# Journal of
# Accounting and Taxation

Volume 6 Number 2 September 2014
ISSN 2141-6664

Academic Journals

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Journal of Accounting and Taxation

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academicJournals

Vol. 6(2), pp. 38-53, September, 2014
DOI: 10.5897/JAT2014.0143
Article Number: 26EE48247765
ISSN 2141-6664

http://www.academicjournals.org/JAT

Journal of Accounting and Taxation

*Full Length Research Paper*

# Do the changes in tax incentives encourage direct investment in China by Taiwanese enterprises?

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Received 21 May, 2013; Accepted 25 September, 2014

**This study examined the association between tax incentives of China's 2008 Enterprise Income Tax Law (the 2008 tax law) and inflows of foreign direct investments from Taiwanese enterprises (TDI) to China. In addition, this study also investigated the effects of industry and location on TDI. This study showed that reduced tax rate concessions for foreign enterprises and increased tax rate considerably reduced TDI inflow to China. Furthermore, industry-specific tax incentives became more favorable than location-specific tax incentives after the new tax laws were introduced. The results of joint tests of tax reform and tax incentives indicated that the 2008 tax law did not provide location-specific tax incentives for TDI, while industry-specific tax incentives appeared to be more attractive to TDI. Moreover, Taiwanese enterprises with intensive indirect investment in China as well as with higher shareholdings were inclined to have higher TDI. The implications of these findings implied that foreign direct investment strategy in accordance with industry-specific and location-specific tax incentives can enhance the competitive advantages of multinational companies.**

**Key words:** Tax incentives, the 2008 tax law, Taiwanese direct investment (TDI).

## INTRODUCTION

Since China implemented its economic reform and opening-up policy, the Chinese government has addressed the country's financial and technological shortfalls by encouraging the inflow of foreign capital and technology to facilitate China's industrialization and urbanization. In 2013, China's gross domestic product (GDP) was USD 9,185 billion,[1] and the mean economic growth rate from 2007 to 2013 was 9.74%, indicating that China's economy has undergone rapid and stable growth. The value of foreign investment by the top ten countries or regions neighboring China accounted for 91.61% of all foreign direct investment (FDI) in China. Taiwanese enterprises were the second-largest investor in China, indicating its influence on China's market.[2] China approved almost 730,000 FDI enterprises, with a total value of USD 1.2 trillion. Because of this rapid growth, China has become the second-largest recipient of FDI in the world. Based on the inflow of foreign investment, China is currently the world's largest developing country.

Taiwanese enterprises were the pioneers of FDI in China. Since the initial economic reform and opening-up policy *initiated* during the 1980s, Taiwanese businesses have invested in China. China began promoting its economic reform and opening-up policy in the late 1970s, and the investment environment in its coastal cities has continually improved, effectively becoming outposts for

[1] Please refer to the PRC State Administration of Taxation statistical data.

[2] For further information, please refer to the website: http://www.fdi.gov.cn.

FDI enterprises. During the 1980s, Taiwanese enterprises established labor-intensive industries in the four economic development zones of Shenzhen, Zhuhai, Xiamen, and Shantou. In the early 1990s, the economic reform and opening-up progressed northward to Shanghai, and later, to more cities along the Yangtze River, as well as in coastal areas and border regions. Consequently, Taiwanese investment moved northward and shifted from labor-intensive industries to technology- and capital-intensive industries. The Investment Commission of the Ministry of Economic Affairs, ROC (MOEA) reported that since China implemented the opening-up policy in 1991, the Taiwanese government has approved 237 investments in China, with a value of USD 174 million. In 2013, 40,762 investments worth USD 133.7 billion were approved, accounting for more than 62% of Taiwan's total outward direct investment. Thus, Taiwanese enterprises clearly occupy a key economic position in China.

Previous studies have primarily investigated the macroeconomic factors affecting FDI in China. Limited extant studies have discussed the effect of tax incentives for investing in specific locations and industries on FDI. This study explores the effect of tax reform incentives on FDI in China after controlling the effect of macroeconomic factors on FDI. We performed a regression analysis to examine the effect of tax incentives on Taiwanese direct investment (TDI) in China. The empirical results of this study suggest that by reducing tax rate concessions for foreign enterprises and increasing the tax rate to 25%, the 2008 tax law effectively decreased the level of TDI in China. After the 2008 tax law was enacted, TDI in Western China was taxed at a reduced rate of 15%, primarily because TDI in that area accounted for only 3% of all TDI in China. Despite attempts to encourage foreign investment in China's western regions, the appeal of tax incentives was limited. Hence, our results show that the increase in TDI was not significant. Furthermore, after promulgating the 2008 tax law, tax incentives for investing in high-tech electronic industries became more favorable than those investing in western China. Because Taiwanese businesses investing in high-tech electronic industries were taxed at a rate of 15%, more Taiwanese enterprises invested in these industries. This study performed joint tests on the 2008 tax law and tax incentives, and the joint test results indicate that the 2008 tax reform did not provide tax incentives encouraging TDI in western China, although it provided effective tax incentives for investing in high-tech electronic industries. The results also show that higher TDI in China and comparatively higher *tax rates* for holding shares facilitated an increase in TDI in China. These two factors were critical tax incentives for TDI enterprises in China.

The contributions of this study are three-fold. First, the validity of this research is strengthened by using a large firm-year sample (from 2001 to 2013) of subsidiaries operating in China. Second, this study incorporated a more comprehensive set of control variables to better investigate the effect of tax incentive on FDI. In addition to controlling the effect of the 2008 China new income tax law on FDI, we also controlled the macroeconomic factors influencing China's overall FDI, including the economic growth rate, consumer price index, employment rate, and the market size of securities to enhance the breadth of this research. Finally, this study provides empirical evidence on the implication of tax reform on industry-specific and location-specific FDI managerial decisions. Specifically, the results provide strategic perspectives for Taiwanese enterprises, one of the largest FDI inflow regions in China, to focus on west-bound and new-high-tech industry investment in China. The findings therefore can also shed light on other inflow sources with respect to FDI inflow investment decisions.

The remainder of this paper is organized as follows. Section 2 details the background of tax reforms in China. Section 3 describes previous studies that are relevant to developing our hypotheses. Section 4 describes the research methodology of the empirical model employed in this study, *including* the empirical variables and sample selection method. Section 5 reports the empirical results and presents additional analyses, and finally, Section 6 *presents* our conclusion, limitation and the implications of our findings.

### *Institutional background and tax reform in China*

Since China's economic reform and opening up to foreign trade, foreign direct investment enterprises in China have played a crucial role in facilitating China's economic development and levitating the development of industries. Table 1 listed the top-ten FDI inflow countries (regions) in China. Asian countries (regions) accounted for the top six due to geographical reason. Hong Kong has long been China's largest source of FDI inflow. The amount of Hong Kong's investment in China has accumulated to USD 420 billion over the period of 2001 to 2012. Japan is China's second largest source of FDI in China which the amount had accumulated to USD 59 billion. South Korea is the fastest growing and also the third largest country (region) FDI inflow source. Prior to 1995, Taiwan was the second largest FDI inflow source next to Hong Kong. However, with China's opening up policy, more and more countries invested in China. Taiwan became the fourth largest source of FDI in 2002. After 2003, Taiwan became China's

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**Table 1.** FDI Inflows in China.

| Year | Hong Kong | Japan | Macao | Singapore | Korea | Taiwan | USA | Germany | France | UK |
|---|---|---|---|---|---|---|---|---|---|---|
| 2001 | 1,671,730 | 434,842 | 32,112 | 214,355 | 215,178 | 297,994 | 443,322 | 121,292 | 53,246 | 105,166 |
| 2002 | 1,786,093 | 419,009 | 46,838 | 233,720 | 272,073 | 397,064 | 542,392 | 92,796 | 57,560 | 89,576 |
| 2003 | 1,770,010 | 505,419 | 41,660 | 205,840 | 448,854 | 337,724 | 419,851 | 85,697 | 60,431 | 74,247 |
| 2004 | 1,899,830 | 545,157 | 54,639 | 200,814 | 624,786 | 311,749 | 394,095 | 105,848 | 65,674 | 79,282 |
| 2005 | 1,794,879 | 652,977 | 60,046 | 220,432 | 516,834 | 215,171 | 306,123 | 153,004 | 61,506 | 96,475 |
| 2006 | 2,023,292 | 459,806 | 60,290 | 226,046 | 389,487 | 213,583 | 286,509 | 197,871 | 38,269 | 72,610 |
| 2007 | 2,770,342 | 358,922 | 63,700 | 318,457 | 367,831 | 177,437 | 261,623 | 73,397 | 45,601 | 83,094 |
| 2008 | 4,103,640 | 365,235 | 58,161 | 443,529 | 313,532 | 189,868 | 294,434 | 90,049 | 58,775 | 91,401 |
| 2009 | 4,607,547 | 410,497 | 81,471 | 360,484 | 270,007 | 188,055 | 255,499 | 121,657 | 65,365 | 67,902 |
| 2010 | 6,056,677 | 408,372 | 65,524 | 542,820 | 269,217 | 247,574 | 301,734 | 88,840 | 123,820 | 71,032 |
| 2011 | 7,050,016 | 632,963 | 68,043 | 609,681 | 255,107 | 218,343 | 236,932 | 112,896 | 76,853 | 58,152 |
| 2012 | 6,556,119 | 735,156 | 50,556 | 630,508 | 303,800 | 284,707 | 259,809 | 145,095 | 65,242 | 40,960 |
| Total | 42,090,175 | 5,928,355 | 683,040 | 4,206,686 | 4,246,706 | 3,079,269 | 4,002,323 | 1,388,442 | 772,342 | 929,897 |

Source: National Bureau of Statistics of China, 2001-2012. (USD 10,000).

fifth-largest FDI inflow source. In 2012, Taiwan invested in China amounted to USD 2.8 billion. Furthermore, Table 1 also indicated that Germany, United Kingdom, France, United States and Canada also in the top-ten list.

