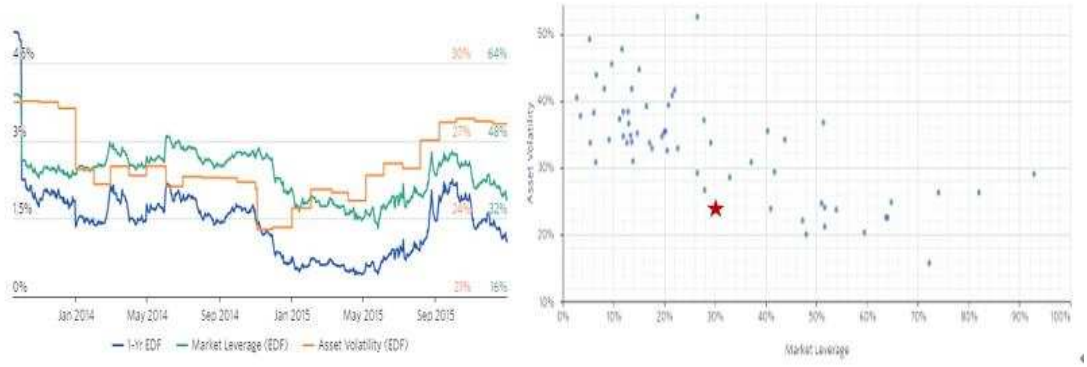

Figure 9: Midea EDF Trend and Industrial Benchmark
Source: Moody's

Senior Ratings Algorithm (SRA) is defined to create an entity's senior rating historical records that are used to analyze an entity's annual and monthly default performance. Its calculation is based upon an entity's actual historical senior unsecured ratings, hence "SRA is a critical index to judge if evaluated firm has any rated senior unsecured debt in whole or part of firm's history" (Moody's, 2017). It allows creditors or investors to significantly compare a company's credit quality without evaluating financial structure.

SRA ratings are classified into 21 different levels of an entity's credit quality. If an entity is rated at SRA Aaa, its credit performance is more outstanding than rate of Aa1, Aa2, Aa3, A1, A2, A3, Baa1, Baa2, and so forth. By 2015, Moody's has rated Miea Group's SRA at A3. In aspects of long term and short-term debts, entity's obligations are defined as upper-medium grade and low credit risk.

What is more, acquirer's EDF fell from 5.1 to 1.1 per cent in two years' period through to 2015, which means the chance of company defaulting has diminished from five to one in one hundred in the following year. EDF and ratio of market leverage are significantly positive correlation. The lower the entity's EDF, the lower its market leverage. The market leverage is resulted of the default point divided by the entity's market capitalization. The company's market value rose from 71,230 to 140,037 million yuan, meanwhile, default point rose from 57,507 to 79,936 million as growing short term liabilities. Hence, percentage of market value founded by debt declined by 36.8 per cent to 36.3 per cent, means more than 60 per cent market capitalization is supported by corporation equity. The possibility of the entity's value falls before the default point becomes less. Also, investors tend to

have more certainties about the firm's market value. Because business risk was further reduced when asset volatility fell on a small size to 27.6 per cent.

According to industry benchmark which is generated from 61 selected companies in the same sector (figure 10) by 31, December of 2015, one forth companies' EDFs were below 0.21 per cent, half companies were lower than 0.51 per cent. Midea is one of the 75 per cent companies whose ratio was under 1.44 per cent. Among them, 30 companies' EDFs outperformed than Midea. But those companies' business risk is higher. For example, Joyoung Company Limited's 2015 EDF was 0.44 per cent, but asset volatility was as high as 43.8 per cent. Leking Wellness Co., Ltd's asset volatility reached to the level of 61.9 per cent although its EDF was 0.84 per cent.

The bridge loan is a kind of temporary financing technique used by an individual or a business for short term expense pending long-term financing. Due to its prompt collect, bridge financing interest rate is usually higher than mortgage loans. Midea received nearly four billion euros bridge loans from Industrial and Commercial Bank of China (ICBC) in 2016 to support transaction of KUKA. Reuters reveals, the interest rate of Midea's bridge loan is 0.65 per cent, lower than average interest rate of up to one-year loan from Deutsche Bank (2.15 per cent).

5.3.4 Acquirer's Shareholding Structure

Evidence from Scott (2016) proves the chance of hostile takeover is small among cross-border takeovers, thus, acquiring entities in friendly takeover can easily access to funds from local banks or financial institutions, more importantly, receive direct or indirect supports of political bodies to develop into global champions.

