The Effect of Diversification on Firm Performance in Emerging Markets: Evidence from A-Share Listed Companies in China

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Abstract

In recent years, diversification has become a common strategy used by companies in emerging markets. It is believed that diversification operations could help firms get better performance and gain higher profits from a larger internal market. However, contradictory results reveal that diversification empirically hurts firm value and other studies show the relationship between diversification and firm performance is complicated that should be studied in separate industries. The opinion is inconclusive on this topic. This study developed a performance index to see how diversification impact on various perspectives of firm performance. Conclusions as follow. International diversification has a positive correlation with firm performance in several aspects whereas industrial diversification helps firms' developing ability. However, due to the unavailability of long-term data, we can not rule out the possibility that well-performed firms go for international diversification. Besides, The relationship between diversification and firm performance affected by different industries. The agricultural and natural resource firms tend to exceed manufacturing firms in the efficiency aspects whereas manufacturing companies tend to have advantages in the sustainability aspect compared to service firms. There is also evidence showing that the largest shareholders' holdings rates have a positive impact on firm performance and state-owned rate has a negative relation with firm performance.

Keywords: industrial diversification, international diversification, firm performance, emerging markets

Introduction

In the last two decades, the rapid growth of some of the emerging markets and firms, especially those in Asia, continues to draw attention from scholars. After the 2008-2009 financial crisis, the global economy has been in a recovery stage for a long time. Many companies in developed economies are experiencing a longer time to recover from this disruptive disaster while some firms in emerging economies are recovering fast and try to seek opportunities for fast growth post-crisis. In developing countries, the situation is not the same as the developed markets. As many small and medium enterprises (SMEs) did not survive through the crisis, some big companies have chosen to diversify through merging into new businesses or creating new products to reach more potential customers to improve their performance.

Diversification is a strategic expansion of business into sectors, segments, markets, or industries mostly induced by reactions to competitiveness in business environment. It is a popular growth option for firms both in developed and developing markets (Purkayastha, Manolova, and Edelman 2012). From 1950 to 1990, most empirical studies about the relationship between diversification and firm performance took place in developed countries. The strategy was popular in North America and Europe where large corporations were seeking to expand their empires by embracing more products and getting involved in new businesses. But such heat slowly faded after the 1990s (Purkayastha, Manolova, and Edelman 2012). The historical record shows more and more companies refocused on their core business after 2000. Through decades of developing and competing among firms, mature markets such as the US and the European countries have established a transparent, open, and competitive capital market. As the external costs continue to decrease, it is believed that there is no need for companies in mature markets to purse

diversification to lower their transaction costs. At the same time, competition among companies is gradually coming to an equilibrium state. The industry barrier for a newcomer is so high that forces companies to focus on their core business to gain profit rather than seeking opportunities in a different business.

While in developing markets, the institutional environment is different, markets are still developing and new problems occur when it comes to diversification strategies (Lien and Li 2013). It is suggested that the financial, legal, and regulatory environments each have a significant effect on the value of diversification. Moreover, the optimal organizational structure and corporate governance may be very different for firms operating in emerging markets than they are for firms operating in more developed and integrated countries (Fauver, Houston, and Naranjo 2003). From 2000 to 2005, the mean number of business segments in Chinese companies was above 2.7 while in developed markets like the USA and UK are below 1.57 and 1.74 respectively (Fan et al. 2008). Even though some research studies about the relationship between diversification and firm performance have been conducted in developing countries, the scarcity of empirical studies in emerging countries reminds us that there is much more to be done.

Form the internal market perspective, companies choose to diversify when the benefits of diversification outweigh the costs of diversification. With high transaction costs and low efficiency, the incentive to diversify is strong for companies in an emerging market to create a large internal capital market to decrease cost and improve efficiency (Lin and Su 2008). Even though diversification strategy is widely practiced and has been significantly researched, conflicting theoretical and empirical disagreements still dominate the finance literature on the relationship

between diversification and firm performance. The inconsistency in results from various studies makes it hard to conclude (Jacquemin, De Ghellinck, and Huveneers 1980; Sambharya 2000; Grant, Jammine, and Thomas 1988; Chakrabarti, Singh, and Mahmood 2007). Some scholars believe that differences between home country environments can explain part of the inconsistency among results (Benito-Osorio, Guerras-Martín, and Zuñiga-Vicente 2012). Some studies show that the relationship between diversification and performance should be examined across each industry separately (Purkayastha, Manolova, and Edelman 2012). Another explanation is that the failure to control for the firm characteristics which lead firms to diversify may wrongly attribute to diversification (Campa and Kedia 2002).

In this study, we are going to study international diversification and industrial diversification side by side by investigating their impact on A-share listed firms' performance in China. Contrary to most empirical studies that investigated the relationship at an integrated level in the diversification literature (Bausch and Pils 2009; Guillen 2000; Khanna and Palepu 2000), firms in this study were assigned to different industry categories according to the 'listed company industry classification guidelines' established in 2012 by the China securities regulatory commission. Different industries have different constraints and advantages when compared with one another. For example, food and beverage industry is a riskier business compared to manufacturing and service industry due to natural causes such as weather or the impact of uncertainties derived from business cycles, wars, or other factors (Mishra, El-Osta, and Sandretto 2004). Besides, it is hard to achieve prosperity and flourishing progress of an agriculture-related company (Huml, Vokáčová, and Kala 2011). As for chemical and manufacturing industry, their fraction of the market is becoming smaller compared to the rapid development of banking and real estate industry. Theoretically, the

diversification strategy provides its risk-reduction benefits for companies to lower their risk of destructive decrease in firm value and an opportunity to utilize all the resources a company contains. However, according to empirical studies, it is not clear whether the effect of diversification would bring a premium or a discount to firm performance in an emerging market. Especially after the financial crisis and the development of third industry, companies like China Railway Construction Co Ltd and, Guangdongwens foodstuff group Co., Ltd are trying to find their way to develop. Only sustainable and cooperative development of all industries can create a synergistic effect and promote the healthy development of the national economy. Most of the previous studies conducted in emerging markets took firm performance as an integrated concept. However, firm performance and diversification strategy are both multi-dimensional indicators, it is important to investigate the relationship in a more detailed way instead of studying it as an integrated term. This paper attempts to find the multiple dimensional impacts of industrial diversification on different aspects of firm performance in emerging markets, taking China as an example. Through observable and measured data, this paper uses CSI 300 index as the sample and collects 235 A-share listed companies excluding banking firms. We adopted a 198-firm dataset to conduct comparison analysis and regression analysis to empirically test how industrial diversification affects firm performance in different aspects.

Because of the development of technology and economy, international business and extending firms' division is under consideration of every firm that is operating at this time. The effect of international diversification is multi-dimensional on firm performance and the integrated results are uncertain after combining all the different impacts. Besides, different industries may have different influences on firm performance based on various industrial constraints and edges which

could distort the relationship between industrial diversification and firm performance. For instance, the Chinese government is encouraging the development of internet technology companies by giving a lot of tax benefits during their growing periods. For agricultural firms, the government gives direct subsidies to those firms affected by natural disasters. It is important to take into consideration the original industry the firm was established from emerging markets.

Under the current situation that listed companies in emerging markets are taking diversification strategy, the relationship between industrial diversification and firm performance among the listed firms in China will be investigated in this study. We prepared a dataset containing the diversification degree of firms, international diversification strategy, and industry classification that contributes to the empirical literature on industrial diversification and firm performance in emerging markets. We used a firm performance index to run a principal component analysis (PCA) that gives common factors of the firm situation as the measures of different perspectives of firm performance in this study. As for control variables, firm size, firm age, largest shareholders percentage, and state-owned share percentage are added to the model. This study is going to reveal the economic laws that diversification operations affect the performance of listed companies, and provides a theoretical basis for promoting the healthy development of industrial diversification in developing countries. Through the analysis of relevant financial data, we can find the problems of the diversified development of listed companies in emerging markets. It draws a conclusion that can objectively reflect the development status of developing countries at this stage and proposes a far-reaching and long-term investment strategy for listed companies, which promotes listed companies to have a better performance record in a capital market. On the other hand, it plays a leading role in promoting the process of industry cooperation and growth. This effectively

promotes the optimization and upgrade of China's industrial structure, enhances the competitiveness of developing country enterprises in the international market, and accelerates the process of developing countries entering the modern development stage from the initial stage.

The rest of the paper is organized as follows. In the next section, we briefly discuss the related literature. Section III describes the data, sample selection criteria, and preliminary analysis. Section IV discusses the estimation methodology and presents the evidence for international and industrial diversification, and Section V concludes.

Literature review and hypothesis setup

Terms and definitions related to research

A-share listed companies

Listed companies are more advanced forms of enterprise in organizational form. Listed firms confirm listing requirements which makes them more regulated and easier to be valued compared to SMEs. To investigate the industrial influence on firm performance, it is important to categorize firms into specific industries. Because some of the listed companies in the Chinese stock market have implemented diversified business development strategies, the divisions of listed companies cross each other and have cross-industry attributes. Therefore, it is difficult to determine whether listed companies belong to specific industry based on the above definition. To supplement the deficiencies defined by the industrial listed companies, this study will further refer to the following criteria when categorizing A-share listed companies in the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE). Based on the latest "Guidelines for the Classification of

Listed Companies by Industry" issued by the China Securities Regulatory Commission in 2012, when the operating income ratio of a certain type of business of a listed company is greater than or equal to 50%, it is classified into the industry corresponding to that business. When a listed company does not have a type of business with a revenue ratio greater than or equal to 50%, but the revenue and profit of a certain type of business are the highest among all businesses, and both account for more than 30% of the company's total revenue and total profit, the company belongs to the industry category corresponding to the business. Moreover, if the company is the leading enterprise in a certain industry, it would be categorized in that industry in this study.

Overall, this study assigned A-share listed companies into different categories based on the above rules, and if a conflict happened, the sample would be removed from our dataset. According to the information above, 198 companies were selected as research objectives to interpret the relationship between diversification and firm performance.

Industrial diversification

The relationship between diversification and firm performance has been widely studied in the context of strategic management, industrial organization, and finance. Even though there are many different types of diversification in markets, there was no exact definition for diversifications in previous studies. For example, the definitions of concentric diversification (Rijamampianina, Abratt, and February 2003), international (conglomerate) diversification (Reeb 2000), and within industry diversification (Zahavi and Lavie 2013) are crossed among each other in some studies. It is hard to define and especially hard to measure the industrial diversification situation of a firm.

To avoid the blurry definition, here in this paper, the diversification will be presented as industrial diversification that refers to the companies involved in the production of unrelated but profitable goods in a different industry other than the one it belongs to. While the industry category the firm belongs to was determined by the characteristics of the firm initial public offering (IPO) and registration under China Securities Regulatory Commission. The diversification strategy is often tied to large investments where there may be high returns. In emerging markets, the industry barrier is not as high as in mature markets, as the cost to get in a new industry is comparably low which encourages firms to evolve into a new business when they see a higher profit. However, the reality is some firms diversified in a new industry based on their specific resources and which lead to success while other firms that lack information try to mimic the successful companies' decisions through entering into the same industry without rational expectation which could lead to a disaster.