## The 1991 tax reform on FDI in China

China's open door policy, which was adopted in 1979, initiated long-term socioeconomic change after 30 years of economic stagnation. With it came the flow of FDI during the early 1980s, which was followed by the proliferation of income tax laws, including the Income Tax Law Concerning Joint Ventures with Chinese and Foreign Investment (the 1980 tax law), which was designed to govern equity joint ventures, and the Income Tax Law Concerning Foreign Enterprises (the 1981 tax law), which concerned contractual joint ventures and wholly foreign-owned enterprises. Throughout the 1980s, these two laws imposed various tax rates and incentives on these three types of FDI (Cho et al., 1998).

The 1991 tax reform, which lowered the marginal tax rate from 40 to 30% and expanded the range of tax preference, resulted in positive changes in foreign investment flows between China and its competitors. China's Income Tax Law for Foreign Investment Enterprises included many tax incentives, such as a 5-year tax holiday, 40% income tax refund for profits from reinvesting in China for a minimum of 5 years, 50% income tax refund for over 70% of export-oriented FIEs in any year, and the designation of investment incentive zones with a tax rate of 15 or 24%, which was less than the statutory rate (30%), and a local surtax (10%). In addition, China designated special economic zones *with* the lowest tax rate (15%) and more tax incentives, and they were thus ranked as a highly favored tax group. Furthermore, coastal open cities were designated with a concessionary (after the tax-holiday) tax rate (24%), and they were accordingly ranked as a moderately favored tax group.

## The 2008 tax reform on FDI in China

Before 2008, foreign-funded companies in China were taxed at a relatively low rate, and a series of preferential policies were implemented to encourage FDI in China. Most foreign-invested enterprises were taxed at a rate (15% or 24%) that was almost 10% less than that for domestic enterprises (33%). On March 16, 2007, China passed the new Enterprise Income Tax (EIT) Law (the 2008 tax law), which will come into effect on January 1, 2008. This was the first law in China's history that imposed an income tax on all *types of enterprises,* and it replaced the Foreign Invested Enterprises (FIE) Income Tax Law (which applied to FDI enterprises) and Interim EIT Regulations (which applied to Chinese-owned enterprises). The 2008 tax law unified the income tax system imposed on foreign and domestic enterprises in China, and it provided a single statutory rate of 25% on business profit. The legislation integrated the taxation of local and foreign firms by consolidating the domestic and foreign EIT laws.

The 2008 tax law removed various tax incentives for foreign investors establishing factories in China *to manufacture* exportable goods. The 2008 tax law was anticipated to have a profound impact on foreign-based investors who had already established manufacturing operations in China under the old tax system that favored the production of exportable goods. However, these changes also offered opportunities for technology or service companies to expand their operations in China by providing new tax incentives and domestic market opportunities.

***Taiwanese enterprises investments in China***

Taiwanese investment in China has promoted China's economic development and Taiwan's industrial upgrade. Taiwanese enterprises were the pioneers of FDI in China, and they occupy a key economic position in the country. During the 1980s, they established labor-intensive industries in China's four economic development zones (Shenzhen, Zhuhai, Xiamen, and Shantou). In the early 1990s, the opening-up policy was progressively implemented northward to Shanghai, and subsequently in more cities along the Yangtze River, as well as in coastal areas and border regions. Consequently, Taiwanese FDI enterprises moved northward and shifted from labor-intensive industries to technology-intensive and capital-intensive industries. According to the Investment Commission of the MOEA statistical data show that in 1991, the Taiwan government approved 237 investment projects in China (valued at USD 174 million). Subsequently, the number of investments increased rapidly, and 40,762 projects were approved *up to 2013* (valued at USD 133.7 billion). TDI in China accounted for more than 60% of total TDI. The amount of direct and indirect investments in China between 1993 and 2012, the Taiwanese government approved USD 27,477 million direct investment and USD 80,831 million indirect investments in China. This shows that approximately 75% of Taiwanese enterprises invested China indirectly.

Between 1952 and 2013, *the TDI* was primarily located in China's coastal areas, including Jiangsu Province (32.6%), Guangdong Province (20.3%), and Shanghai (15.61%). By contrast, considerably fewer TDI was located in China's western regions, including Sichuan Province (2.2%) and Chongqing (1.53%). The remaining TDI was located in the western area of Guangxi Zhuang Autonomous Region, Northwestern China, Guizhou Province, Yunnan Province, and Tibet Autonomous Region, accounting for less than 1% of TDI. To balance the disparity between developments in China's eastern and western regions, the 2008 tax law offering tax concessions to encourage FDI in Western China. The table also shows that Taiwanese FDI enterprises in the coastal cities in Eastern China[3] accounted for 71.58% of all approved investments, primarily because of geographic, transportation infrastructure, and climate factors in that region. In addition, investments in Northern[4] and Central China[5] respectively accounted for 5.01 and 22.92% of all approved investments.

At the end of 2013, the top three industries for TDI in China were electronic components manufacturer (19.08%), computers, electronics, and optical products manufacturer (13.74%) and electrical equipment manufacturer (7.32%). These industries collectively accounted for 40.14% of TDI in China.

[3] This includes the six provinces and one municipality: Shandong, Zhejiang, Anhui, Fujian, Jiangxi, Jiangsu and Shanghai.
[4] This includes Beijing, Tianjin, Hebei, Shanxi and Inner Mongolia.
[5] The region includes Henan, Hubei, Hunan, Guangdong and Hainan.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### Tax incentives for FDI

Before 1979, FDI was not allowed in China. In 1979, China opened its economy to foreign investors, and FDI in China grew to USD 133 billion by the end of 1995. In the previous 15 years, China has actively opened its regional markets to foreign businesses, and progressively opened inland areas to foreign trade. Consequently, substantial changes have been implemented regarding the size, source, and type of investment for introducing foreign capital and technology. Because of China's foreign investment policy for coastal areas, foreign businesses have invested approximately four times more in coastal provinces than they have in inland provinces. Furthermore, FDI inflow to China increased considerably after China's *entry* into the World Trade Organization in 2001. At the end of 2010, the cumulative FDI inflow to China peaked at USD 1,047 billion. Since 1979, China has formulated a series of tax incentives, including tax exemptions and lower tax rates, through tax laws for foreign enterprises. These laws were drafted in accordance with the principle of minimum tax burden and maximum preferential tax treatment, and to further open China's markets to foreign trade. These tax incentives are industry-specific, location-specific, and enterprise-specific. The tax incentives include partial tax concessions, such as reduced tax rates, tax holidays, tax refunds, depreciation, and loss carry backs and carry forwards, with a particular focus on enterprise income tax.

Previous studies have shown that most developing countries use tax incentives to attract FDI (Hadari, 1990; Usher, 1977). However, previous studies have yielded conflicting results regarding the effectiveness of using tax incentives to attract FDI. One view is that Chinese tax policies have had a decisive influence on foreign investment in China. Between 1979 and 1995, the coastal regions, which were given more tax preferences, attracted approximately 83% of foreign investment (compared which only 17% for the inland regions). Policies offering greater tax preferences in the coastal regions are a critical factor in the recent rapid absorption of FDI in those regions. Specifically, if foreign enterprises investing in China intended to increase their after-tax returns, increased FDI would be anticipated in the special tax incentive zones that offer concessionary rates (15 or 24%), compared with that in other areas where FDI is subject to higher statutory tax rates. Attitudinal and empirical studies on the effect of tax incentives on FDI have been inconclusive. Some studies (Fortune, 1977; Root and Ahmed, 1978; Hartman, 1984; Boskin and Gale, 1986; Papke, 1987; Young, 1988; Slemrod, 1990; Grubert and Mutti, 1991; He and Guisinger, 1993; Swenson, 1994;

Hines, 1996) have shown that tax incentives are a critical factor for attracting FDI and for making regional investment decisions; however, other studies (Forsyth, 1971; Carlton, 1983; Lim, 1983; Yelpaala, 1984; Moore et al., 1987; Ernst and Young International, 1994) have presented opposite conclusions. This inconsistency may partially be the result of the various tax measurements employed in these studies. Hartman (1984), Boskin and Gale (1986), and Young (1988) measured the influence of effective tax rates on FDI. Grubert and Mutti (1991) empirically showed that statutory tax rates are stronger determinants of income shifting than effective tax rates.