35.1 per cent stakes were held by entity founder He Xiangjian via Midea Holding Co., Ltd; shares held by three domestic individuals from group senior management accounted for 4.89 per cent in 2015. Different from previous year, China Securities Finance Co., Ltd (CSF) and Central Huijin Asset Management Ltd. bought in 127.5 million and 52.3 million shares, which represent 2.99 per cent and 1.23 per cent of group's shares respectively. CSF becomes the company's third largest independent

shareholder.

In light of share price (32.8 yuan) as of December 31, 2015, provided by Moody's, a total investment of 907.4 million dollars (exchange rate 6.5 yuan per dollar) from above two organizations, 643.6 million from CSF and 263.8 million from Central Huijin. Shares held by these two entities rose to 180 million and 78.5 million in 2016, with a total value of 1,120 million dollars at the price of 28.17 yuan as of 31 December, 2016.

Through investigation, CSF is an only state-owned financial institution that is in responsible for raising funds and securities to provide qualified entities with financial loan services for margin transactions. Its main shareholders are composed of Chinese dominating stock exchanges, such as Shanghai Stock Exchange, Shenzhen Stock Exchange.

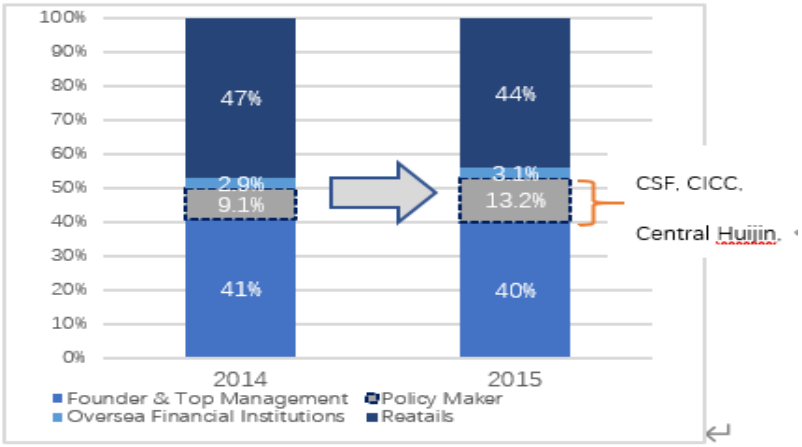

Figure 10: Midea ShareHolding Structure in 2014 and 2015
Source: Author Graphic

Another shareholder Central Huijin Asset Management Ltd. is one of the subsidiaries of Central Huijin Investment Co.,Ltd., established by the central government in 2003, and is entitled to support state-owned financial organizations via equity financing. Therefore, Central Huijin Investment Co., Ltd's majority subsidiaries are financial institutions, including big four banks – Bank of China, Industrial and Commercial Bank of China (CIBC), China Construction Bank (CCB), and Agricultural Bank of China. Members of Central Huijin's Executive board and Supervisory Board are directly appointed by the State Council. Its principal shareholder rights are exercised on behalf of the State Council (Gao Jie, 2013).

Establishing equity investment partnership with government or state-owned organizations is one approach of obtaining government funds when private entities confront insufficient funds in big scale projects. For example, TCL Group and Huizhou Investment Holding Co., Ltd., (one department of Huizhou City government) established Guangdong Rongchuangyueling Automation Manufacture and Information Technology Industry Equity Investment Partnership. In the last decade, Geely has finished at least eight oversea transactions starting from the target of Volvo to recent Daimler. To afford transaction cost of nearly nine billion dollars, Geely and Hubei governmental fund "Yangtze River Economic Belt Industry Guiding Fund Partnership" established "Hubei Jiyun Yangtze River Industry Fund Partnership" before purchasing Daimler stakes.

Similarly, Midea, together with China International Capital Corporation Limited (CICC) makes a "CICC Directional Asset Management Plan for the Midea Group Partner Stock Ownership Plan" (Midea Financial Report, 2015). CICC is the first investment bank in the Chinese mainland, which is incorporated by state owned CCB, Morgan Stanley, China National Investment and Guaranty Co., Ltd., and the Mingly Corporation in 1995. Many Chinese notable figures were its former employees, among them including Wang Qishan, Vice President of the People's Republic of China; Levin Zhu, the son of Zhu Rongji, a former Premier of China; Zhou Xiaochuang, former Vice Chairman of the National Committee and former president of the People's Bank of China.