Firm performance

Firm performance is an objective measure of how well a firm can use assets from its primary mode of business and generate revenues. The term ‘performance’ has usually been defined as a measure of firm profitability, a measure of risk (Datta, Rajagopalan, and Rasheed 1991). To be more specific, firm performance refers to the final results a company achieves in certain financial indicators, including sales, sales revenue, sales growth rate, gross profit margin, gross profit growth rate, return on asset and so on. Firm performance is different from the firm value which represents the firm equity value, market value, and M&A value. Firm performance is an integrated understanding and comprehensive evaluation of the sustainable development potential of a

company and its instinct value after considering different aspects of a company's capabilities, macroeconomic situation and the objectives of business owners.

Most of the previous studies about diversification effect use univariate variables as a proxy for firm performance (Gyan, Brahmana, and Bakri 2017; Phung and Mishra 2016; X. Li and Rwegasira 2008; Lang and Stulz 1994). Some scholars use Tobin's q as the measurement of firm performance (Lang and Stulz 1994; Montgomery 1994; Lien and Li 2013 and others) because it incorporates the capitalized value of the benefits from diversification but at the same time reflects what the market thinks are the benefits from diversification, whether illusory or not. Return on asset (ROA) is another widely used measurement as a proxy for firm performance (Markides 1995; Schiefer and Hartmann 2008). Serrano, Fernández-Olmos, and Pinilla (2018) use ROA and ROS to measure the performance in agri-food firms. Capar (2003) chooses the return on sales (ROS) to measure firm performance and believes that use return on sales (ROS) avoids considering the differences in intangible assets among different companies. Because the return on sales (ROS) and return on asset (ROA) are highly correlated, both ROA and ROS generated similar findings. However, scholars have long recognized the multi-dimensional nature of the performance construct. Any single index may fail to provide a comprehensive understanding of the impact of the constructs of interest (Chakravarthy 1986). In this study, the definition of firm performance will be described as the comprehensive performance of the company's ability to integrate into the market environment, its ability to repay debt, and its ability to allocate its economic resources reasonably and effectively to achieve profitability and maintain its competitive advantage in the market.

In this study, firm performance refers to an enterprise's ability to integrate into the market environment, its ability to repay debt, and its reasonable and effective allocation of own economic resource for profitability and its ability to maintain a market competitive advantage. Thus, my first hypothesis is:

H1: industrial diversification has a positive effect on different aspects of firm performance. For example, industrial diversification increases firms developing ability.

Type and degree of diversification

There are two ways to describe the firm diversification strategy. One is in quantitative (the degree of diversification) term, and the other is in qualitative (the type of diversification) term. The degree of diversification refers to the dispersion of a firm's sales, profit or asset among different markets other than its core business without considering the differences between these markets whereas the type of diversification refers to the diversity between each business such as related/unrelated diversification or international diversification, in which the firm is active in (Muzyrya 2010).

The degree of diversification generally conceptualizes and operationalizes the number and the relative importance of the segment division a firm is active in. The more sales a firm generates from different divisions, the higher the degree of diversification gets. On the contrary, the type of diversification aims to capture the diversity among the divisions a firm is active in. One such distinction that is often made is the distinction between international diversification and domestic diversification. International diversification refers to the company's extension of its business

beyond the frontiers of its geographical confines and markets in which it operates (Denis, Denis, and Yost 2002). The past success story of local and indigenous firms exporting products to other countries, particularly in East Asia, accorded with various managerial and organizational problems (S. H. Lee 2000). In the age of rapid global competition, whether international diversification is still a good practice for firms in emerging markets needs to be studied in more detail. The advantages of already available technology, synergy from moving of assets across different divisions, and building reputation through a shared brand identity across a range of products needs to be investigated with different firm performance aspects. Here comes to my second hypothesis:

H2a: firms diversified internationally have better firm performance in various dimensions compared to firms only operating domestically.

H2b: firms diversified internationally have worse firm performance in various dimensions compared to firms only operating domestically.

Diversification-performance relationship

The linkage between diversification and performance has been an important topic for different research fields. Theoretically, several benefits (e.g., economies of scope, low transaction cost, risk reduction) have all been attributed to diversification. With the benefits in mind, companies can expect better firm performance after diversification strategies. However, some early empirical researches observed a diversification discount in developed countries, while later studies show mixed results that diversification premiums, discounts, and no statistical significance are found

(Casper 2010). In practice, diversification proved to be a much more controversial strategy as some companies diversify successfully while others fail (Muzyrya 2010).

Diversification premium

The main theoretical frameworks used in the diversification study that provides arguments in favor of diversification are the resource-based theory (RBT), the transaction cost theory (TCT), and internal market theory (IMT).

There have been great mergers during the decade of the 1960s and quite some of them evolved in large international companies (Lewellen 1971). Rumelt's 1974 study found that firms with related diversification strategies would gain benefits from economies of scope in the US market (Purkayastha, Manolova, and Edelman 2012). Bhide (1990) stated a co-insurance effect derived from combining business reduces the firm's unsystematic risks and thus increase firm value. Besides, Villalonga (2004) uses Tobin's q-value and excess return to measure business performance to analyze the relationship between diversification and firm performance. Both of their research shows that diversification helps companies improve their performance. As they claimed in their papers, diversification reduces the external cost since it makes the new market a part of the company.

Studies conducted in developed countries base their hypotheses on a critical assumption that markets are close to perfect competition and strive to efficiency. However, the assumption cannot be made in the context of developing countries because of many market defects. For example, the

lack of intermediary institutions such as financial and market intermediaries (Hall and Lee 1999), the lag between firms' practices and influence of government intervention policy, and the high searching cost when it comes to diversification. For instance, there is some subsidy policy targeted on firms operating in agriculture business. Some of the firms started planting business but turns to food manufacturing still benefit from these targeted policies. Is this change acceptable? Should the company still enjoy the benefits? The lack of mature institutions reflects in the stock market, the increase and decrease of a stock have to be within 10% and stop trading on the same day when it reaches the limit (±10%) in SSE and SZSE. These factors will become obstacles for developing countries to learn from the experience of developed countries, thus they must be properly considered in the studies in the context of emerging markets.

Based on internal market perspectives, the scope of emerging market business divisions allows firms to internally replicate the functions provided by standalone market institutions which give the diversified firms possibilities to outperform their focused counterparts (Khanna and Palepu 1999). Sea Jin Chang and Unghwan Choi (1988) found in Korea that a multidivisional structure makes superior economic performance because such a structure reduces transaction costs arising from the organizational failure. Wan (1998) used entropy measures for firms that decide to diversify internationally and industrially in Hongkong and found that international diversification has a positive impact on profitability stability and sales growth, but not on profitability. At the same time, industrial diversification enhances profitability stability but reduces profitability significantly. O'Brien et al. (2014) conducted empirical tests on Japanese firms showing that firms accrue higher returns from leveraging their resources and capabilities into new markets. Although very few studies have examined diversification-performance relationships within the context of

developing countries, an empirical study conducted on the sample of nine emerging markets found that diversified firms are valued more compared to single-segment firms operating in similar industries, providing support for diversification premium (Akben Selçuk 2015).

According to the resource-based view (RBV), Baumol, Panzar, and Willig (1982) point out the economies of scope of companies in imperfect emerging markets create more potential competitions that lead to more efficient and better outcomes than it was previously thought (Amavilah 2012). By diversifying, companies can develop diversification strategies based on inputs that are valuable, durable, irreplaceable, and non-sustainable, thereby providing a basis for sustainable competitive advantage (Markides 1995). The resource-based view gives developed companies a different light on strategic options by looking at firms in terms of their resources rather than their products (Wernerfelt 1984). Nickel and Rodriguez (2002) found that diversified companies have higher returns because of the synergic effect and the share of management skills and resource among different divisions. Grant, Jammine, and Thomas (1988)used panel data of British manufacturing companies and found that profitability in the home market encouraged the overseas expansion that in turn increased profitability. International diversification might also increase firm value by creating flexibility within the firm to respond to changes in relative prices, differences in tax code, shifting production to countries where production cost is lower and shift distribution to countries in which market demand is higher. Both the resource-based perspective and internal market theory are considered as an applicable paradigm for explaining diversification in the context of the emerging markets.

Diversification discount

Even though many works of literature states that diversification strategies bring benefits for companies, Bettis (1981) argues that the superior returns of related diversification may be due largely to industry effects rather than the type of diversification. As many scholars put all companies in the aggregate analysis without considering the effect of industry(Sea Jin Chang and Unghwan Choi 1988; Borda et al. 2017), it is hard to recognize if there is any distort because of industrial or company's specific characteristics. When taking a close look at German manufacturing companies, the authors found that an increase in the degree of product diversification hurts profitability (Braakmann and Wagner, 2009). Even though scholars have controlled for the industry effect when analyzing at an integrated level (Villalonga 2004), I argue that the firm characteristics are different from industry to industry and those might be the factors that would have an impact on the diversification strategies. It is important to compare firm performance across different industries to see how diversification strategies impact different industries. These results and reviews give rise to my third hypothesis:

H3a: Manufacturing firms perform better than service firms.

H3b: Agricultural and natural resources firms perform better than Manufacturing firms.

As it is well known, information asymmetry between shareholders and managers is an important topic when it comes to firm organization and performance. The conflicts between shareholders and managers is a concern to researchers. According to the agency theory, when the level of managerial ownership exceeds the critical level of control, owner-managers can control the firm

and reap greater private and family benefits without the associated high costs of the diversification strategy (Chen and Yu 2012a). Thus, certain diversification may not be the best for firm development and may hurt firm performance. There was a large diversification discount during the 1960s in the US (Servaes 1996). During the financial crisis, studies found the product diversification is negatively correlated to multiple measures of performance in Singapore (Tongli, Ping, and Chiu 2005). Contrary to the empirical findings of improved performance outcomes, studies conducted under the agency cost model found that diversification strategy could be a way for managers to decrease their "employment risk" which can lead to conflicts between different departments and adversely affect business performance (Amihud and Lev 1981). Also, managerial compensation is highly related to firm size, top managers have incentives to make diversification decision out of personal interests (Jensen and Murphy 1990). During their observation and research on companies in the US with total sales of over 20 million dollars, Berger found that the more segments a diversified company have, the more losses they suffer (Berger and Ofek 1995). In the oil industry, Jensen (1986) found that managers launched diversification programs to invest funds outside the industry in 1984. These investments turned out to be the least successful of the last decades. The majority of empirical studies mentioned above indicate that diversified firms in developed markets trade at discount compared to single division firms nowadays. Through comparing single-segment firms and multi-segment firms, Lins and Servaes (2002) found that diversified firms are traded at discounts and less profitable than single-segment firms in emerging markets. Corporate governance is an important variable that should be added when considering the diversification discount (Hoechle et al. 2012). The severe market imperfections in emerging economies increase the potential agency costs associated with diversification strategies. Besides, the more diversification strategies in use, the higher administration cost goes which can hurt the

companies' performance. At the same time, instead of improving firm performance, higher asymmetric information might allow top managers and large shareholders to more easily exploit the firm for their own benefits (Stulz 1990).