China provides an ideal opportunity for testing these assertions because of its relatively high FDI, as well as the various tax incentives that China has offered to attract FDI during the previous two decades. China's total FDI has grown annually at an average rate of 41%; specifically, it has increased from USD 1.26 billion in 1984 to USD 41.73 billion in 1996 (China State Statistical Bureau, 1983–1997). By 1993, China had become the second-largest recipient of FDI in the world (second to the United States), and the largest beneficiary in the developing world.

Tax incentives have been adopted worldwide to attract foreign direct investment (FDI) and its superior technology. Deng et al. (2012) develop a static computable general equilibrium (CGE) model of China to explore it. Their results suggest that abolishing differential tax system leads to weaker FDI spillovers in the short term. Park et al. (2013) examine how a tax regime, composed of a host country's corporate taxes and tariffs, affects inbound and outbound FDI. Their empirical results of this study intensify the opinion that tax burdens or incentives are deeply associated with inbound or outbound FDI, and imply that the adjusted outbound FDI gravity model is helpful to examine determinants of FDI or tax effects on FDI. Klemm and Parys (2012) prepared a new dataset of tax incentives in over 40 Latin American, Caribbean and African countries for the period 1985-2004. They found evidence that lower rates and longer tax holidays are effective in attracting FDI in Latin America and the Caribbean but not in Africa. An (2012) examined whether FIEs are responding to the 2008 tax reforms in China by reducing their investment in China. This study found that FIEs are reducing their investment in China and the magnitude of the response is larger for Hong Kong-Macau-Taiwan (HMT) investment enterprises. The evidence of An (2012) supports the claim that some Chinese investors engaged in "roundtripping" FDI.

Based on the aforementioned studies, China's tax policies do have impact on DFI. According to An (2012), the influence of tax incentives under 2008 tax reforms was a reducing effect. As one of the top-ten FDI inflow source, it is expected that Taiwanese direct investment (TDI) inflow to China would decrease after the new tax laws were enacted. Accordingly, this study proposed the following hypothesis:

H1: *Ceteris paribus*, after the 2008 tax laws were implemented in China, tax incentives for foreign investors were reduced, and TDI is decreased.

3.2 Tax Incentives on FDI Types.

In China, there are three types of FIE on FDI: equity joint ventures, contractual joint ventures, and wholly foreign-owned enterprises. Equity joint ventures are limited liability corporations (there is a minimal requirement of 25% foreign participation) in which Chinese and foreign partners jointly invest and manage the operations. Contractual joint ventures may or may not form as legal entities, and there is no minimal foreign participation requirement. In addition, the profits and losses are shared in accordance with the terms and conditions stipulated in the venture contract. Wholly foreign-owned enterprises may be established by foreign companies using their own capital, technology, and management. Moreover, foreign investors are responsible for all risks, gains, and losses. In 1991, the Income Tax Law for Foreign Investment Enterprises and Foreign Enterprises (the 1991 tax law) were simplified, and all types of FDI were granted identical tax benefits.

Under the 1991 tax law, all three types of FDI were treated identically, and they were subjected to the same tax rates and incentives. Two major differences exist in the tax provisions for the three types of FDI. First, the 1991 tax law replaced the progressive tax rates of the 1981 tax law with a flat income tax rate (30%) and local tax (3%) on all types of FDI. Consequently, the tax liability of large contractual joint ventures and wholly foreign-owned enterprises was reduced, whereas the small and medium enterprises, which previously paid lower taxes, were liable to pay a higher tax rate. Second, the 1991 tax law unified tax exemptions, reductions, and refunds for all types of FDI. Regarding the choice of investment type, foreign investors considered both tax and nontax factors. To compare the governing laws and regulations, legal liability, duration, approval and registration, capital requirements, profit/loss distribution, management and ownership control, and termination of business of the three types of FDI in China. Tung and Cho (2000) explored whether the various types of FDI were affected differently. They showed that China's tax reforms in 1979–1991 provided more tax incentives for equity joint ventures than they did for contractual joint ventures and wholly foreign-owned enterprises; moreover, most types of FDI in China were equity joint ventures. After the 1991 tax reform, the effect of tax incentives on the type of investment was insignificant.

**Tax incentives based on FDI zone**

Location theory purports that multinational enterprises (MNEs) maximize their FDI potential by selecting an FDI location that is close to their market or *to their source of* raw materials. When an investment location attracts

increasingly more FDI, it becomes an agglomerated location. Moreover, the agglomeration effect is typically associated with externalities. Operating in concentrated production or population areas facilitates the rapid spillover of knowledge and access to joint networks of suppliers and distributors. Consequently, firms can enhance their technology level to acquire economies of scale and scope. Investing in regions featuring substantial industrial clustering is likely to involve relatively lower costs than *in regions* with a dispersed manufacturing sector. Regarding the agglomeration effect, Krugman (1991) considered clustering as a form of economic activity resulting from historical contingencies. Because of contingencies, some locations became clustering sites for specific industries; for example, manufacturing firms that minimize their transportation costs can attain economies of scale. Thus, they typically select locations with aggregated industries.

Previous studies have shown that most developing countries use tax incentives to attract FDI (Hadari, 1990; Usher, 1977). However, previous studies have yielded conflicting results regarding the effectiveness of using tax incentives to attract FDI. Tung and Cho (2000) assessed whether preferential tax treatment was an effective method for attracting FDI to China, and whether it influenced the organizational structure of FDI enterprises. Consistent with previous research, their results indicate that concessionary tax rates and incentives were effective for attracting FDI into the designated special tax incentive zones in China. Consistent with Scholes and Wolfson (1992), they showed that the increased inflow of FDI into these zones was the result of concessionary tax rates enhancing the after-tax return on investments.

In China, from the early 1980s to the early 1990s, special tax incentive cities and zones emerged, spanning from the south to the north areas and from the coastal regions to the inner areas of China. All provinces and autonomous regions (except for Tibet) were opened to FDI. These cities and zones offered various tax concessions to foreign investors (Cho and Tung, 1998). The open door policy began in 1980 when China opened four special economic zones in comparatively less developed rural areas of Southern China. The local governments of these zones were given autonomy over their economic development and, a 15% tax rate has been available to foreign investors operating in these areas since 1984. The success of the special economic zones led to the further opening up of China to foreign investment. In 1984, 14 Coastal Open Cities were designated to attract foreign capital and technology to improve local industries.

In 1992, the Chinese government opened up 18 provincial capitals, six cities along the Yangtze River, and 13 border open cities. Hence, the development of special tax incentive zones was further extended to inner parts and border regions of China. Simultaneously, the government undertook various measures to facilitate the inflow of FDI, such as developing an institutional infrastructure and adopting laws to regulate the legislative, administrative, and judicial operations of government. To attract FDI into the special tax incentive zones, generous tax incentives were offered to investors. Specifically, FIEs operating in the zones were granted concessionary tax rates of either 15 or 24%, which was comparatively lower than the statutory tax rates (33%) levied on FIEs outside of these areas.

The theory of location advantages considers the dispersion of resources and markets, international transport, trade barriers, infrastructure, cultural and psychological gaps, and political factors. Manufacturers typically select their preferred regions based on their characteristics. Crow (1979) indicated that many countries could achieve regional industrial development by offering additional incentives to attract business to designated regions. Scholes and Wolfson (1989, 1992) also indicated that tax rules jointly influence investment decisions and organizational form. If tax factors are critical investment decisions, China's concessionary income tax rates (15 or 24%) would be adopted in the different special tax incentive zones. Dunning (1988) stressed the importance of location selection for FDI, and indicated that the factors requiring consideration are ownership structure, investment location, and the degree of internationalization. Klimberg and Ratick (2008) indicated that a suitable investment location should be determined based on the location configuration, optimal applicability, and equipment performance. Pan and Chi (1999) showed that FDI MNEs in Beijing, Shanghai, Tianjin, and other coastal metropolitan cities exhibited optimal production efficiency. Li et al. (2003) reported that the performance and invest- ment location of enterprises did not differ significantly between coastal and inland cities.