In light of this plan, CICC in 2015 purchased 6,483,759 shares at an average price of 34.85 yuan per share from the secondary market, with a value of 34.76 million dollars under exchange rate 6.5 yuan per dollar. Group's 2015 financial reports reveal, half funds will be used for Midea's special fund, the rest are classified as Midea's self-financing. CICC purchased 2,583,060 shares at an average price of 30.69 yuan per share in the year of 2016. Capitals which was invested by CICC from 2015 to 2016 were accumulated to 46.96 million dollars.

Rongrui Equity Investment (Zhuhai) Partnership was Midea's second largest shareholder before 2016, 7.14 per cent of whole shares. Seeing Tianyancha, a Chinese professional platform used for searching background of Chinese entities, Rongrui's largest shareholder Rongtong Gengtou Equity

Investment (Zhuhai) Partnership takes up 60.6 per cent shares. While, Rongtong is the 100 per cent subsidiary of China Resources. It means Rongrui is indirectly controlled by China Resources, a Chinese state-owned conglomerate whose mother organization is State-owned Assets Supervision and Administration Commission. Besides, the number of shares held by Tianjin CDH Jiatai Equity Investment Partnership was 78 million, 1.83 per cent of group shares. Its 37.4 per cent shares are purchased by National Council for Social Security Fund the People's Republic of China. As a whole, total number of shares indirectly controlled by governmental institutions was 381.5 million, with a value of 1,925.11 million dollars if the average share price is 32.8 yuan and exchange rate 6.5 per dollar.

5.3.5 Political Connection

As Bloomberg indicates, close relationship with politics, cheap and sufficient funding technique facilitates HNA grows from an airline operator to the owner of Swissport, Carlson Hotels, a major shareholder of Deutsche Bank and Hilton via frequent acquiring activities in the last ten years' period. From 2012 to 2015, HNA Group has granted by government funds of 83.85 million, 128 million, 163 million, and 244 million dollars, according to HNA filings, the political supports in aspects of tax reduction, funds, and financial grants create a positive policy environment for company development. Government played an important role in Midea's development as well. In the 1980s, to finance Midea's import of foreign machinery, the government acted as a guarantor when Midea applying for bank loan; in the 1990s, to support corporation transformation through the approach of Management Buyout (MBO), the government sold out 100 million cooperation shares to the company directors for price at 2.95 yuan per share and transferred the rest 300 million shares to Midea's subsidiary for the price of 3 yuan per share. Both prices were lower than net asset value of 4.26 and 4.07 yuan presented in the financial statements. The transformation is completed at the cost of destroying state-owned property, but Midea brand value increased to ten billion yuan. The brand was ranked at the eighth of the country's most valuable brands in 2000, which paves the way for company's internationalization.

Firms featured with high technology, high output of gross domestic production, labor intensive sector,

local publicly listed companies are priority targets receiving government grant. From 2010, Midea became the largest beneficiary among household POEs. Over 300 products are listed in “Energy-saving Products included in the Government Procurement List” since 2011. Government grants are usually altered at regional policy makers’ disposal and mostly are not disclosed in governmental fiscal budget. Nevertheless, company financial reports indicate, amount of grants from policymaker in the period from 2012 to 2014 in the group’s profit stayed between seven and nine per cent. From 2015, this value was kept at more than 200 million dollars in each year of three years’ period: 263 million in 2015, 262.5 million in 2016, and 247.3 million dollars in 2017. The percentage of grants in total net incomes was increased to between 10 per cent and 13 per cent.

5.3.6 Conclusion

Before the announcement of the tender offer to KUKA, government funds to Midea were in an indirect form with a scale of 1,925 million dollars. Since 2015 funds sourced directly from three governmental organizations – CSF, Central Huijin, and CICC -- are surged by approximately 1,167 million dollars during Midea’s frequent shopping activities. The size of shares was expanded to 484 million, accounting for 13.2 per cent of group shares. Also, the acquiring company is permitted to raise funds from foreign markets through bank and financial institutions, like Deutsch Bank, Merrill Lynch International. Among the top 15 shareholders (both restricted and non-restricted shareholders), the size of abroad shares in 2015 climbed to 224 million. Foreign funds reached to 1,132.26 million dollars (unit share price 32.8-yuan, exchange rate 6.5 per dollar).