Non-linear relationship between diversification and firm performance

Some studies found a more complex relationship between industrial diversification and firm performance other than value-destroying or value-adding. Servaes (1996) found no evidence that diversified companies were valued at a premium over single segment firms during the 1960s and 1970s in the US. From the perspective of the internal capital market, diversification strategies lower the external cost since it makes the new market a part of the company but at the same time increases the level of diversification which may lead to disproportionate growth in administrative costs, as well as greater inflexibility in operations. However, emerging markets like China have poorly functioning institutions, leading to severe agency problems and information asymmetry. Hashai (2015) believes the interplay between adjustment costs, coordination costs, and diversification benefits the firm performance, resulting in an S-shaped relationship between within-industry diversification and firm performance. Grant, Jammine, and Thomas (1988) found an inverted U-shaped relationship between product diversification and return on asset (ROA). They also found that diversification has a more significant impact on firm growth than on profitability. With a 12-year longitudinal dataset, K. Lee, Peng, and Lee (2008) tracked the longitudinal process of how a diversification premium becomes a diversification discount during institutional transitions in South Korea. It is observed that accounting and market measures of firm performance initially declined with group diversification and then increase once group

diversification exceeds a certain level in India (Khanna and Palepu 2000). Chen and Yu (2012) found a U-shaped relationship between managerial ownership and corporate diversification and suggested that managerial ownership can affect firm performance both directly and indirectly.

Industrial diversification belongs to unrelated diversification in all the diversification strategies. The studies conducted in developed countries have more historical data to analyze as study protocol is mature, though there is no conclusive view on this topic while it provides us a lot of good practice to learn from their experience. The diversification influence on firm performance in emerging markets is unclear and should be studied in detail. In developing countries with imperfect market norms and inadequate organizational institution structure, the impact of diversification on firm performance could be completely different from developed countries. All in all, taking internal market theory as a benchmark, the influence of industrial and international diversification on different aspects of firm performance in emerging markets is the focus of this study.

Methodology

Data collection

The Chinese stock exchange was established in the late 1880s but was closed during the wartime and the command economy period. After the reform and opening policy was launched, a market-oriented economy was established during the 1980s. This ultimately led to the Shanghai Stock Exchange to be reopened in 1990. Since the Chinese stock exchange market only established for around 30 years, the population included all the firms listed on the Shanghai stock exchange (SSE)

and Shenzhen stock exchange (SZSE) to get a better view of the market. To have a scope of the whole market, my sample included all the firms contained in CSI 300 in 2018. Due to the limited availability of datasets, I am using cross-sectional data in this study. The CSI 300 Index consists of 300 company stocks with large market capitalization and good liquidity in the Shanghai and Shenzhen securities markets, which comprehensively reflects the overall performance of the prices of listed stocks in China's A-share market. The CSI 300 Index has a high market coverage rate. According to statistics, till December 31, 2009, the total market value coverage ratio and circulating market value coverage ratio of the CSI 300 Index were approximately 72%. The index has been included in the scope of the IOSCO Financial Benchmark Assurance Report in 2018. To collect the major data for this study, the China Stock Market & Accounting Research Database (CSMAR) is used. Due to some of the data points missing in the database, we also used some stock searching websites to find companies' information such as original financial reports and establishment dates (http://summary.jrj.com.cn/; http://so.hexun.com/?type=stock). Then we excluded firms whose primary business is financial services because of the difficulty to construct meaningful ratios of their market value to their sales level (Akben Selçuk 2015; Phung and Mishra 2016; X. Li and Rwegasira 2008). This sample allowed us to capture the complete A-share market firms' performance and their post-crisis diversification situation by using a limited sample size. Due to the data shortage problem and extreme outliers, the study also leaves out 37 listed companies. Thus, the actual operational sample size is 198.

Variables and measures

Independent variables

The most important characteristic of diversified firms is the multi-division operation under common control of a single firm. Instead of using the Standard Industrial Code (SIC) system to measure diversification empirically (Bass, Cattin, and Wittink 1978; Ravenscraft 1983 and others), we are going to follow Li and Rwegasira (2008) to adopt the specification ratio (SR). It measures the degree of diversification by the fraction of sales accounted for by the largest single business unit of the corporation. The smaller the SR value, the higher the degree of diversification. To keep the variable changing in the same direction, I am going to use a non-specification ratio (non-SR) which is 100 percent minus the fraction of sales accounted for by the largest single division.

$$\text{Equation 1: non} - \text{SR} = \left(1 - \frac{largest\ segment\ sales}{total\ corporate\ sales}\right) * 100\%$$

Another way to measure the diversified variation of a firm is the number of segments. We assigned 1 for firms that only have one business unit and different numbers for firms engaged in more industries. It is believed that these measures have captured the diversification from two perspectives- depth and breadth in which this research is interested.

Another factor is the international diversification. Because in the financial reports it is not specified which country the sales generate from, here we construct a dummy variable and assign 1 if the firm has oversea businesses. Otherwise, it is assigned 0.

Dependent variables

To understand if the industrial diversification has an impact on firm performance (initial research question), the firm performance factors are used to determine firm performance among different aspects. The firm performance of listed companies includes multiple levels of production, operation, and management. Therefore, comprehensive analysis and evaluation are required based on a variety of financial indicators to draw objective conclusions that reflect the future development trend of the study objects. In this study, the original firm performance is measured by 15 accounting indicators including current ratio, quick ratio, cash to current ratio, debt-asset ratio, total asset growth rate, net profit growth rate, income growth rate, price-book value (PBV) growth rate, main profit proportion, return on asset (ROA) return on equity (ROE), earnings before interest and tax (EBIT) to total asset, inventory turnover rate, current rate, and total asset rate.

Table 1 Dependent variable

code	name	definition
CR	current ratio	current assets / current liabilities * 100%
QR	quick ratio	(current assets-inventory) / current liabilities * 100%
C-CR	cash to current ratio	(cash ending balance + cash equivalent ending balance) / current liabilities * 100%
D-AR	debt-asset ratio	total liabilities / total assets * 100%
TAGR	total asset growth rate	(end value of the current period of the total assets/beginning value of the current period of the total assets -1) *100%
NPGR	net profit growth rate	(total profit for the current period / total profit for the same period last year -1) * 100%

IGR	income growth rate	(amount of operating income for the current year/amount of operating income for the previous year) -1) * 100%
PBVGR	price-book value (PBV) growth rate	(net assets per share for the current period / net assets per share for the same period last year -1) * 100%
MPP	main profit proportion	operating profit / total profit
ROA	return on asset	net profit / average total assets
ROE	return on equity	net profit/end shareholder equity
EBIT-TA	EBIT to total asset	EBIT / total assets
ITR	inventory turnover rate	operating costs/inventory ending balance
CRTT	current turnover rate	operating income / current assets ending balance
TATR	total asset turnover rate	operating income / total assets ending balance

All the variables listed above are financial measures to evaluate firm performance (Table 1). Return on equity (ROE) and return on assets (ROA) are the most common indicators for firm performance due to their availability and simplicity(M. Li, n.d.; Alsmairat et al. 2018; Khanna and Palepu 2000). Other indicators make up the missing aspects when studies only look at the univariant measure. Moreover, the indicators do reflect how well the firm operates the assets and cash flows. Therefore, this study evaluates firm performance in a more comprehensive way.

Control variables

In addition to the key explanatory variables used to test hypotheses in this study, we included several control variables that may affect firms' strategic outcomes in a significant way (Lien and Li 2013). The industrial sectors were included by using two dummy variables for the

manufacturing and service sectors, with agriculture and natural resources as the base. Campa and Kedia (2002) stress that the failure to control for firm characteristics that lead the firm to diversify and be discounted may wrongly attribute the discount to diversification instead of the underlying characteristics. In this study, to make the analysis more accurate, besides firm characteristic measures I also consider the institutional influence. These controls are critical for a properly specified model. First of all, firm size and firm age have been widely used in previous studies. Size is measured as the log of total assets in this study. Using assets instead of the number of employees reduces the impact of inter-industry labor intensity differences (M. Li, n.d.). Firm age is an indicator of the experience gained by the firm from inception. we also include the largest shareholder percentage, and state-owned shares rate to diminish the effect of institutional and policy on the firm performance.

Data analysis

When measuring firm performance, Chen and Chang (2012) measured financial performance by two aspects: growth and sustainability. There is also research found that diversified companies may sacrifice growth to pursue stable returns (Bettis and Hall 1982). If using univariate measurement, it would not capture the entire effect of diversification on every aspect of firm performance. Using too many variables is also an inefficient way to investigate the relationship. This study offers an alternative approach to examine the industrial diversification strategies in the context of firm performance.

Factor analysis is a statistical analysis method that uses a few common factors to describe the relationship between a large number of indicators or factors, and more comprehensively reflects the original data information. It is a dimensionality reduction processing technology that reduces complexity. The basic concept is to classify the original variables based on their internal correlations of the original variables and to classify the highly relevant variables into the same group, but the correlation between non-homogeneous variables are the opposite. Then each type of factor variable represents a basic variable, that is, the common factor, and studying the original variable is equivalent to studying the common factor. Factor analysis has the following four characteristics. First, the number of factor variables is less than the number of original index variables, which can reduce the workload of factor analysis. The second is that the factor variables are recombined and constructed according to the information of the original variables so that the information of the original variables can be fully reflected. Third, because factor variables do not have a significant linear correlation like the original variables, factor analysis will be more convenient. The fourth is that factor variables can reflect some of the original variables comprehensively and have named explanation.

It is necessary to reduce the size of the high-dimensional variable numbers under the principle that the distortion of the original data information is minimized. The interpretation system in the low-dimensional variable level is better than the interpretation system in the high-dimensional variable level. Therefore, factor analysis is needed. Reorganize a large number of original variables, analyze and evaluate data at a more scientific variable level to draw conclusions that can objectively reflect facts is important.

Factor analysis constructs a few representative common factors from a large number of original variables, provided that there is a strong correlation between the original variables. Therefore, factor analysis requires correlation analysis to test whether the statistics of the correlation coefficient matrix of the original variables are suitable for factor analysis.

This study mainly uses the factor analysis to detect common factors then uses regression analysis to interpret the casual relationship. Here we use the factor analysis detection method provided by SPSS software: Bartlett Test of Sphericity and KMO (Kaiser-Meyer-Olkin) test. Bartlett's spherical test is based on the correlation coefficient matrix of the original variables. If the statistic value is large and its corresponding probability value is less than the significance level specified by the user, it is concluded that there is a correlation between the original variables. In the KMO test, the KMO value is between 0-1 and the closer to 1, which indicates that the sum of the squares of the simple correlation coefficients between all variables is much larger than the sum of the squares of the partial correlation coefficients, is more suitable for factor analysis. There are the following standards: KMO> 0.9, very suitable; 0.8 <KMO <0.9, suitable; 0.7 <KMO <0.8, general; 0.6 <KMO <0.7, not very suitable; KMO <0.5, not suitable.