Buettner and Ruf (2007) investigated the impact of taxation on the decision of German multinationals to hold or establish a subsidiary in other European countries or abroad. Taking account of unobserved local characteristics as well as firm-specific preferences for potential locations, their findings confirmed that there are significant effects of tax incentives on cross-border location decisions. Azemar et al. (2007) measured the effects of taxation on FDI and estimated the impact of tax sparing provisions on Japanese outbound FDI between 1989 and 2000. They found that a positive relation exists between the tax sparing provision and the location of Japanese FDI. Parys and James (2010) investigated to what extent tax incentives are effective in attracting investment in Sub-Saharan Africa and found no robust positive relation between tax holidays and investment in the tax incentives zone. Guo (2010) examined the relation between taxes and the distribution of FDI in China. The results show that taxes have a significantly negative effect on the location. Foster (2011) showed that FDI in China was markedly skewed in favor of the richest east region, whereas the western region was the weakest attractor.

Chen and Yeh (2012) examined variations in the preferences of location antecedents and the rate of FDI by MNEs in relation to increased FDI experience and evolved strategic intentions.

Taiwanese FDI enterprises prefer certain economic regions. The eastern region of China, which has the longest coastline, is nearest to Taiwan, and it features extensive internal and external links, convenient transportation, and advanced communications infrastructure, all of which attract foreign companies. Currently, Shanghai Pudong New District, which was expanded into an open economic zone, is the largest base of Chinese industrial technology, and it is a crucial international port city in the Western Pacific region. Therefore, most Taiwanese FDI is concentrated in Eastern China, accounting for 71.58% of all investments. With increasingly more foreign companies entering Eastern China, the infrastructure has advanced, and the quality of workers and employees has improved. However, the labor and land tax costs have increased accordingly. The 2007 *Report on the Operating Conditions of China Investment Undertakings* showed that the strongest incentive for Taiwanese FDI in China is cheap labor. Moreover, increasing labor costs has a negative impact on the business performance.

Regarding the 2008 tax law, China's central government revised the List of Industries for Foreign Investment in Mid-west China to develop the country's eastern regions, which gradually became critical bases for MNEs investing in China. With China's economic development, the costs of land, labor, and other factors in Eastern China have increased recently. Certain industries became less competitive, and the declining economic efficiency caused companies operating in Eastern China to become inefficient.

To minimize the gap between the eastern and western regions of mainland China, China's government implemented the China Western Development Program to relocate some manufacturing industry chains operating near China's coastal region to the western region, thereby attracting *Notes Book (NB)* industry clusters to Chongqing and Chengdu, Sichuan Province, to establish factories. Chongqing and Chengdu are competing aggressively to become leaders of the NB industry chain through internal competition for resources, and external competition for positive investment opportunities. In addition to the environmental advantages of the investment location, new railroad infrastructure can significantly reduce the time and cost of transportation. Successful investment in Chongqing, Taiwanese FDI enterprises to the free trade zone investment enjoys state subsidies of 10 years and 15% income tax for export tax rebates.

To continue encouraging economic developments in Western China, the Ministry of Finance, General Administration of Customs, and State Administration of Taxation jointly issued the 58th Notice on the Indepth Implementation of the Western Development Strategy on Tax Policy in July 2011. The 58th Notice extended the tax preferential policies of the western development period from January 1, 2011 to December 31, 2020. The 58th Notice made provisions for enterprises operating in preferred industries in the western area of China, as well as provisions encouraging industrial projects for the main business in China. After companies have been audited by tax authorities, they are required to pay a reduced corporate income tax rate of 15% in Taiwan. Thus, since 2008, China's tax concessions have favored businesses operating in the country's western regions, and they have also encouraged Taiwanese FDI in China's northwestern and southwestern regions. Hence, this study expected that the implementation of the 2008 tax law will increase FDI in Western China. Accordingly, we proposed the following hypothesis:

H2: *Ceteris paribus*, after the 2008 tax law implementation, the TDI enterprises in Western China have the higher TDI.

**Tax incentives based on the FDI industry**

The 1991 tax law provides many tax incentives for FDI enterprises in China; such as a 50% reduction in the tax rate for income from exportable products or high-technology enterprises, 40% income tax refund for reinvesting in China. After implementing the 2008 tax law, the principle of providing favorable tax concessions for location-specific investment has shifted to favor more for industry- specific investment. Thus, high-technology enterprises were taxed at a rate of 15% instead of the standard rate of 25%. However, new high-technology enterprises were required to meet stringent requirements, including the core intellectual property, research and development expenditure exceeding a specific threshold, and reach the required proportion of scientific and technical personnel. High-tech enterprises can enjoy other tax breaks including 50% additional deduction or amortization of development costs, small and medium high-tech enterprises can be offset part of the taxable investments and accelerated or shorten the depreciation of fixed assets. Hence, Taiwan businessmen invest in high-tech industry of emerging technologies to China, higher the amount of their investment. The hypothesis is proposed as follows:

H3: *Ceteris paribus*, after the 2008 tax law implementation, the TDI enterprises belonging to high-tech and new technology industries have higher TDI.

**Non-tax incentives factors**

**Types and holding shares of FDI flow**

Taiwanese FDI enterprises typically invest in China either

directly or indirectly. Direct investments include remittance of investments to subsidiaries in China either through companies operating in a third region or via direct remittance. Indirect investments are made either through investment companies or through existing companies registered in a third region, which accounted for one-third of TDI in China. Currently, most Taiwanese businesses invest in China through investment companies operating in Hong Kong and Macau. Moreover, because the tax rates in Hong Kong and Macau are relatively low, large shareholders can increase their profits through tax savings. Furthermore, in 2008, Taiwan's tax authorities drafted an amendment of Article 24 of the Relations between Peoples of the Taiwan Area and the Mainland China Area. The article states that proceeds (i.e., dividend revenues) received by Taiwanese FDI enterprises in China that have been subjected to a 10% tax are considered an income item that can be deducted from their taxable income when the dividend is paid to Taiwan.

Because most Taiwanese FDI enterprises operating in China involve indirect investments, Taiwanese enterprises benefit from paying less tax. Article 24 also states that most of Taiwanese companies using investment companies (or subsidiaries) operating in a third region to invest in enterprises in mainland China, in accordance with Taiwan's Income Tax Law, declare the investment proceeds *from* third-region companies derived from investing in companies in mainland China as investment returns, *because this income is considered as taxable income*. However, the portion of returns on investments in third-region areas (or in mainland China) that have already been subjected to income tax can be deducted from their tax payable in Taiwan. Draft amendments to the general relaxation of investment Taiwanese businessmen on the mainland China taxation provisions to reduce tax duplication, thereby encouraging companies to return their dividends to their parent company in Taiwan. Therefore, this study controlled the effect of the type of investment on FDI behavior.

**Rates of the holding shares**

Taiwanese parent companies' holding shares in subsidiaries represented various decision-making power which will affect the TDI decisions in China. Regardless of whether Taiwanese enterprises invest directly or indirectly in subsidiaries in China, up to 25% of shares held by parent companies are considered gains (or losses) on equity investments. Although Taiwanese parent companies can repatriate their investment income, because no tax agreement exists between Taiwan and China, repatriated profits are subject to a 10% withholding tax. According to the current tax conventions of the Organization for Economic Cooperation and Development, if Taiwan signed a tax agreement with mainland China, the withholding tax rate on repatriated investment profits would be reduced to 5%, provided that the Taiwanese shareholders held more than 25% of shares. Because of the tax incentives for holding more than 25% of shares, we controlled the tax incentives for stock ownership to control the effect of holding shares on Taiwanese FDI in China.

**Macroeconomic factors**

Numerous empirical studies have discussed the determinants of regional FDI distribution in China. Cheng and Kwan (2000) examined data from 29 provinces from 1985 to 1995, and they observed the agglomeration effects from the rate of foreign capital stocks. They showed that larger markets, perfect infrastructures, preferential policies, and lower wages exerted a positive effect on FDI. In addition, *they* reported that although education exerts a positive influence on FDI, the effect was non-significant. Coughlin and Segev (2000) used data of regional provinces in China from 1990 to 1997 to examine the mode of the determinants of FDI in China. They showed that market size, labor productivity, and location (i.e., coastal versus inland) exerted a positive effect on FDI. Conversely, higher wages and illiteracy rates negatively influenced FDI. Wei and Liu (1999) reported that lower wage rates and higher GDP growth rates have a positive effect on attracting FDI. Furthermore, high levels of international trade have a positive effect on FDI. *Ceteris paribus*, the higher the research and development manpower, the more attractive a region would be to foreign investors. Moreover, a positive relationship exists among infrastructure, preferential policies, and FDI. In addition, areas that are geographically closer to the main sources of FDI have a positive effect on pledged FDI.

Sun et al. (2002) examined the changes in importance of FDI determinants over time. Among the various determinants for attracting FDI, wages exhibited a positive relationship with FDI before 1991, although the relationship was negative following 1991. In addition, labor quality and infrastructure were crucial determinants of FDI distribution. Buettner and Ruf (2007) investigated the impact of taxation on the decision of location for investments. The results confirmed a significant effect of market size on cross-border location decisions.