Invited by Chinese Premier Li Keqiang, German Chancellor Angela Merkel visited China from 12 to 14, June of 2016, stated by Foreign Ministry Spokesperson Hong Lei’s Regular Press Conference on 6, June of 2016, one of the aims is to actively promote cooperation between “MIC 2025” and German’s “Industry 4.0”. “Runder Tisch des Deutsch-Chinesischen Beratenden Wirtschaftsausschusses mit Bundeskanzlerin Angela Merkel und Minsterpäsident Li Keqiang”, held on the 13th of June, 2016. It is the fourth form between China Premier Li Keqiang and German Chancellor Angela Merkel. In the forum, Premier Li Keqiang stated that the Chinese company’s takeover of KUKA abides by the economy market. As a response, Chancellor Angela Merkel

expressed her attitude that “she would not try to prevent takeover of robot maker KUKA”. Afterward, Midea’s takeover offer has been approved by the German Federal Financial Supervisory Authority on the 16th of June, 2016, and issued publicly on the same date.

CHAPTER SIX: FINGDINGS, LIMITATIONS, AND FUTURE CHALLENGES

6.1 Findings

Industry growth is driven by metrics of attractive products, large potential demand, and sufficient purchasing power. In the past decades, Germany and other European economies have benefited from leading industry’s growth in automobiles. This industry is in the status of saturation in those advanced countries, but in rapid growth in emerging economies to date.

Oversea M&As are recognized as an important and efficient way in the corporate growth by conquering a market that has high industry growth and the economy growth. Other M&A synergies, from targets’ perspective, are probably their desires to respond to a low level of profitability because of expensive material, labor force, or existing business portfolio, and the thirst of enhancing market share, filling out the product line. Because of ‘Glass Ceiling[1]’, inadequate distribution network, and insufficient ability to diversify, targeting companies’ growth and goals can be realized by leveraging a preestablished distribution system without spending much equity on resources. “Cooperation between KUKA and Midea would provide customers better solutions in new fields” said KUKA former CEO Dr. Till Reute. Through comparing different scenarios, the author found German targets’ profitability is strengthened to 35 per cent though growing sales from emerging market after diversifying business portfolio and optimizing cost control via merging with Chinese company.

Agency problem is commonly existed in organizations. Differences in interests concerned by executive management members and company owners cause conflict when taking measurements.

[1] Glass Ceiling refers to the corporation management and shareholders have taken business’s growth and development as far as it can go without investing much entity in resources and platf orm (Andrew, 2010)

In view of executives, they tend to be driven by personal benefits or purpose through M&A strategy. Their salary, utility function, social position and management power would be raised when company becomes more diversified (Aggarwal and Samwick, 2003). Targets' industrial diversification and geographic diversification can be realized after merging with a large company in the promising and emerging market. Apart from receiving privileges from local government when expanding businesses in the market, German targets which have quality assets are entitled by Chinese acquirers with high autonomy in companies' development. Management's behaviors and decisions are fully respected by the mother company.

Whereas, shareholders are more stimulated by financial value. They are supposed to shift a strategic investment to financial one when the shareholders are facing a very convincing transaction. The offer price premium, on some degrees, determines whether a transaction can be successfully finished. Additionally, variables of deal payment, and timing may greatly influence the shareholder's final decision of accepting or rejecting acquirer's tender offer.

An effective merge needs to evaluate the company goal, and also the competitive and regulatory environment where the transaction conducts (Giovanna, 2017). In this dissertation, the author has also made efforts on analyzing the Chinese government's effects on private entities' oversea transactions through the deal between KUKA and Midea, and summarized following findings:

1. Different from developed markets, each stage of Chinese M&A development in home country and abroad is driven by government policies;
2. SEOs are always policies' beneficiaries. In recent decade, POEs' positive connection with policymaker facilitates private firms to grow up into international companies;
3. Home companies benefit from government direct and indirect supports in terms of financing and political policies when acquiring resources that would accelerate the country's economy upgrading;

4. Regional policies towards grant amount and grant form are various and flexible. They are not specifically defined by regulations and laws, in most cases, at policy maker's disposal that based upon economic situation and fiscal statue;

5. The political and economic relationships between the acquirer country and target country, on some degrees, influences the M&A transaction process. The positive and frequent political conversation would promote the deal to complete smoothly and successfully.