There are many different methods to choose common factors in factor analysis but the most common method is principal component analysis (PCA). By calculating indicators such as variance contribution rate, the cumulative variance contribution rate, and characteristic root, the number of common factors is selected and determined.

The number of common factors is determined according to the following conditions. First, the size of the observed eigenvalues, value greater than 1 can be used as common factors; second, the cumulative variance contribution rate of the observation factor, the cumulative contribution rate above 70% can be used as the common factor.

For the comparative analysis, we are going to manually divide companies in this study into three different categories. The first category is agriculture and natural resource. In this group, it includes companies engaged in agriculture, forestry, animal husbandry, fishing, and extraction of natural resources. Then the second group includes companies operate in manufacturing activities. Last but not least, the third group mainly contains service section companies. The groups are classified according to the industry guidance classification codes for listed companies by China Securities Regulatory Commission. A to B belongs to the first group; C belongs to the second group; D to S belongs to the third group. By comparing the firm performance among the three categories, it could be observed if there any different impact of diversification on firm performance in different industries. Then we proceed to regression analysis.

Descriptive statistics

Figures 1 and 2 show the different industrial diversification levels and international diversification situation among industries. The agricultural and natural resource sector has the highest average diversification level at 35.41%, which is more than doubled the diversification level of the service sector (16.59%) and almost tripled the manufacturing sector (13.02%). Besides, the manufacturing sector has the most international diversified firms, up to 90 firms. Followed by the service sector

which has 42 international diversified firms. The agricultural and natural resource sector has 10 international diversified firms and 4 domestic operating firms. From the percentage perspective, the international diversified firm accounts for 84.9% in the manufacturing sector while the agricultural sector and service sector are 71.4% and 52.8% respectively.

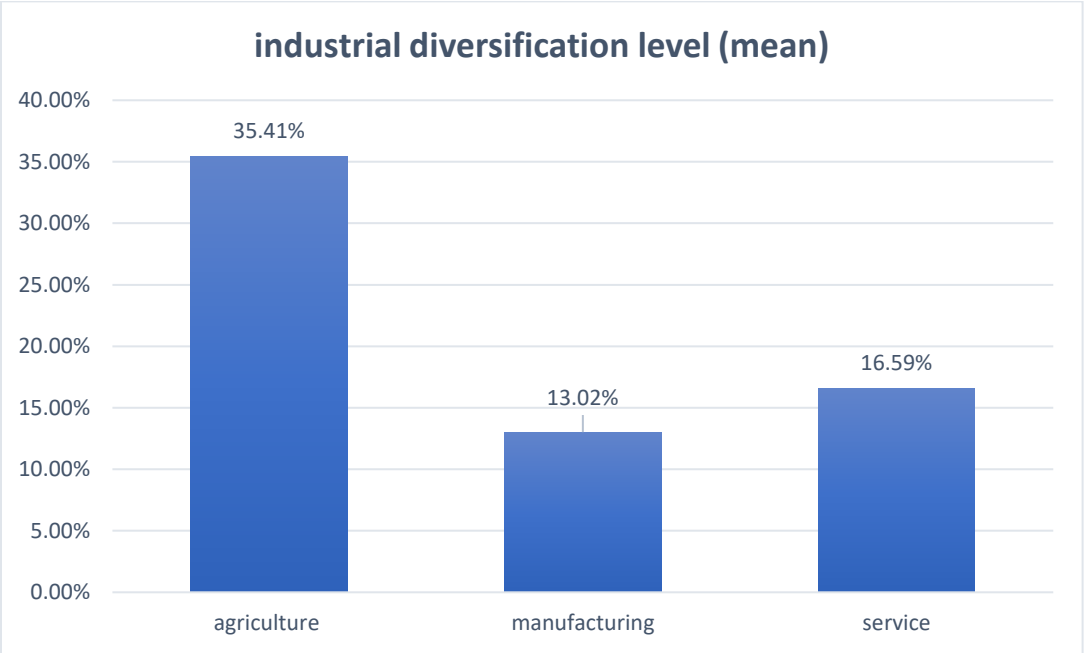

Figure 1 average of industrial diversification levels in different sectors

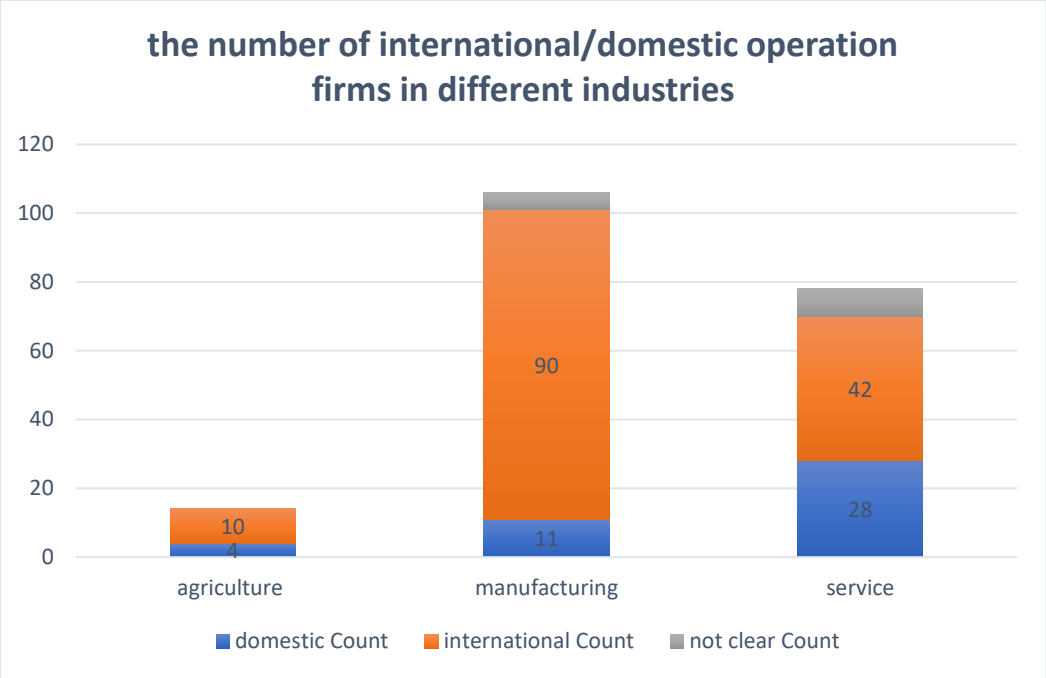

Figure 2 number of international diversified firms in different sectors

Tables 2 provides descriptive statistics of all the dependent variable indicators. From the results of table 2, among these financial measures, the difference between minimum and maximum is big. However, the mean of return of assets and price-book value growth rate is 0.069 and 0.091 respectively which means listed firms' profitability on average is in a good state. Furthermore, the standard deviation of the total asset growth rate is 0.229 while the standard deviation of the net profit growth rate is 4.099. The difference in growth levels of listed companies based on total assets as the core business is not obvious, while the growth levels of net profit based on the core business are significantly different. It can be seen that excellent companies are more competitive in the market. However, targeted subsidies by the nation and local protectionism make up for the lack of profitability of specific enterprises in the market. Current ratio, quick ratio cash to current ratio, and debt to asset ratio are all about the debt-paying problem. From the means of the four measures, it can be seen that listed companies have good debt repayment ability no matter in the

short or long term. At the same time, the variance of the debt asset ratio is smaller than the other three variables, indicating that there is no big difference in the long-term debt-paying ability among the listed companies. Compared to the current ratio, the quick ratio only removes the inventory that is not easy to liquid. However, the variance values of each measure are 1.048 and 0.979 respectively which are quite different, indicating that the inventory has a greater impact on the volatility of the market value of listed companies. Proper handling of inventory is conducive to enhancing the economic benefits of listed companies. From the operating efficiency perspective, the variance of inventory turnover rate is 135.075 and for the current rate, the variance is 1.330 which means inventory and operating income are important when it comes to operating efficiency. The ability to handle inventory and manage the operating income is a critic of a firm that wants to have better sustainability. From the future growth perspective, the average PBV growth rate and income growth rate are 0.091 and 0.280 respectively which shows that the overall development of listed firms is good.

Table 2 Descriptive Statistics for each financial indicator

	N	Minimum	Maximum	Mean	Std. Deviation
current ratio	198	0.167	7.246	1.598	1.048
quick ratio	198	0.163	6.833	1.225	0.979
cash to current ratio	198	0.009	4.444	0.501	0.636
debt-asset ratio	198	0.074	0.917	0.521	0.188
total asset growth rate	198	-0.101	1.611	0.190	0.229
net profit growth rate	194	-28.252	41.684	0.186	4.099
income growth rate	198	-0.602	5.805	0.280	0.670
main profit proportion	198	-10.691	12.331	2.485	1.937

PBV growth rate	198	-0.941	1.310	0.091	0.232
roa	198	-0.055	0.372	0.069	0.062
roe	198	-0.211	0.443	0.132	0.088
ebit to total asset	198	-0.055	0.450	0.089	0.069
inventory turnover rate	198	0.119	1689.548	30.208	135.075
current turnover rate	198	0.038	8.321	1.582	1.330
total asset turnover rate	198	0.027	2.428	0.675	0.432

From the statistical results of the data in Table 3, the significance of the standardized index was tested by Bartlett's Test of Sphericity. The approximate chi-square statistical value was 2285.349, and the significance probability was 0.000, which was less than 1%, indicating that there is a correlation between the sample indicators, meaning it is suitable for factor analysis. In the KMO test, the KMO statistic is 0.732, which is greater than 0.7, meaning it is suitable for factor analysis. Two different correlation detection methods have proved that the hypothesis that the index variables collected in this research are suitable for factor analysis is valid.

Table 3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.732
Bartlett's Test of Sphericity	Approx. Chi-Square	2285.349
	df	105
	Sig.	.000

To determine the number of common factors, the decision can be made from observations and judgments of two aspects: the scree plot of the characteristic values of the indicator variables and the total variance interpretation table. According to the principle of confirming that the

characteristic value of the common factor is greater than 1, the number of common factors is more than 5.

The eigenvalues of each component only determine an interval for the number of common factors for factor analysis while studying the firm performance of listed companies requires a clear number of common factors. Therefore, it is necessary to use the total variance interpretation table to make a further decision. According to the principle of common factor extraction that the cumulative contribution rate should be above 70%, the number of common factors in this study was finally determined to be 5. From Table 4, the cumulative variance contribution rate of the 5 factors extracted has reached 72.36%, which has been able to retain and reflect as many of the original variables as possible, which is a good representative for this study.