Liu et al. (2012) analyzed the relative importance of the potential determinants of FDI inflow across the coastal, northeastern, central, and western regions in China between 2001 and 2009. Specifically, they examined market size, labor cost, labor quality, physical infrastructure development, telecommunications, and the degree of economic openness and government incentives to attract FDI. This study used the employment rate, economic growth rate, inflation price index, and market size to control the effect of macroeconomic factors on FDI.

Naveed et al. (2013) found that economic growth was the most dominating factors of FDI. Khan et al. (2014) analyzed the relationship between macroeconomic factors (e.g. economic growth, consumer consumption index) and FDI in South Asia. Similar to Naveed et al. (2013), Khan et al. (2014) also found that economic growth is an important factor.

## RESEARCH DESIGN

### Regression model

This study investigated the impact of tax incentives on TDI in China by controlling the effect of macroeconomic factors on TDI. The multiple regression equation is expressed as follows:

$$TDI_{it} = \alpha_0 + \alpha_1 DY08_{it} + \alpha_2 DY08 \times AREA_{it} + \alpha_3 DY08 \times ELEC_{it} + \alpha_4 AREA_{it} + \alpha_5 ELEC_{it} + \alpha_6 TYPE_{it} + \alpha_7 HOLD_{it} + \alpha_8 INVREV_{i,t-1} + \alpha_9 EMPLOY_t + \alpha_{10} GDP_t + \alpha_{11} CPI_t + \alpha_{12} INDEX_t + \varepsilon_{it} \quad (1)$$

### Measurement variables

### Dependent variables

$TDI_{it}$ was measured using the natural logarithm of the value (in NTD 1,000) of Taiwanese FDI in China's subsidiaries of firm *i* at year *t*.

### Hypothesis variables

$DY08_{it}$ is a dummy variable for the year; if the year was between 2008 and 2012, then *DY08* = 1 (otherwise, *DY08* = 0). It is not uncommon to use Year dummy to capture the effect of tax reform on business decisions in related articles. For instance, previous studies adopted year-dummy variable to explore the effect of USA TRA 1986 tax reform on dividend policy (Burman et al.1994; Papaioannou and Savarese, 1994; Schulman et al., 1996; Casey et al., 1999; Casey and Dickens, 2000) and domestic income shifting behavior (Shevlin et al. 2012). Wang and Chen (2004) used the dummy-year variable to examine the implementation of 1998 Taiwan imputation tax system on cash dividend payout ratios and capital structure (Wang and Chen, 2007). Tung and Cho (2000, 2001) also employed the year dummy variable to examine whether concessionary tax rates and tax incentives under 1991 China tax reforms attract FDI into certain designated areas. This study anticipated that a negative correlation would exist between TDI and the 2008 tax law enacted.

$AREA_{it}$ is a dummy variable denoting location; if a Taiwanese subsidiary firm *i* was located in Western China, then AREA = 1 (otherwise, AREA = 0). We anticipated that preferential tax treatment was given to enterprises operating in Western China *when* the 2008 tax law was enacted. We hypothesized that the correlation between *TDI* and *AREA* would be positive.

$ELEC_{it}$ is a dummy variable representing specific industries; if a Taiwanese subsidiary firm *i* invested in a high-technology electronics industry, then *ELEC* = 1, (otherwise, *ELEC* = 0). We anticipated that the preferential tax rate of 15% was applied to FDI enterprises operating in high-technology electronics industries after the new tax laws were enacted. We hypothesized that the correlation between *TDI* and *ELEC* would be positive.

### Control variables

$TYPE_{it}$ is a dummy variable denoting the investment type. If a Taiwanese parent firm *made either through investment companies or through existing companies registered in a third region* to indirectly invest China subsidiary *i*, then *TYPE* = 1 (otherwise, *TYPE* = 0; i.e., a direct investment). We anticipated that preferential tax treatment was given for indirect investments, and we hypothesized that the correlation between *TDI* and *TYPE* would be positive.

$HOLD_{it}$ is a dummy variable for the rate of holding shares; if a subsidiary firm *i* received more than 25% of its investments from a Taiwanese parent firm, then *HOLD* = 1 (otherwise, *HOLD* = 0). We anticipated that less tax was withheld when invested holding shares exceeded 25%. We hypothesized that the correlation between *TDI* and *TYPE* would be positive.

$INVREV_{i,t-1}$ denotes the preceding period ($t-1$) investment revenue for firm *i* in year *t* in China. Most subsidiaries retain the profits as savings in the host country, and they do not return it back to their parent firm. We controlled this effect on *TDI*, and we anticipated that the correlation between *TDI* and *INVREV* would be positive.

$EMPLOY_t$ represents the rate of employment at year *t* in China; we expect there is positive correlation between *TDI* and *EMPLOY*.

$GDP_t$ denotes the real GDP per person at year *t* in China. China's GDP growth has been relatively high in these years; however, this study controls the impact of *GDP* on *TDI*.

$CPI_t$ denotes the consumer price index (CPI) at year *t* in China; we anticipated that the correlation between *TDI* and *CPI* would be positive.

$INDEX_t$ is the weighted stock market index of the Shanghai Stock Exchange at year *t*. We anticipated that the correlation between *TDI* and *CPI* would be positive.

### Research sample data

Because *of the unavailability of* financial statements of Taiwanese FDI enterprises in China, we used data from a

**Table 2.** Taiwan FDI Amount in China.

| Panel A: Types of investment | | | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **Mean** | **Minimum** | **Q1** | **Median** | **Q3** | **Maximum** |
| direct remittance (n=617) | 1025016.72 | 1892 | 85300 | 252736 | 1054245 | 19087152 |
| third-region remittance (n=714) | 2134082.91 | 34 | 127709 | 531296 | 1753314 | 27359037 |
| through investment companies (n=25,688) | 2107739.72 | 40 | 175985 | 542832 | 1624459.50 | 73505945 |
| through existing companies (n=12,400) | 3027295.64 | 656 | 197834 | 665734 | 1988625 | 55000000 |

| Panel B: Areas of investment | | | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **Mean** | **Minimum** | **Q1** | **Median** | **Q3** | **Maximum** |
| East China Area (n=24,346) | 2361558.49 | 136 | 188594 | 605535 | 1859995 | 73505945 |
| South China Area (n=10,917) | 2048339.20 | 40 | 157310 | 445079 | 1341520 | 73505945 |
| Central China Area (n=797) | 3898000.79 | 6978 | 434199 | 989769 | 2885863 | 73505945 |
| North China Area (n=2,789) | 2104046.55 | 527 | 153836 | 536979 | 1321990 | 73505945 |
| Northwest Area (n=310) | 3477419.68 | 4278 | 205934 | 852459 | 1929755 | 27359037 |
| Southwest Area (n=913) | 5105919.41 | 6990 | 476742 | 1205485 | 5339966 | 73505945 |
| Northeast Area (n=610) | 3458906.80 | 9731 | 435979 | 1205485 | 1783951 | 73505945 |

Firm-Year/NTD1,000.

*TEJ* database (specifically, parent company financial information, location, FDI type, rate of holding shares, and value of investments from parent companies investing in China). Initially, we obtained a sample comprising 43,138 observations samples from the *TEJ*. After removing 2,418 missing data, this study analyzed the remaining 40,720 firm-year observations. Subsequently, we deleted 23,523 observations *for* outliers and missing data due to the use of one-period-lagged values. The final samples of 17,197 observations were used in the correlation and regression analyses.

## EMPIRICAL RESULTS

### Descriptive statistics and *correlation coefficients analyses*

Table 2 (Panel A) reports investment types for TDI in China. Investment types include direct- and indirect-investment. Direct investments include remittance of investments to subsidiaries in China either through via direct remittance (direct remittance) or via companies operating in a third region (third-region remittance). Indirect investments are made either through investment companies (through investment companies) or via through existing companies registered in a third region (through existing companies), which accounted for one-third of TDI in China. Panel A shows that 671 firms direct remittance invested in China subsidiaries between 2001 to 2012. The mean of these investments is NTD 1,025 million. There are 714 China subsidiaries firms received remittance investments from a third-region company, and the mean is NTD 2,134 million. There are 25,688 firms used investment companies to invest indirectly in subsidiaries, which was the most commonly used approach, and the mean is NTD 2,108 million. Panel A also indicates that 12,400 firms used existing companies in third-region to invest indirectly in China subsidiaries, and the mean is NTD 3,027 million. Based on the TEJ database, we divided the investment areas into eight areas (East China, South China, Central China, North China, Northwest, Southwest, Northeast, and other regions). **Error! Reference source not found.**2 (Panel B) shows that between 2001 and 2012, most TDI in China was primarily in the coastal regions of East China Area, with 24,346 firm-year observations, accounting for 60% of the entire sample. The mean of these investments is NTD 2,362 million. The number of observations of South China Area is 10,917, and the mean is NTD 2,048 million. The number of observation of North China Area is 2,789 and the mean is NTD 2,104 million. After implementing the 2008 tax law, China government encouraged FDI inflow into Western China to balance the disparity in economic development between China's eastern and western regions. The TDI accounted for only 310 firm-year observations for Northwest Area, and the mean investments for this region is NTD 3,477 million. Panel B shows that there were 913 firm-year observations for Southwest Area, but the mean investments is NTD 5,106 million. The data in Table 2 show that TDI inflow to China's western region increased slowly over time, because the opened up years are shorter and the costs of property, equipment are larger, the returns on investment are stagnant. Table 3 reports the descriptive statistics of research variables. The Panel A of Table 3 shows the mean investment (*TDI*) is NTD 2,852 million. In addition, the analysis shows that regarding the location of