6.2 Limitations

German targets are not favored by Chinese buyers until 2015. Most acquisitions are dealt with German hidden champions. Available samples about big scale deals between German notable targets and Chinese acquires are limited in number. Therefore, it tends to be difficult to interview the crucial management, owners, or shareholders of targeting companies for authentic material. Considering business confidentiality, target's business partners would not like to share all information requested. The analysis is mostly based upon disclosed information via financial reports, public media, and third-party platforms.

Grant and policies are varied in regions across the acquirers' country, the number of grants allocated to companies cannot found in government fiscal budget, in consequence, the uncovered data of this part is restricted to the companies' financial statements published on companies' websites. Large companies are probably granted several allowances to one or more projects in the same fiscal year but do not list in details in reports. Thus, grant value related to the case in this research is calculated upon published information excluding disclosed allowances like cheaper land use, interest discount, and other invisible expenses saved from shortened approval time when applying for bank loan, property use, and so forth.

6.3 Future Challenges

As Chinese POEs' abroad M&As are still in the primary stage comparing to the companies in developed economies. The future study can evaluate deeply how politics in emerging countries effect

POEs oversea transactions by combining more practical cases in the future, test if those premium targets that purchased at a considerable price by Chinese acquirers make some contributions in promoting country's economy from dimensions of research time consuming, technology innovation, product competition. Meanwhile, to identify influences of selling quality assets brought to targeting country in terms of threats from Chinese competitors, technology or product upgrade or imitation, and German targets' Chinese characterization via qualitative methods, like survey and interview to collect first hand material.

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APPENDIXES

Appendix One: Ten M&A Transactions Between China and German (2010-2018)

Time	Target	Sector	Acquirer	Sector	M&A	Value (Euro) & Payment
2010	Dürkopp Adler AG	Textil Machinery	SGSB Group	Textil Machinery	Horizontal	35 million, 95% stake, 74% cash, 26% loan
2011	Medion AG	Electronics	Lenovo	Electronics	Horizontal	23 million, 36.67% stake; 80% cash, 20% issue new shares
2011	Sellner IPG Industrieplast	Auto	Ningbo Huaxiang Electronic	Auto	Horizontal	18.7 million, 100% stake; cash
2012	Putzmeister	Construction machinery	Sany	Construction machinery	Horizontal	360 million, 100% stake: 90% cash, 10% PE (CITIC Private Equity Funds Management)
2013	Kion Group AG	Auto	Weichai Power	Auto	Vertical	1.1 billion, 32%stake, cash
2014	Columbus Holding GmbH (CYBEX)	Consumer goods	Goodbaby International	Consumer goods	Horizontal	70.71 million, 100% stake, cash, (38,51 million euros cash, 32,2 million euros by issuing 100 million new shares)
2014	Hilite GmbH	Auto	China's AVIC	Aero	Conglomerate	473 million, 100% stake cash
2015	Hauck & Aufhaeuser	Financial services	Fosun International	Investment	Horizontal	210 million, 99.9% stake cash, loan, PE
2016	MANZ AG	Machinery	Shanghai Electric Group	Machinery	Horizontal	92.9 million, 29.9% stake cash, issue new shares
2018	Rolf Benz AG & Co. KG, RB Management AG	Furniture	KUKA Home	Furniture	Horizontal	42 million, 100% stake, cash (99.92% stake of Rolf Benz AG & Co. KG ; RB Management AG)

Appendix Two: Midea's Critical Shareholders between 2014 and 2015

Shareholders of the Top 15 Shareholders (2014 & 2015)					
2014			2015		
Name	Nature	Share Quantity	Name	Nature	Share Quantity
Midea Holding Co., Ltd.	Domestic Private	1,496,250,000(35.49%)	Midea Holding Co., Ltd.	Domestic Private	1,495,250,000(35.07%)
Rongrui Equity Investment (Zhuhai)	Domestic Private	304,500,000(7.22%)	Rongrui Equity Investment (Zhuhai)	Domestic Private	304,500,000(7.14%)
Top Management (3 senior managers)	Domestic Individual	226,839,995(5.39%)	Top Management (3 senior managers)	Domestic Individual	226,826,995(4.89%)
Tianjin CDH Jiatai Equity Investment	Domestic Private	78,000,000(1.85%)	China Securities Finance Co.,Ltd.	State owned	127,545,960(2.99%)
CDH M-Tech (HK)	Overseas corporation	60,000,000(1.42%)	Tianjin CDH Jiatai Equity Investment	Domestic private	78,000,000(1.83%)
CDH Spark (HK)	Overseas corporation	57,500,000(1.36%)	CDH M-Tech (HK)	Overseas corporation	60,000,000(1.41%)
National Social Security Fund	Domestic fund	45,088,858(1.06%)	CDH Spark (HK)	Overseas corporation	57,500,000(1.35%)
Merrill Lynch International	Oversea investment	42,533,976(1.0%)	Central Huijin Asset Management Ltd	Sate owned	52,316,600(1.23%)
New China Life Insurance Company Ltd.	Domestic insurance	40,771,968(0.097%)	Fidelity Investments Management (HK) -Clients' Funds	Oversea Mutual fund	37,302,429(0.087%)
National Social Security Fund 103 Portfolio	Domestic fund	35,031,918(0.083%)	Deutsche Bank Aktiengesellschaft	Oversea bank	36,196,687(0.085%)
UBS AG	Oversea bank	29,031,918 (0.069%)	Merrill Lynch International	Oversea investment	33,385,844 (0.078%)
Business Talent Holdings Limited	Oversea consultant	28,750,000(0.068%)	Hillhouse Capital Management Limited-HCM China Fund	Domestic fund	31,263,565(0.073%)