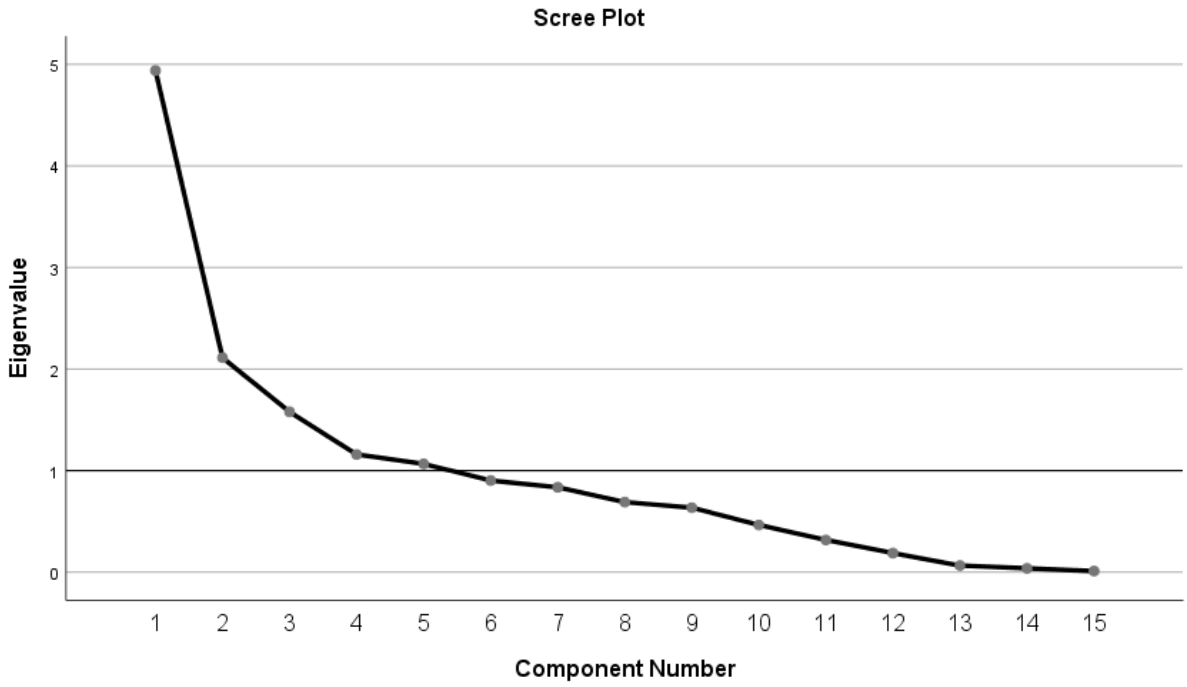

Figure 3 the rubble of the value of the performance characteristics of each component before rotating

Table 4 Total Variance Explained

	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.939	32.926	32.926	3.570	23.803	23.803
2	2.111	14.075	47.001	2.857	19.046	42.849
3	1.579	10.527	57.528	1.902	12.677	55.526
4	1.159	7.724	65.252	1.312	8.748	64.274
5	1.066	7.105	72.357	1.212	8.083	72.357

To make the common factors have a clear economic meaning and have a good interpretation of the original variables, this study uses the variance maximum rotation method to rotate the factors that make the load on each factor is moved closer to ± 1 or 0. Table 5 shows the factor load matrix after rotation.

Table 5 Rotated Component Matrix[a]

Zscore	Component 1	Component 2	Component 3	Component 4	Component 5
current ratio	.894	.241	-.169	.089	.038
quick ratio	.937	.207	-.072	.082	-.023
cash to current ratio	.861	.075	-.062	.156	-.005
debt asset ratio	-.767	-.329	-.223	.134	.041
total asset growth rate	.105	-.108	.022	.804	-.043
net profit growth rate	.030	.317	-.291	.120	.663

income growth rate	-.250	.094	-.670	.024	.227
main profit proportion	.034	-.230	.226	-.271	.508
PBV growth rate	.043	.300	-.052	.693	.010
roa	.459	.845	.122	.025	-.132
roe	.144	.890	.002	.172	-.041
ebit to total asset	.417	.849	.143	.005	-.172
inventory turnover rate	.051	.267	.020	-.007	-.623
Current turnover rate	-.275	.025	.790	-.077	-.022
total asset turnover rate	-.060	.279	.752	.056	.145

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

By comparing the rotation results of each factor, each standardized original variable is classified according to the factor load, that is the common factor, and the attributes of the original variable are used to economically explain the common factor.

In common factor F1, the Z-scores of current ratio, quick ratio, cash to current ratio, and debt asset ratio are 0 .894, 0.937, 0.861, and -0.767 respectively. There is a strong correlation among the four variables and they all reflect firms' debt repayment ability either in the short or long term, the ability of a company to use its assets to pay off debt. In this study, F1 is named the solvency factor.

In common factor F2, return on asset, return on equity, and earnings before interest and tax (EBIT) to the total asset are highly correlated (Z-scores are above 0.8). Besides, these three variables explain firms' profit sources through operating income, total asset, and net asset, reflecting the

value-added ability of the firm's fund or capital which is the base of the reproduction expansion of a company. In this study, we call F2 the profitability factor.

In common factor F3, Z-scores of income growth rate, current turnover rate, and total asset turnover rate are -0.670, 0.790, and 0.752 respectively. They reveal the economic resource utilization of companies through its operating activities, from the perspective of sales, net income, and asset scale, to keep expanding the firm size and maintaining competitive advantages. In this study, we name F3 the efficiency factor.

In common factor F4, Z-scores of total asset growth rate and price-book value (PBV) growth rate are 0.804 and 0.693 respectively. Both of them reflect the expansion speed of the company's capital scale and represent as important indicators to measure the change and growth of the size of the company. In this study, F4 is called the development ability factor.

In common factor F5, net profit growth rate, main profit proportion, and inventory turnover rate are categorized into the same group according to their high Z-scores in F5. To make ongoing progress, companies depend on the accumulation of business operations. The higher the net profit growth rate and main profit proportion are, the more stable the company development is. In this study, we name F5 the sustainability factor.

At this point, the common factors required to analyze and evaluate the firm performance of listed companies are finally determined. Each common factor has a clear economic meaning explanation through the original variables in the group, and the naming of common factors has been completed

according to its economic content and research practices. Table 6 describes the names of the common factors and the original variables contained in their categories.

Table 6 the factor name and indicators contained

name	Indicator contained in the category
F1 solvency factor	current ratio, quick ratio, cash to current ratio and debt asset ratio
F2 profitability factor	return on asset, return on equity and earnings before interest and tax (EBIT) to the total asset
F3 efficiency factor	income growth rate, current turnover rate, and total asset turnover rate
F4 development ability factor	total asset growth rate and price-book value (PBV) growth rate
F5 sustainability factor	net profit growth rate, main profit proportion, and inventory turnover rate

The point of factor analysis is to decrease the number of variables and run certain comparable analysis afterward. According to the modeling idea of factor analysis, the Z-score of each common factor can be expressed by a linear function of the original variable, that is, the score of common factor is a weighted average measure of the original variable, where the weight is the importance of the original variable affecting the common factor. Generally, three methods are provided for calculating the common factor score coefficient: regression method, Bartlett method, and Anderson-Rubin method. This study uses the regression method to calculate the common factor score coefficient.

Listed companies' performance can be measured and compared through each common factor. What is more, factor scores can be seen from two levels. The first level is a single factor score, and the second level is an integrated factor score. Compared with the integrated factor score, the single factor score can evaluate and analyze the performance of a listed company in a more detailed way. The integrated factor score is weighted score contains single factor scores, which can more comprehensively reflect the overall performance of the listed company.

In this study, the single factor score is used as the entry point. The factor score coefficient and the corresponding normalized original variable is added to obtain the corresponding single factor score. The calculation formula is as follows:

Equation 2: $F_i = c_1 X_{Z_1} + c_2 X_{Z_2} + c_3 X_{Z_3} + \cdots + c_{15} X_{Z_{15}} \quad (i = 1,2,3,4,5)$

Secondly, the integrated score takes into account the importance of the influence of every single factor on firm performance. The measure of the degree of importance is the proportion of the variance contribution rate of each factor to the total variance contribution rate of all factors, and this is used as the weight for the integrated factor score. Therefore, according to the total variance interpretation table (table 4), the formula for calculating the comprehensive factor score is:

Equation 3: $\mathrm{F} = 0.455 * \mathrm{F1} + 0.195 * \mathrm{F2} + 0.145 * \mathrm{F3} + 0.107 * \mathrm{F4} + 0.098 * \mathrm{F5}$

After factor analysis and comparative analysis, I follow Shackman (2007) and Gyan, Brahmana, and Bakri (2017) method. We perform separate OLS regressions for each firm performance factor and diversification measures with all of the above-mentioned explanatory variables. By using the baseline model below, I believe we could find a certain causal relationship between independent and dependent variables.

$$\text{Equation 4 : } firm\ performance\ factor_i = \alpha_0 + \beta_1 non - SR + \beta_2 D(international\ diversification) + \beta_3 D(agricultural\ sector) + \beta_4 D(service\ sector) + \beta_5 firm\ age + \beta_6 firm\ size + \beta_7 largest\ holder\ rate + \beta_8 state\ owned\ share\ rate + \varepsilon$$

To test the robustness of the firm performance factors, I use different measurements for dependent variables: integrated firm performance factor and Tobin's Q.

Empirical results

Comparative analysis

Table 7 presents the test results for the differences between international diversified firms and domestic firms through firm performance factors. After eliminating 13 samples that do not specify whether they are operating internationally or not in their annual report, this test contains 185 firms. F1, the solvency factor, shows the comparison between companies that only operate domestically and firms that adopt international diversification. From table 7, we can see the mean of

international diversified firms has a higher score which is 0.066 while domestic firms only have a mean of -0.309. As for the efficiency factor (F3), the international diversified firms also outperform domestic firms with a score of 0.115 and -0.486 respectively. Although statistics show significance on the solvency factor and efficiency factor, there is no difference between international diversified firms and domestic operating firms on profitability, development ability, and sustainability factor. For the integrated factor, the international diversified group is statistically different from the domestic group with a score of 0.035 and -0.222 respectively.

Table 7 Group Statistics of international diversification

	international	N	Mean	Std. Deviation	Std. Error Mean	Sig (2-tailed)
F1 (solvency factor)	domestic	43	-0.309	0.852	0.130	0.017**
	international	142	0.066	0.969	0.081	
F2 (profitability factor)	domestic	43	0.089	1.053	0.161	0.382
	international	142	-0.068	0.924	0.078	
F3 (efficiency factor)	domestic	43	-0.486	1.226	0.187	0.004***
	international	142	0.115	0.821	0.069	
F4 (development ability factor)	domestic	43	-0.179	0.735	0.112	0.196
	international	142	-0.001	0.920	0.077	
F5 (sustainability factor)	domestic	43	-0.095	1.152	0.176	0.548
	international	142	0.022	0.963	0.081	
F (integrated factor)	domestic	43	-0.222	0.471	0.072	0.003***
	international	142	0.035	0.518	0.043	

$^{*}p < 0.1; ^{**}p < 0.05: ^{***}p < 0.01$

Table 8 shows that there are differences among industries of the agricultural and natural resource sector, the manufacturing sector, and the service sector. There are statistically significant differences between three major industries on solvency factor, profitability factor, efficiency factor, and sustainability factor. To be more specific, Table 9 presents how different industries differentiate on the firm performance factors. The differences between the agricultural and natural resources industry and manufacturing industry lay on the profitability factor, the efficiency factor, and the development ability factor. Although agricultural firms' profitability factor score and development ability factor score are less than manufacturing firms', the efficiency factor score of agricultural firms is 0.490 higher than manufacturing firms'. While between the agricultural and natural resource industry and service industry, the differences occur on the efficiency factor, development ability factor, and sustainability factor. However, after combining all the factors, there is a difference between the manufacturing industry and the service industry without any significant difference between these two and the agricultural and natural resource industries.