foreign-invested firms (*AREA*), only 3% were located in



**Table 3.** Regression variables descriptive statistics result.

| **Panel A: Total Sample (n=17,197)** | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **Mean** | **Minimum** | **Q1** | **Median** | **Q3** | **Maximum** |
| Investment Amount | 2852227 | 350 | 220449 | 709680 | 2269071 | 73505945 |
| *TDI* | 13.44 | 5.86 | 12.30 | 13.47 | 14.63 | 18.11 |
| *DY08* | 0.57 | 0 | 0 | 1 | 1 | 1 |
| *AREA* | 0.03 | 0 | 0 | 0 | 0 | 1 |
| *ELEC* | 0.60 | 0 | 0 | 1 | 1 | 1 |
| *TYPE* | 0.94 | 0 | 1 | 1 | 1 | 1 |
| *HOLD* | 0.98 | 0 | 1 | 1 | 1 | 1 |
| *INVREV (t-1)* | 9.65 | 0 | 8.31 | 9.78 | 11.119794 | 16.9622158 |
| *EMPLOY* | 95.87 | 95.7 | 95.80 | 95.90 | 95.90 | 96.40 |
| *GDP* | 3476.60 | 1038 | 2064 | 3404 | 5434 | 6076 |
| *CPI* | 2.96 | -0.4 | 1.9 | 2.5 | 4 | 7 |
| *INDEX* | 2482.26 | 1161.06 | 1820.81 | 2269.13 | 2808 | 5262 |

| **Panel B: Pre-2008 (n=7,343)** | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **Mean** | **Minimum** | **Q1** | **Median** | **Q3** | **Maximum** |
| Investment Amount | 1571813 | 350 | 152197 | 494176 | 1322017 | 30522129 |
| *TDI* | 13.03 | 5.86 | 11.93 | 13.11 | 14.09 | 17.23 |
| *DY08* | 0.03 | 0 | 0 | 0 | 0 | 1 |
| *AREA* | 0.57 | 0 | 0 | 1 | 1 | 1 |
| *ELEC* | 0.95 | 0 | 1 | 1 | 1 | 1 |
| *TYPE* | 0.99 | 0 | 1 | 1 | 1 | 1 |
| *HOLD* | 9.51 | 0 | 8.2607514 | 9.6524588 | 10.94 | 16.55 |
| *EMPLOY* | 95.91 | 95.7 | 95.8 | 95.9 | 96 | 96.4 |
| *GDP* | 1817 | 1038 | 1270 | 1726 | 2064 | 2645 |
| *CPI* | 3 | -0.4 | 1.6 | 2.8 | 3.20 | 6.50 |
| *INDEX* | 2488 | 1161.06 | 1266.5 | 1497.04 | 2675.47 | 5261.56 |

| **Panel C: Post-2008 (n=9,854)** | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **Mean** | **Minimum** | **Q1** | **Median** | **Q3** | **Maximum** |
| Investment Amount | 3806366 | 527 | 294308 | 938022 | 2985448 | 73505945 |
| *TDI* | 13.75 | 6.27 | 12.59 | 13.75 | 14.91 | 18.11 |
| *DY08* | 0.04 | 0 | 0 | 0 | 0 | 1 |
| *AREA* | 0.61 | 0 | 0 | 1 | 1 | 1 |
| *ELEC* | 0.93 | 0 | 1 | 1 | 1 | 1 |
| *TYPE* | 0.98 | 0 | 1 | 1 | 1 | 1 |
| *HOLD* | 9.76 | 0 | 8.3416486 | 9.8845595 | 11.2458431 | 16.9622158 |
| *EMPLOY* | 95.85 | 95.70 | 95.80 | 95.90 | 95.90 | 95.90 |
| *GDP* | 4713 | 3404 | 3740 | 4423 | 5434 | 6076 |
| *CPI* | 2.98 | 1.20 | 1.90 | 2.50 | 4.10 | 4.60 |
| *INDEX* | 2478 | 1820.81 | 2199.42 | 2269.13 | 2808.08 | 3277.14 |

Variable definitions: *Investment Amount*it: this is measured by the investment amount of Taiwan FDI in China's subsidiaries firm *i* at year *t* in NTD. *TDI*it: this is measured by the natural logarithm of investment amount of Taiwan FDI in China's subsidiaries firm *i* at year *t* in NTD. *DY08*it: this is the dummy variable of year, if the year is 2008 to 2012 then *DY08*=1; o.w. then *DY08*=0. *AREA*it: this is the dummy variable of location, if the China's subsidiaries firm *i* invested in location of western China then *AREA*=1; o.w. then *AREA*=0.*ELEC*it: it is the dummy variable of industry, if the China's subsidiaries firm *i* invested in high-tech electronic industries then *ELEC*=1; o.w. then *ELEC*=0.*TYPE*it: it is the dummy variable of investing type, if a Taiwanese parent firm made either through investment companies or through existing companies registered in a third region to indirectly invest China subsidiary i, then TYPE = 1 (otherwise, TYPE = 0; i.e., a direct investment).*HOLD*it: it is the dummy variable of holding share rate, if the China's subsidiaries firm i is invested by Taiwan parent firm more than 25% then *HOLD*=1; o.w. then *HOLD*=0.*INVREVi*,t-1: it is the last period (*t-1*) investment revenue for firm *i* at year *t* in China. *EMPLOY*t: it is the rate of employment at year *t*

in China. *GDP*t : it is the real GDP per person at year t in China. *CPI*t : it is the Consumer Price Index at year *t* in China. *INDEX*t : it is the weighted stock index of Shanghai at year *t* in China.



Western China, whereas almost 50% of Taiwanese FDI enterprises invested in high-technology electronics industries (*ELEC*). Regarding the preferred investment type, 94% of Taiwanese FDI enterprises invested indirectly in China (*TYPE*), with 98% of parents' firms holding more than 25% of subsidiaries shares (*HOLD*). Regarding the macroeconomic factors, both the mean and median rate of employment (*EMPLOY*) in China is 96%. In addition, the mean (median) of GDP per person (*GDP*) and CPI is RMB 3,477 (RMB 3,404) and 2.96% (2.5%), respectively.

Finally, the mean (median) of index of the capital (securities) market is 2,482 (2,269). We divided the sample into the following two groups based on when the 2008 tax law was enacted: the pre-enactment group (2001–2007; *DY08* = 0); and the post-enactment group (2008–2012; *DY08* = 1). Table 3 (Panels B and C) show that the mean investment (*TDI*) of the pre-enactment group is NTD 1,572 million, whereas that of the post-enactment group is NTD 3,806 million. It appears that the mean TDI increased by 1.42 times after the 2008 tax law was enacted.

The statistical analysis for the research variables are detailed as follows. The mean *AREA* increased from 3 to 4%, and only 1% of TDI were located in Western China after the 2008 tax law was enacted. The mean *ELEC* increased from 57 to 61%, and only 4% TDI were in the high-technology industries after the enactment of the new tax law. Table 4 presented both Pearson and Spearman correlation coefficient matrixes. Based on the Pearson correlation coefficient matrix, the correlation coefficient is 0.86 between DY08 and GDP. Unexpectedly, the enactment of 2008 tax reform in China (DY08) is positively correlated with TDI. Furthermore, DY08, TDI are positively correlated with DY08×AREA and DY08×ELEC, as expected. The results indicated that the 2008 tax law did provide location-specific and industry-specific tax incentives for FDI. The inter-correlation among the independent variables suggests that a multivariate analysis is further required to consider the effect of enactment of 2008 tax reform on TDI decisions by simultaneously incorporating all the independent variables. The Spearman correlation coefficients matrix provides similar results. The Variance Inflation Factor (VIF) test shows that the values are all below 4, which implies they may not exit serious multicollinearity problems.