Appendix Three: Pro forma Statements of Three Scenarios

	Actual					Scenario 1					Scenario 2					Scenario 3				
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
annual growth rate of sales		12%	6%	18%	18%	15%	15%	15%	15%	15%	18%	18%	18%	18%	18%	18%	18%	20%	20%	20%
Sales (mil. Dollars)	1995	2226	2360	2787	3292	3786	4354	5007	5758	6622	3885	4584	5409	6383	7532	3885	4584	5501	6601	7921
cost of goods sold (million dollar)	1604	1732	1777	2095	2517	2915	3352	3855	4434	5099	2973	3508	4128	4871	5748	2933	3461	4143	4971	5967
cost of goods sold (% of sales)	80%	78%	75%	75%	76%	77%	77%	77%	77%	77%	77%	77%	76%	76%	76%	76%	76%	75%	75%	75%
cost of material (million dollars)	1206	1329	1238	1388	1668	1969	2264	2604	2994	3443	2020	2384	2813	3319	3916	1959	2312	2775	3330	3995
	60%	60%	52%	50%	51%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	50%	50%	50%	50%	50%
personnel expense (million dollars)	369	376	427	538	662	795	914	1051	1209	1391	816	963	1136	1340	1582	816	963	1155	1386	1663
	19%	17%	18%	19%	20%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
personnel expense (million dollars) after enlarging capacity	19%	17%	18%	19%	20%	795	914	1051	1209	1391	718	847	943	1113	1313	718	847	959	1151	1392
Gross Income (million dollars)	392	494	583	692	775	871	1001	1152	1324	1523	912	1076	1281	1511	1783	951	1123	1358	1630	1957
selling expenses (million dollars)	138	153	173	214	279	303	348	401	461	530	311	367	433	511	603	311	367	385	462	554
	7%	7%	7%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	7%	7%	7%
R&D costs (million dollars)	52	55	79	104	117	151	174	200	230	265	155	183	216	255	301	155	183	272	327	393

	3%	2%	3%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	5%	5%	5%
General and Administrative Expenses (million dollars)	110	126	146	178	237	265	305	350	403	464	272	321	379	447	527	272	321	440	528	634
	5%	6%	6%	6%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	8%	8%	8%
Other operating income (+) (million dollars)	60	41	42	13	26	38	44	50	58	66	39	46	54	64	75	39	46	55	66	79
	3%	2%	2%	0.5%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Other operating expenses (million dollars)	62	70	75	21	16	19	22	25	29	33	19	23	27	32	38	19	23	28	33	40
	3%	3%	3%	1%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Earnings from operating activities (million dollars)	89	131	151	184	148	170	196	225	259	298	193	228	280	331	390	233	321	289	346	415
financing costs included in operating results (million dollars)	12	9	9	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
EBIT (million dollars)	101	141	160	189	151	173	199	228	262	301	196	231	283	334	393	236	324	292	349	418
depreciation and amortization (million dollars)	18	20	27	58	137	151	174	200	230	265	155	183	216	255	301	194	229	330	396	475
	1%	1%	1%	2%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	5%	5%	6%	6%	6%
EBITDA (million dollars)	119	161	187	246	288	325	373	429	492	566	352	415	499	589	694	430	553	622	745	894
Net Income (million dollars) after tax	42	71	77	91	96	82	105	125	149	176	98	127	164	199	240	125	192	182	225	277