Table 8 differences in comparison groups-industries

		Sum of Squares	df	Mean Square	F	Sig.
F1	Between Groups	6.080	2	3.040	3.171	.044**
	Within Groups	186.920	195	.959		
	Total	193.000	197			
F2	Between Groups	4.975	2	2.487	2.580	.078*
	Within Groups	188.025	195	.964		
	Total	193.000	197			
F3	Between Groups	16.092	2	8.046	8.869	.000***
	Within Groups	176.908	195	.907		
	Total	193.000	197			

F4	Between Groups	3.910	2	1.955	2.016	.136
	Within Groups	189.090	195	.970		
	Total	193.000	197			
F5	Between Groups	6.747	2	3.374	3.532	.031**
	Within Groups	186.253	195	.955		
	Total	193.000	197			
F(integrated)	Between Groups	4.087	2	2.044	7.764	.001***
	Within Groups	51.325	195	.263		
	Total	55.412	197			

Table 9 Multiple Comparisons-industries

Dependent Variable		I	J	Mean Difference (I-J)	Std. Error	Sig.
F1	Dunnett T3	agri	manufac	-0.322	0.186	0.258
			service	0.034	0.198	0.997
		manufac	agri	0.322	0.186	0.258
			service	0.356	0.151	0.056*
		service	agri	-0.034	0.198	0.997
			manufac	-0.356	0.151	0.056*
F2	LSD	agri	manufac	-0.521	0.279	0.063*
			service	-0.276	0.285	0.334
		manufac	agri	0.521	0.279	0.063*
			service	0.246	0.146	0.095*
		service	agri	0.276	0.285	0.334
			manufac	-0.246	0.146	0.095*
F3	LSD	agri	manufac	0.490	0.271	0.072*
			service	0.960	0.276	0.001***
		manufac	agri	-0.490	0.271	0.072*
			service	0.470	0.142	0.001***
		service	agri	-0.960	0.276	0.001***
			manufac	-0.470	0.142	0.001***
F4		agri	manufac	-0.455	0.158	0.021**

			service	-0.571	0.175	0.007***
	Dunnett T3	manufac	agri	0.455	0.158	0.021**
			service	-0.116	0.153	0.832
		service	agri	0.571	0.175	0.007***
			manufac	0.116	0.153	0.832
F5	LSD	agri	manufac	0.219	0.278	0.432
			service	0.554	0.284	0.052*
		manufac	agri	-0.219	0.278	0.432
			service	0.335	0.146	0.023**
		service	agri	-0.554	0.284	0.052*
			manufac	-0.335	0.146	0.023**
F(integrated)	LSD	agri	manufac	-0.204	0.146	0.164
			service	0.095	0.149	0.524
		manufac	agri	0.204	0.146	0.164
			service	0.299	0.077	0.000***
		service	agri	-0.095	0.149	0.524
			manufac	-0.299	0.077	0.000***

*. The mean difference is significant at the 0.05 level.

$^{*}p < 0.1;^{**}p < 0.05;^{***}p < 0.01$

Regression analysis

To compare the firm performance of listed companies with different degrees of diversification, this section uses multiple linear regression analysis methods to conduct regression analysis through 7 models. The analysis of 198 listed companies in 2018 is still used, and the relevant dataset comes from the CSMAR database.

The dependent variables of the multiple linear regression model were the five-factor score (F1 to F5) and comprehensive performance score (F) obtained based on the above factor analysis. Taking the degree of diversification, international diversification, and the industry as independent

variables, the controlling variables include the company's age, company size, the largest shareholder's ratio, and the state-owned shareholders' ratio.

For clarity, the names, symbols, and calculation methods of the variables are listed in the following table:

Table 10 Variables description

	Variable names	Variable symbol	Calculation method
Dependent variable	F1 solvency factor	F1	Principal component analysis (PCA)
	F2 profitability factor	F2	
	F3 efficiency factor	F3	
	F4 development ability factor	F4	
	F5 sustainability factor	F5	
	Integrated factor	F	
Independent variable	firm diversification degree	degree	(1-largest segment sales/total sales)*100
	international diversification	international	0, domestic; 1 international; 2, not clear
	industry variable	agri	1, agricultural industry; otherwise 0
		service	1, service industry; otherwise 0
Control variable	firm size	size	the logarithm of total asset
	firm age	age	start as firm established
	largest shareholder's rate	top1	percentage
	state-owned shares rate	state	percentage

Table 11 presents the test results on how firm performance affected by industrial diversification and international diversification. The first 5 models show how diversification affects the different aspects of firm performance. Model 1 shows the relationship between diversification and solvency ability in listed firms. The result shows that international diversification has a positive impact on firms' solvency factor at the significance level of 0.1, the coefficient is 0.219, which means when a firm adopts international diversification, the firm's performance of solvency score gets higher. Similarly, model 3 shows that international diversification and efficiency capacity are positively correlated at a significant level of 0.01. Model 3 reveals different industries have different influence on firm performance. Compared to the manufacturing industry, diversification under the agricultural and natural resources industry have a positive correlation with the efficiency of firm performance at a significance level of 0.1 and the correlation coefficient is 0.504 while service industry has decreased the efficiency at a significance level of 0.05 and the coefficient is -0.359. A contrary result presents when it comes to the development ability factor, model 4. Even though general industrial diversification and international diversification increase the development ability of firm performance, for those firms belonging to the agricultural and natural resources industry, adopting diversification strategy would hurt the development ability of the firm. Model 5 reveals the relationship between industrial diversification and sustainable ability of the firm. The result shows the service industry decreases the sustainability of a firm at a significance level of 0.05 when adopting diversification strategies compare to the manufacturing industry. Besides, the regression results of Model 2 are not ideal, which shows that there is no significant correlation between the performance and profitability of listed companies.

Model 6 reflects the relationship between the international diversification and the comprehensive firm performance of listed companies. The result shows that international diversification is significant at a significant level of 0.01 and the correlation coefficient is 0.176, indicating that the integrated firm performance of listed companies is significantly positively related to international diversification, that is, the international diversified companies' comprehensive firm performance will increase significantly. Among control variables, firm size has a negative influence on firm performance in two different aspects of firm performance, including solvency and profitability factors. The impact is also significant when the dependent variable is the integrated firm performance factor. Firm size is significant at the significance level of 0.01 and the correlation coefficient is -0.216. The bigger the firm size, the lower the integrated firm performance score is. The largest shareholder's holding rate has a positive effect on the integrated factor at 0.05 significance level and the coefficient is 0,402, which means every one-unit increase in the largest shareholder's holding rate will increase integrated score 0.402 unit. The regression result of Tobin's q is not ideal but we still have some findings of the firm characteristic effect. Firstly the firm size has a significant negative effect on Tobin's q at the significance level of 0.01, the coefficient is -0.507. Then, the state-owned share rate harms Tobin's q value at the significance level of 0.05, the coefficient is -0.011.

Table 11 firm performance of listed companies

	single-factor model					integrated factor	test factor
	1	2	3	4	5	6	7
variables	F1	F2	F3	F4	F5	F	Tobin's Q
independent variables							
degree	0.001	-0.003	0.003	0.005*	0.004	0.002	0.000
international	0.219*	-0.055	0.418***	0.243*	0.004	0.176***	-0.006
agri	0.133	-0.408	0.504*	-0.572*	0.113	0.004	-0.249
sevice (manufacturing as base)	-0.003	-0.133	-0.359**	0.119	-0.379**	-0.104	-0.117
control variables							
size	-0.319***	-0.169***	-0.067	0.036	0.007	-0.216***	-0.507***
age	0.005	0.003	0.014	-0.018	-0.013	0.002	-0.012
top1	0.317	0.934**	0.947**	-0.473	-0.111	0.402**	0.594
state	0.001	-0.008	-0.003	-0.006	0.003	-0.002	-0.011**
constant	9.134***	3.984***	0.726	-0.622	0.181	5.070***	14.426***
N	198	198	198	198	198	198	198
R square	0.278	0.092	0.173	0.091	0.053	0.364	0.268
adjusted R square	0.248	0.054	0.138	0.053	0.013	0.337	0.256

$^{*}p < 0.1; ^{**}p < 0.05: ^{***}p < 0.01$

In general, the international diversification of listed companies has a significant positive impact on corporate solvency, efficiency, and development capabilities to varying degrees, which is positively related to the efficiency factor at a significant level of 0.01. It can be illustrated that international diversification is conducive to improving the performance of listed companies. Thus verifying Hypothesis 2a: firms diversified internationally have better firm performance in various dimensions compared to firms only operating domestically. Hypothesis 2b was rejected. However, there is also a possibility that it is the other way around. Well-performed firms choose to diversify internationally while under-performed companies stay operating domestically. To rule the possibility out, we need to have panel data to investigate the relationship.

Hypothesis l indicates that industrial diversification has a positive effect on different aspects of firm performance. If one looks at table 11, model 4 shows that a percent increase in the industrial diversification would significantly increase the developing ability factor score by 0.005 unit. Thus, Hypothesis l is verified.

Hypothesis 3a states that manufacturing firms perform better than service firms. According to the industry comparison results in table 9, some support was found for the hypothesis. Through the multiple comparisons, we can observe that the difference between the manufacturing sector and the service industries occur on every factor except development ability factor. Manufacturing companies perform better than service companies at an integrated level and different aspects of firm performance. Hypothesis 3b states agricultural and natural resources firms perform better than manufacturing firms. Mixed support was found for this hypothesis. According to the comparison analysis, agricultural and natural resource firms would have a better firm performance on the efficiency aspect compared to manufacturing companies while performing worse on the profitability and developing ability factors than manufacturing firms. Overall, it can be concluded that there is limited support for H3b. Service firms would be worse at efficiency and sustainability aspects compared to the manufacturing industry. The study results show that different companies with different considerations for firms should have different choices when it comes to diversification strategies. Even though there are many different reasons for listed firms choose to diversify but the dream and reality are different, firms should take careful consideration before deciding to adopt diversification strategy.