## Regression analyses

Before 2008, foreign-funded companies in China were taxed at a relatively low rate, and a series of preferential policies were implemented to encourage FDI inflow to China. Most foreign-invested enterprises were taxed at almost 10% less than that applied to domestic enterprises. On March 16, 2007, the National People's Congress of January 1, 2008). This was the first law in China's history imposing an income tax on all forms of enterprise, and it replaced the FIE Income Tax Law and Interim EIT Regulations. The EIT unified the income tax system imposed on foreign and domestic enterprises operating in China, and it provided a single statutory rate of 25% on business profit. The 2008 tax law removed various tax incentives for foreign investors establishing factories in China for producing exportable goods. The 2008 tax law was anticipated to have a profound impact on foreign-based investors who had already established manufacturing operations in China under the old tax system that favored the production of exportable goods. However, these changes also offered opportunities for technology industries to expand their operations, and for factories to relocate to Western China by providing new tax incentives and domestic market opportunities.

Table 5 shows the result of the Taiwanese FDI (*TDI*) regression model. The coefficient of *DY08* is significantly negative, indicating that implementing the 2008 tax law, which reduced tax concessions for Taiwanese FDI and increased tax rates to 25%, resulted in a significant reduction in *TDI* ($t$ =-2.38, $p$ <0.0174); thus, H1 is supported. For the period after the new tax laws were enacted, the *DY08* × *AREA* regression coefficient is positive ($t$ = 1.15, $p$ = 0.2516), but lacks statistically significance, indicating that the *TDI* in Western China capitalized on the reduced tax rate of 15%, which was a 10% reduction (25%-15%=10%). Because *TDI* in Western China was only 3%, despite China's tax incentives encouraging *TDI* inflow to the western regions, the appeal of tax incentives for investing in this region was limited. Hence, although we observed an increase in *TDI*, the difference is not significant; thus, H2 is unsupported. Furthermore, for the period after the 2008 tax law was enacted, the *DY08* × *ELEC* regression coefficient is positively significant ($t$ = 7.90, $p$ < 0.0001), indicating that industry-specific tax incentives were preferable to location-specific tax incentives. Taiwanese FDI enterprises investing in high-technology electronic industries capitalized on the tax rate 15%, and *TDI* in high-technology electronics industries increased; thus, H3 is supported. This finding is consistent with the results reported by Liu et al. (2012).

Table 5 shows the variables for controlling the effect of nontax factors on *TDI.* The regression coefficient of *DAREA* (0.295) is statistically significant ($t$ = 2.47, $p$= 0.0136), indicating that Taiwanese FDI enterprises located in Western China (i.e., Northwestern and Southwestern China in this study) were offer greater tax incentives by China's government. Since 2008, China's tax concessions for developing the western region has provided enterprises this region belonged to the encouraged industry catalogue and located in the western area. There are provisions encouraging industrial project for the main

business in China; and its main business income total income exceeds 70% business that year, as well as the

**Table 4.** Correlation coefficients statistics result.

| Variables | *TDI* | *DY08* | *DY08 × AREA* | *DY08 × ELEC* | *AREA* | *ELEC* | *TYPE* | *HOLD* | *INVREV* | *EMPLOY* | *GDP* | *CPI* | *INDEX* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *TDI* | 1 | 0.203*** | 0.072*** | 0.120*** | 0.060*** | -0.056*** | 0.068*** | 0.045*** | 0.325*** | -0.037*** | 0.228*** | 0.104*** | 0.086*** |
| | | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (<.0001) |
| *DY08* | 0.199*** | 1 | 0.114*** | 0.636*** | 0.015* | 0.042*** | -0.046*** | -0.016** | 0.058*** | -0.250*** | 0.864*** | 0.011 | -0.007 |
| | (<.0001) | | (<.0001) | (<.0001) | (0.0575) | (<.0001) | (<.0001) | (0.0330) | (<.0001) | (<.0001) | (<.0001) | (0.1473) | (0.3397) |
| *DY08 × AREA* | 0.069*** | 0.114*** | 1 | 0.056*** | 0.780*** | -0.012 | -0.002 | -0.004 | 0.019** | -0.018** | 0.113*** | 0.007 | -0.006 |
| | (<.0001) | (<.0001) | | (<.0001) | (<.0001) | (0.1313) | (0.7904) | (0.6129) | (0.0124) | (0.0192) | (<.0001) | (0.3913) | (0.4188) |
| *DY08 × ELEC* | 0.117*** | 0.636*** | 0.056*** | 1 | -0.004 | 0.606*** | -0.019** | 0.006 | 0.069*** | -0.155*** | 0.555*** | 0.014* | -0.004 |
| | (<.0001) | (<.0001) | (<.0001) | | (0.5964) | (<.0001) | (0.0119) | (0.4651) | (<.0001) | (<.0001) | (<.0001) | (0.0787) | (0.6182) |
| *AREA* | 0.058*** | 0.0145* | 0.780*** | -0.004 | 1 | -0.038*** | -0.008 | -0.001 | -0.002 | 0.004 | 0.021*** | -0.002 | -0.013 |
| | (<.0001) | (0.0575) | (<.0001) | (0.5964) | | (<.0001) | (0.3059) | (0.8571) | (0.8034) | (0.5714) | (0.0052) | (0.7744) | (0.1085) |
| *ELEC* | -0.049*** | 0.043*** | -0.012 | 0.606*** | -0.04*** | 1 | 0.007 | 0.011 | 0.050*** | -0.027*** | 0.048*** | 0.025*** | 0.015* |
| | (<.0001) | (<.0001) | (0.1313) | (<.0001) | (<.0001) | | (0.3859) | (0.1537) | (<.0001) | (0.0004) | (<.0001) | (0.0011) | (0.0506) |
| *TYPE* | 0.063*** | -0.046*** | -0.002 | -0.019** | -0.008 | 0.007 | 1 | 0.009 | 0.027*** | -0.009 | -0.057*** | 0.008 | 0.017** |
| | (<.0001) | (<.0001) | (0.7904) | (0.0119) | (0.3059) | (0.3859) | | (0.2602) | (0.0006) | (0.2600) | (<.0001) | (0.3124) | (0.0288) |
| *HOLD* | 0.049*** | -0.016** | -0.004 | 0.006 | -0.001 | 0.011 | 0.009 | 1 | 0.004 | -0.005 | -0.015** | -0.001 | 0.002 |
| | (<.0001) | (0.0330) | (0.6129) | (0.4651) | (0.8571) | (0.1537) | (0.2602) | | (0.6163) | (0.5049) | (0.0442) | (0.8761) | (0.7538) |
| *INVREV* | 0.324*** | 0.056*** | 0.018** | 0.069*** | 0.001 | 0.052*** | 0.024*** | 0.002 | 1 | 0.011 | 0.062*** | 0.041*** | 0.043*** |
| | (<.0001) | (<.0001) | (0.0193) | (<.0001) | (0.9900) | (<.0001) | (0.0020) | (0.8325) | | (0.1509) | (<.0001) | (<.0001) | (<.0001) |
| *EMPLOY* | -0.004 | -0.201*** | -0.009 | -0.122*** | 0.006 | -0.007 | -0.009 | -0.003 | 0.018** | 1 | -0.041*** | 0.132*** | 0.203*** |
| | (0.5688) | (<.0001) | (0.2320) | (<.0001) | (0.4611) | (0.3800) | (0.2213) | (0.6758) | (0.0183) | | (<.0001) | (<.0001) | (<.0001) |
| *GDP* | 0.226*** | 0.861*** | 0.111*** | 0.553*** | 0.019** | 0.050*** | -0.053*** | -0.015** | 0.061*** | 0.090*** | 1 | 0.270*** | 0.139*** |
| | (<.0001) | (<.0001) | (<.0001) | (<.0001) | (0.0117) | (<.0001) | (<.0001) | (0.0444) | (<.0001) | (<.0001) | | (<.0001) | (<.0001) |
| *CPI* | 0.097*** | 0.037*** | 0.012 | 0.032*** | 0.000 | 0.024*** | 0.001 | -0.007 | 0.035*** | 0.430*** | 0.342*** | 1 | 0.728*** |
| | (<.0001) | (<.0001) | (0.1216) | (<.0001) | (0.9945) | (0.0020) | (0.9458) | (0.3961) | (<.0001) | (<.0001) | (<.0001) | | (<.0001) |
| *INDEX* | 0.134*** | 0.267*** | 0.022*** | 0.171*** | -0.011 | 0.024*** | 0.004 | -0.007 | 0.045*** | 0.263*** | 0.399*** | 0.593*** | 1 |
| | (<.0001) | (<.0001) | (0.0033) | (<.0001) | (0.1473) | (0.0019) | (0.6098) | (0.3306) | (<.0001) | (<.0001) | (<.0001) | (<.0001) | |

a. The upper right corner is Pearson Correlation Coefficients; the lower left corner is Spearman Correlation Coefficients. b. ***, **, and * denote significance at the 0.01, 0.05, and 0.10 level, respectively. c. Variable definitions: *TDI*it : this is measured by the natural logarithm of investment amount of Taiwan FDI in China's subsidiaries firm *i* at year *t* in NTD. *DY08*it : this is the dummy variable of year, if the year is 2008 to 2012 then *DY08*=1; o.w. then *DY08*=0. *AREA*it : this is the dummy variable of location, if the China's subsidiaries firm *i* invested in location of western China then *AREA*=1; o.w. then *AREA*=0. *ELEC*it :it is the dummy variable of industry, if the China's subsidiaries firm *i* invested in high-tech electronic industries then *ELEC*=1; o.w. then *ELEC*=0. *TYPE*it : it is the dummy variable of investing type, if a Taiwanese parent firm made either through investment companies or through existing companies registered in a third region to indirectly invest China subsidiary i, then TYPE = 1 (otherwise, TYPE = 0; i.e., a direct investment). *HOLD*it : it is the dummy variable of holding share rate, if the China's subsidiaries firm i is invested by Taiwan parent firm more than 25% then *HOLD*=1; o.w. then *HOLD*=0. *INVREV*i,t-1: it is the last period (*t-1*) investment revenue for firm *i* at year *t* in China. *EMPLOY*t : it is the rate of employment at year *t* in China. *GDP*t : it is the real GDP per person at year t in China. *CPI*t : it is the Consumer Price Index at year *t* in China. *INDEX*t : it is the weighted stock index of Shanghai at year *t* in China, we expect there is positive correlation between *TDI* and *CPI*.