Discussion

The results of the analysis of the relationship between diversification and firm performance have provided some interesting outcomes. After comprehensively using several methods for empirical analysis, a comparative study of the industry diversification and international diversification of listed companies is concluded as follows:

Firstly, after the comparison between international diversified companies and domestic operating companies, we can find that international diversification gives companies some advantages to their firm performance at an integrated level. To be more specific, the positive relationship reflects on different aspects of firm performance. The significant differences show on the solvency (F1) and efficiency (F3) aspects. We can observe from the mean differences between international and domestic operating firms that four out of five factors show that international diversified firms have positive factor scores while the scores of domestic operating firms are negative. This comparison benefits companies that try to have higher efficiency and solvency abilities through international diversification. Besides, even there is not a significant difference in profitability factor, we can see the mean number changes from positive to negative when firms are internationally diversified. It reminds firms to make careful decisions if their goal is to achieve higher profitability. This could give firm decision-makers information about how to decide their international diversification decisions based on various aspects and what kind of financial measurements they should pay attention to. Based on industry comparison, we found out that it is important to investigate the relationship between diversification and firm performance in separate industries. Generally speaking, we can observe significant differences between service sector and manufacturing sector at 0.001 level from the comparative analysis. Manufacturing sector has higher mean scores

compared to service sector, meaning overall manufacturing sector has a better performance score than service sector. However, looking at five different factors we can see manufacturing sector has lower scores on developing ability factor. By combining comparison analysis and regression analysis we can find that if a manufacturing firm adopts an international diversification strategy, it might compensate its weak developing ability thus improve the overall firm performance. Base on the regression analysis, agricultural and natural resource companies could be significantly efficient through international diversification since they can make full use of their internal resources and gain more efficiency by allocating residual resources. What is more, we found that diversification has a positive impact on firms developing ability factor which is a weak aspect of agricultural and natural resource sector. It can partially explain why agricultural and natural resource sector has the highest diversification level. However, it might not be a good choice for service industry companies to go for international diversification because it can harm the firm's original low profitability. However, it is highly possible that only well-performed companies diversify internationally, the relationship between international diversification and firm performance needs to be studied with long term data.

Then, the firm-specific characteristics are important variables when studying the relationship between diversification and firm performance. Previous studies consider firm size which shows significance in both of the integrated models. This study proved that firm size has a significant negative impact on firm performance. At the same time, the ownership structure is also an important aspect when studying the relationship between diversification and firm performance in emerging countries. In this study, we found that the concentration of the largest shareholders' holding could increase the firm performance significantly, especially the profitability. The more

concentrate a firm is, the higher the firm performance could be. Another interesting result is that state-owned shares percentage has a negative impact on Tobin's q, indicating state-owned structure could decrease firm performance. Based on the limited support, we can conclude that the relationship between state-owned shares and firm performance should be further studied to test whether the negative relationship between state-owned shares percentage and firm performance is robust.

Last but not least, future studies could also use alternative measures for the firm performance index as measurements. It is clear that these measures largely contain financial indicators, which ignores market indicators to some extent. Therefore, it would be a valuable contribution to the use of alternative measures for the firm performance variables used in this study. Besides, a more detailed industry classification can be studied to see how diversification strategies impact different types of firms, especially agricultural firms.

Conclusion

According to our study results, an interesting finding is that industrial diversification has a little impact on firm performance while international diversification has a significant impact on two aspects of firm performance. Higher industrial diversification level would significantly increase firm developing ability but little change shows on the overall firm performance. It shows that investors and shareholders need to look at more detailed information like the development indicator rather than just focus on the integrated ones when a firm diversified. One possible argument has been that firms can improve their developing ability performance using the internal

capital market theory, which results from industrial diversification. The internal capital market makes possible the formation of a resource pool in firms and the use of residual resources. However, the benefit gained from developing ability may be offset by the cost of entering a new business. That answers why there is no significant improvement in firm performance at an integrated level to some extent. The regression analyses showed a statistically significant positive relationship between international diversification and performance, especially on the efficiency factor. This evidence further supports the internal capital market makes firms perform more efficiently and gives firms possibilities to develop. In this way, firm performance could be enhanced using international diversification strategy. However, the relationship between international diversification and firm performance needs to be studied further to conclude above since we cannot rule out the possibility of sample bias that only well-performed firms adopt international diversification. Meanwhile, we noticed that state-owned shares rate decrease firm performance whereas we detected a negative relationship between firm size and performance. Although the support is relatively weak, these results indicate that the firms in the sample did not obtain scope or scale economies to enhance their performance. The negative relationship between state-owned shares rate and firm performance illustrates that a more market-oriented economy would benefit listed companies in emerging markets.

This study seeks to contribute to the literature on the relationship between diversification and firm performance using data on the industrial diversification and international diversification of firms operating in emerging markets. The major purpose of this study was to overcome the limitation of earlier studies that have largely ignored the multidimensional nature of firm performance and the various characteristics of different industries. At the same time, study the

relationship among different industries separately. In light of results in this study, it is shown that listed firms can possibly improve their investment opportunities and reach better performance levels by making use of international diversification. There was also some support that firms can have better development through industrial diversification. Ownership structure has a mixed impact on firm performance. In conclusion, this study provides more detailed information about the relationship between diversification and firm performance. We hope that it will give inspiration and influence further research on the relationship between diversification and firm performance. Future research may include long-term data collected in different regions to make up for some of the deficiencies in the research.

As with any study, this study has several limitations. First of all, using China as a representative that has a special culture and policy background could distort the results. Therefore, generalization to firms in other emerging markets should be made carefully. Another limitation is the use of OLS. In this study, the non-linear relationship and interaction among different variables have not been considered due to statistical techniques. Future studies should examine such interaction effects based on longitudinal data, given the shortcomings of cross-sectional methods.

The construction of the firm performance indicator index when performing factor analysis is an innovation but also inadequate. The shortcoming is that its rigor needs to be confirmed after a long period of repeated empirical studies. Since there is no unified reference standard in academia, this also requires further related research that is followed up in time.

A possible extension of this study is that industrial diversification might have a lagged impact on firm performance. The effect of industrial diversification could show a significant impact on firm performance with a two or three-year lag. Another study extension relies on diversification levels among different industries. The diversification levels are pretty high in agricultural companies while manufacturing firms stay with their core businesses. It could be a topic to investigate diversification strategy development in the agriculture business.

References

Akben Selçuk, Elif. 2015. “Corporate Diversification and Firm Value: Evidence from Emerging Markets.” *International Journal of Emerging Markets; Bradford* 10 (3): 294–310. http://dx.doi.org.proxy.bib.uottawa.ca/10.1108/IJoEM-12-2012-0180.

Alsmairat, Yazan Yaseen Yousef, Wan Sallha Yusoff, Mohd Fairuz, and Norida Basnan. 2018. “International Diversification, Audit Quality and Firm Value of Jordanian Public Listed Firm.” *Academy of Accounting and Financial Studies Journal; Arden* 22: 1–7.

Amavilah, Voxi Heinrich. 2012. “Baumol, Panzar, and Willig’s Theory of Contestable Markets and Industry Structure: A Summary of Reactions.” 41974. *MPRA Paper*. MPRA Paper. University Library of Munich, Germany. http://ideas.repec.org/p/pra/mprapa/41974.html.

Amihud, Yakov, and Baruch Lev. 1981. “Risk Reduction as a Managerial Motive for Conglomerate Mergers.” *The Bell Journal of Economics* 12 (2): 605–17. https://doi.org/10.2307/3003575.

Bass, Frank M., Philippe Cattin, and Dick R. Wittink. 1978. “Firm Effects and Industry Effects in the Analysis of Market Structure and Profitability.” *Journal of Marketing Research; Chicago* 15 (1): 3–10.

Bausch, Andreas, and Frithjof Pils. 2009. “Product Diversification Strategy and Financial Performance: Meta-Analytic Evidence on Causality and Construct Multidimensionality.” *Review of Managerial Science* 3 (3): 157–90. https://doi.org/10.1007/s11846-009-0027-4.

Benito-Osorio, Diana, Luis Ángel Guerras-Martín, and José Ángel Zuñiga-Vicente. 2012. “Four Decades of Research on Product Diversification: A Literature Review.” *Management Decision; London* 50 (2): 325–44. http://dx.doi.org.proxy.bib.uottawa.ca/10.1108/00251741211203597.

Berger, Philip G., and Eli Ofek. 1995. “Diversification’s Effect on Firm Value.” *Journal of Financial Economics* 37 (1): 39–65. https://doi.org/10.1016/0304-405X(94)00798-6.

Bettis, Richard A. 1981. “Performance Differences in Related and Unrelated Diversified Firms.” *Strategic Management Journal* 2 (4): 379–93.

Bhide, Amar. 1990. “Reversing Corporate Diversification.” *Journal of Applied Corporate Finance* 3 (2): 70–81. https://doi.org/10.1111/j.1745-6622.1990.tb00201.x.

Borda, Armando, José-Mauricio G. Geleilate, William Newburry, and Sumit K. Kundu. 2017. “Firm Internationalization, Business Group Diversification and Firm Performance: The Case of Latin American Firms.” *Journal of Business Research* 72 (March): 104–13. https://doi.org/10.1016/j.jbusres.2016.11.006.

Braakmann, Nils, and Joachim Wagner,. 2009. “Product Differentiation and Profitability in German Manufacturing Firms - ProQuest.” 2009. http://search.proquest.com/docview/1698742427?rfr_id=info%3Axri%2Fsid%3Aprimo.

Campa, Jose Manuel, and Simi Kedia. 2002. “Explaining the Diversification Discount.” *The Journal of Finance* 57 (4): 1731–62. https://doi.org/10.1111/1540-6261.00476.

Capar, Nejat. 2003. “An Analysis of the Relationships between International Diversification, Product Diversification, Firm Resources and Firm Performance.” Ph.D., United States -- Florida: The Florida State University. http://search.proquest.com/docview/305326836/abstract/A7212D2CED8E4012PQ/1.

Casper, Steven J. 2010. “Does the International Diversification Discount Vary by Industry and/or Firm Characteristics?” Ph.D., United States -- Pennsylvania: Temple University. http://search.proquest.com/docview/609970996/abstract/F5134DF5B7B145EEPQ/1.

Chakrabarti, Abhirup, Kulwant Singh, and Ishtiaq Mahmood. 2007. “Diversification and Performance: Evidence from East Asian Firms.” *Strategic Management Journal* 28 (2): 101–20. https://doi.org/10.1002/smj.572.

Chakravarthy, Balaji S. 1986. “Measuring Strategic Performance: Summary.” *Strategic Management Journal (1986-1998); Chichester* 7 (5): 437.

Chen, Chiung-Jung, and Chwo-Ming Joseph Yu. 2012a. “Managerial Ownership, Diversification, and Firm Performance: Evidence from an Emerging Market.” *International Business Review* 21 (3): 518–34. https://doi.org/10.1016/j.ibusrev.2011.06.002.

———. 2012b. “Managerial Ownership, Diversification, and Firm Performance: Evidence from an Emerging Market.” *International Business Review* 21 (3): 518–34. https://doi.org/10.1016/j.ibusrev.2011.06.002.

Datta, Deepak K., Nandini Rajagopalan, and Abdul M. A. Rasheed. 1991. “Diversification and Performance: Critical Review and Future Directions.” *Journal of Management Studies* 28 (5): 529–58. https://doi.org/10.1111/j.1467-6486.1991.tb00767.x.

Denis, David J., Diane K. Denis, and Keven Yost. 2002. “Global Diversification, Industrial Diversification, and Firm Value.” *The Journal of Finance* 57 (5): 1951–79. https://doi.org/10.1111/0022-1082.00485.

Fan, Joseph P.H., Jun Huang, Felix Oberholzer-Gee, Troy D. Smith, and Mengxin Zhao. 2008. “Diversification of Chinese Companies: An International Comparison.” *Chinese Management Studies* 2 (1): 6–13. https://doi.org/10.1108/17506140810866223.

Fauver, Larry, Joel Houston, and Andy Naranjo. 2003. “Capital Market Development, International Integration, Legal Systems, and the Value of Corporate Diversification: A Cross-Country Analysis.” *The Journal of Financial and Quantitative Analysis* 38 (1): 135. https://doi.org/10.2307/4126767.

Grant, Robert M., Azar P. Jammine, and Howard Thomas. 1988. “Diversity, Diversification, and Profitability Among British Manufacturing Companies 1972-84.” *Academy of Management Journal* 31 (4): 771–801. https://doi.org/10.2307/256338.

Guillen, Mauro F. 2000. “Business Groups in Emerging Economies: A Resource-Based View.” *Academy of Management Journal; Briarcliff Manor* 43 (3): 362–80.

Gyan, Alex Kwaku, Rayenda Brahmana, and Abdul Karim Bakri. 2017. “Diversification Strategy, Efficiency, and Firm Performance: Insight from Emerging Market.” *Research in International Business and Finance* 42 (December): 1103–14. https://doi.org/10.1016/j.ribaf.2017.07.045.

Hall, Ernest H., and Jooh Lee. 1999. “BROADENING THE VIEW OF CORPORATE DIVERSIFICATION: AN INTERNATIONAL PERSPECTIVE.” *The International Journal of Organizational Analysis* 7 (1): 25–53. https://doi.org/10.1108/eb028893.

Hashai, Niron. 2015. “Within-Industry Diversification and Firm Performance-an S-Shaped Hypothesis: Within-Industry Diversification and Performance.” *Strategic Management Journal* 36 (9): 1378–1400. https://doi.org/10.1002/smj.2290.

Hoechle, Daniel, Markus Schmid, Ingo Walter, and David Yermack. 2012. “How Much of the Diversification Discount Can Be Explained by Poor Corporate Governance?” *Journal of Financial Economics* 103 (1): 41–60. https://doi.org/10.1016/j.jfineco.2011.03.025.

Huml, Jan, Lucie Vokáčová, and Štěpán Kala. 2011. “Implementation of Diversification Strategy on Farms in the Czech Republic.” *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis* 59 (2): 109–14. https://doi.org/10.11118/actaun201159020109.

Jacquemin, Alexis, Elisabeth De Ghellinck, and Christian Huveneers. 1980. “Concentration and Profitability in a Small Open Economy.” *Journal of Industrial Economics* 29 (2): 131–44. https://doi.org/10.2307/2098166.

Jensen, Michael C. 1986. “Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers.” *American Economic Review* 76 (2): 323.

Jensen, Michael C., and Kevin J. Murphy. 1990. “Performance Pay and Top-Management Incentives.” *Journal of Political Economy* 98 (2): 225–64. https://doi.org/10.1086/261677.

Khanna, Tarun, and Krishna Palepu. 1999. “Policy Shocks, Market Intermediaries, and Corporate Strategy: The Evolution of Business Groups in Chile and India.” *Journal of Economics & Management Strategy* 8 (2): 271–310. https://doi.org/10.1111/j.1430-9134.1999.00271.x.

———. 2000. “Is Group Affiliation Profitable in Emerging Markets? An Analysis of Diversified Indian Business Groups.” *The Journal of Finance* 55 (2): 867–91. https://doi.org/10.1111/0022-1082.00229.

Lang, Larry H.P., and René M. Stulz. 1994. “Tobin’s q, Corporate Diversification, and Firm Performance.” *Journal of Political Economy* 102 (6): 1248.

Lee, Keonbeom, Mike W. Peng, and Keun Lee. 2008. “From Diversification Premium to Diversification Discount during Institutional Transitions.” *Journal of World Business* 43 (1): 47–65. https://doi.org/10.1016/j.jwb.2007.10.010.

Lee, Soo Hee. 2000. “Institutional Environments and Diversification Strategy of Emerging Market Firms.” *Journal of Interdisciplinary Economics* 11 (2): 165–85. https://doi.org/10.1177/02601079X00001100205.

Lewellen, Wilbur G. 1971. “A Pure Financial Rationale for the Conglomerate Merger.” *The Journal of Finance* 26 (2): 521–37. https://doi.org/10.1111/j.1540-6261.1971.tb00912.x.

Li, Mingfang. n.d. “Diversification and Economic Performance: An Empirical Assessment of Chinese Firms,” 23.

Li, Xiaorong, and Kami Rwegasira. 2008. “Diversification and Corporate Performance in China: An Agency Theory Perspective.” *Journal of Transnational Management* 13 (2): 132–47. https://doi.org/10.1080/15475770802255465.

Lien, Yung-Chih, and Shaomin Li. 2013. “Does Diversification Add Firm Value in Emerging Economies? Effect of Corporate Governance.” *Journal of Business Research* 66 (12): 2425–30. https://doi.org/10.1016/j.jbusres.2013.05.030.

Lin, Chen, and Dongwei Su. 2008. “Industrial Diversification, Partial Privatization and Firm Valuation: Evidence from Publicly Listed Firms in China.” *Journal of Corporate Finance* 14 (4): 405–17. https://doi.org/10.1016/j.jcorpfin.2008.05.001.

Lins, Karl V., and Henri Servaes. 2002. “Is Corporate Diversification Beneficial in Emerging Markets?” *Financial Management* 31 (2): 5–31. https://doi.org/10.2307/3666220.

Markides, Constantinos C. 1995. “Diversification, Restructuring and Economic Performance.” *Strategic Management Journal* 16 (2): 101–18. https://doi.org/10.1002/smj.4250160203.

Mishra, Ashok K., Hisham S. El-Osta, and Carmen L. Sandretto. 2004. “Factors Affecting Farm Enterprise Diversification.” *Agricultural Finance Review* 64 (2): 151–66. https://doi.org/10.1108/00214660480001160.

Montgomery, Cynthia A. 1994. “Corporate Diversification.” *The Journal of Economic Perspectives (1986-1998); Nashville* 8 (3): 163.
Muzyrya, Yulia. 2010. “The Relationship between Product and International Diversification: The Effect of Asset Dispersion and Asset Diversity on Firm Performance.” M.Sc., Republic of Singapore: Singapore Management University (Singapore). http://search.proquest.com/docview/873817540/abstract/791D2D7096046E8PQ/1.
Nickel, Manuel Núñez, and Manuel Cano Rodriguez. 2002. “A Review of Research on the Negative Accounting Relationship between Risk and Return: Bowman’s Paradox.” *Omega* 30 (1): 1–18. https://doi.org/10.1016/S0305-0483(01)00055-X.
O’Brien, Jonathan P., Parthiban David, Toru Yoshikawa, and Andrew Delios. 2014. “How Capital Structure Influences Diversification Performance: A Transaction Cost Perspective: Capital Structure, Diversification, and TCE.” *Strategic Management Journal* 35 (7): 1013–31. https://doi.org/10.1002/smj.2144.
Phung, Duc Nam, and Anil V. Mishra. 2016. “Corporation Diversification and Firm Performance: Evidence from Vietnamese Listed Firms: Corporation Diversification and Firm Performance.” *Australian Economic Papers* 55 (4): 386–408. https://doi.org/10.1111/1467-8454.12083.
Purkayastha, Saptarshi, Tatiana S. Manolova, and Linda F. Edelman. 2012. “Diversification and Performance in Developed and Emerging Market Contexts: A Review of the Literature*: Diversification and Performance.” *International Journal of Management Reviews* 14 (1): 18–38. https://doi.org/10.1111/j.1468-2370.2011.00302.x.
Ravenscraft, David J. 1983. “Structure-Profit Relationships at the Line of Business and Industry Level.” *Review of Economics & Statistics* 65 (1): 22. https://doi.org/10.2307/1924405.
Reeb, David M. 2000. “Internationalization and Firm Risk: An Upstream-Downstream Hypothesis.” *Journal of International Business Studies* 31 (4): 611–629. https://doi.org/10.1057/palgrave.jibs.8490925.
Rijamampianina, Rasoava, Russell Abratt, and Yumiko February. 2003. “A Framework for Concentric Diversification through Sustainable Competitive Advantage.” *Management Decision* 41 (4): 362–71. https://doi.org/10.1108/00251740310468031.
Sambharya, Rakesh B. 2000. “Assessing the Construct Validity of Strategic and SIC-Based Measures of Corporate Diversification.” *British Journal of Management* 11 (2): 163–73. https://doi.org/10.1111/1467-8551.t01-1-00158.
Schiefer, Jan, and Monika Hartmann. 2008. “Determinants of Competitive Advantage for German Food Processors.” *Agribusiness* 24 (3): 306–19. https://doi.org/10.1002/agr.20168.
Sea Jin Chang, and Unghwan Choi. 1988. “Strategy, Structure and Performance of Korean Business Groups: A Transactions Cost Approach.” *Journal of Industrial Economics* 37 (2): 141. https://doi.org/10.2307/2098561.
Serrano, Raúl, Marta Fernández-Olmos, and Vicente Pinilla. 2018. “Internationalization and Performance in Agri-Food Firms.” *Spanish Journal of Agricultural Research* 16 (2): e0107. https://doi.org/10.5424/sjar/2018162-12206.
Servaes, Henri. 1996. “The Value of Diversification During the Conglomerate Merger Wave.” *The Journal of Finance* 51 (4): 1201–25. https://doi.org/10.1111/j.1540-6261.1996.tb04067.x.

Shackman, Joshua D. 2007. “Corporate Diversification, Vertical Integration, and Internal Capital Markets: A Cross-Country Study.” *Management International Review* 47 (4): 479–504. https://doi.org/10.1007/s11575-007-0027-z.

Stulz, R. 1990. “Managerial Discretion and Optimal Financing Policies.” *Journal of Financial Economics* 26 (1): 3–27. https://doi.org/10.1016/0304-405X(90)90011-N.

Tongli, Lin, Er Jwee Ping, and Winston Kwok Chee Chiu. 2005. “International Diversification and Performance: Evidence from Singapore.” *Asia Pacific Journal of Management* 22 (1): 65–88. https://doi.org/10.1007/s10490-005-6418-4.

Villalonga, Belén. 2004. “Diversification Discount or Premium? New Evidence from the Business Information Tracking Series.” *The Journal of Finance* 59 (2): 479–506. https://doi.org/10.1111/j.1540-6261.2004.00640.x.

Wan, Chun-Cheong. 1998. “International Diversification, Industrial Diversification and Firm Performance of Hong Kong MNCs.” *Asia Pacific Journal of Management* 15 (2): 205–17. https://doi.org/10.1023/A:1015489514744.

Wernerfelt, Birger. 1984. “A Resource-Based View of the Firm.” *Strategic Management Journal* 5 (2): 171–80.

Zahavi, Talli, and Dovev Lavie. 2013. “Intra-Industry Diversification and Firm Performance: Intra-Industry Diversification.” *Strategic Management Journal* 34 (8): 978–98. https://doi.org/10.1002/smj.2057.