**Table 5.** Regression analysis result.

| Variables | Pred. Sign | Parameter Estimate | t-Value | Pr > \|t\| |
|---|---|---|---|---|
| Intercept | ? | 50.456 | 4.67 | <.0001 |
| *DY08* | - | -0.163** | -2.38 | 0.0174 |
| *DY08*×*AREA* | $\alpha_2$ + | 0.170 | 1.15 | 0.2516 |
| *DY08*×*ELEC* | $\alpha_3$ + | 0.398*** | 7.90 | <.0001 |
| *AREA* | $\alpha_4$ + | 0.295** | 2.47 | 0.0136 |
| *ELEC* | $\alpha_5$ + | -0.522*** | -13.75 | <.0001 |
| *TYPE* | + | 0.489*** | 9.57 | <.0001 |
| *HOLD* | + | 0.330*** | 3.47 | 0.0005 |
| *INVREV* | + | 0.261*** | 47.17 | <.0001 |
| *EMPLOY* | + | -0.427*** | -3.78 | 0.0002 |
| *GDP* | + | 0.000*** | 10.61 | <.0001 |
| *CPI* | + | 0.002 | 0.17 | 0.8659 |
| *INDEX* | + | 0.000*** | 4.32 | <.0001 |

Adj. R-Sq. 17.52%; F-Value 305.46 (p value <.0001); Test 1: H0 $\alpha_2 = \alpha_4$ ; F Value 0.24 (p value =0.6222) Accept Ho; Test 2: H0 $\alpha_3 = \alpha_5$ ; F Value 123.42 (p value <.0001) Reject Ho; *INVREV*t-1: Due to one lag period missing data 23,523 firm-year, this paper use n=17,197 to follow-up regression analysis. b. *** and ** denote significance at the 0.01 and 0.05 level, respectively. c. Variable definitions: *TDI*it : this is measured by the natural logarithm of investment amount of Taiwan FDI in China's subsidiaries firm *i* at year *t* in NTD. *DY08*it : this is the dummy variable of year, if the year is 2008 to 2012 then *DY08*=1; o.w. then *DY08*=0. *AREA*it : this is the dummy variable of location, if the China's subsidiaries firm *i* invested in location of western China then *AREA*=1; o.w. then *AREA*=0. *ELEC*it : it is the dummy variable of industry, if the China's subsidiaries firm *i* invested in high-tech electronic industries then *ELEC*=1; o.w. then *ELEC*=0. *TYPE*it : it is the dummy variable of investing type, if a Taiwanese parent firm made either through investment companies or through existing companies registered in a third region to indirectly invest China subsidiary i, then TYPE = 1 (otherwise, TYPE = 0; i.e., a direct investment). *HOLD*it : it is the dummy variable of holding share rate, if the China's subsidiaries firm i is invested by Taiwan parent firm more than 25% then *HOLD*=1; o.w. then *HOLD*=0. *INVREV*i,t-1: it is the last period (*t-1*) investment revenue for firm *i* at year *t* in China. *EMPLOY*t : it is the rate of employment at year *t* in China. *GDP*t : it is the real GDP per person at year t in China. *CPI*t : it is the Consumer Price Index at year *t* in China. *INDEX*t : it is the weighted stock index of Shanghai at year *t* in China. $TDI_{it} = \alpha_0 + \alpha_1^{DY08} DY08_{it} + \alpha_2^{DY08} \times AREA + \alpha_3^{DY08} \times ELEC_{it} + \alpha_4^{AREA} AREA_{it} + \alpha_5^{ELEC} ELEC_{it} + \alpha_6^{TYPE} TYPE_{it} + \alpha_7^{HOLD} HOLD_{it} + \alpha_8^{INVREV} INVREV_{i,t-1} + \alpha_9^{EMPLOY} EMPLOY_t + \alpha_{10}^{GDP} GDP_t + \alpha_{11}^{CPI} CPI_t + \alpha_{12}^{INDEX} INDEX_t + \varepsilon_{it}$ .....(1)

implementation of enterprise applications and management audits by tax authorities. After companies have been audited by tax authorities, they are required to pay a reduced corporate income tax rate of 15% in Taiwan. Thus, these tax incentives encouraged TDI to flow from the southeastern region to the southwestern region. Furthermore, relative to the financial services industries, the high-technology electronics industries require more capital, land, and plant equipment. Recently, TDI inflow to China's high-technology electronics industries has decreased. The regression coefficient of *ELEC* (-0.522) is statistically significant. The F values in the last row of Table 5 shows the joint test results of the effect of tax reform and tax incentives. The result of Joint Test 1 is not significant, indicating that the 2008 tax reform did not provide tax incentives for FDI in specific locations. However, the result of Joint Test 2 is significant, indicating that industry-specific tax incentives following the 2008 tax reform were effective. The type of investment and ratio of holding shares are critical factors for Taiwanese FDI inflow to China. The *TYPE* and *HOLD* regression coefficients are positively significant, indicating that Taiwanese FDI enterprises invested indirectly in China to decrease the amount of payable income tax, hence the increase in *TDI*. This study also controlled the investment revenues from the preceding period; most Taiwanese FDI subsidiaries retained their investment income in China to minimize their payable income tax for remittances on

dividends, and to reinvest in China. The regression coefficient of *INVREV* (0.261) is statistically significant ($t$ = 47.17, $p$ < .0001).

With respect to macroeconomic factors, the regression coefficient of *EMPLOY* is significantly negative; because the increased employment rate decreased *TDI*, it did not conform to this study. The higher *GDP* and *INDEX* values indicate that more foreign funds are required to increase *TDI* in China. This finding is in agreement with the findings reported by Sun et al. (2002) and Liu et al. (2012).

## Conclusion

Since China's reform and opening up, Chinese government has aggressively introduced foreign capital and technology to promote China's industrialization and urbanization. The China 2008 tax law decreased tax concessions and raised tax rates to 25% for FDI. Under the 2008 tax law reform, the FDI invested in Western China and high-technology industries will enjoy the 15% tax rate which decreased tax burden by 10% (from 25 to 15%). This study used official macroeconomic data to explore the association between the tax incentives of China 2008 tax law on TDI in China. This study also performed tests on the effect of tax incentives of 2008 new tax law on FDI in specific locations and industries.

The empirical results showed that the enactment of 2008 tax reform was associated with significant reduction in TDI in China. As to location specific tax concessions, we failed to find significantly positive relation between TDI invested in western China after the 2008 tax law was enacted. This may be due to the proportion of TDI invested in Western China was only about 3%; although China encourages FDI bounded toward the western area, the aggregate tax incentive is still limited. In addition, after promulgating the 2008 tax law, tax incentives for investing in high-technology industries are more favorable than non-high-technology industries.

Taiwanese businesses investing in high-technology electronic industries were taxed at a rate of 15%, thus more Taiwanese enterprises invested directly in those industries after the 2008 tax law was enacted. In other words, the test results indicated that the 2008 tax reform did not provide tax incentives for FDI in specific locations, although it provided effective tax incentives for FDI in specific industries. This finding supports the goals of the China 2008 tax reform which emphasizes tax incentives more on industry-specific than on location-specific. The results of this study have rendered implications for government policy making and investment strategies formation for management of enterprises. Given an increasing competitive environment, how to save tax burden via the choices of the location and industries is imperative for enterprises. It is therefore essential to be knowledgeable about tax incentives of FDI in China as well as the impacts on the parent company and factors that may improve or exacerbate investments.

There are some research limitations to this study. First of all, due to the inherent difficulties in obtaining the financial statements of subsidiaries in China, we can only use data from their parent companies. Secondly, the incorporation of macro-economic and tax incentives variables cannot be all inclusive. There are some factors we cannot control. For instance, the political factor sometimes could be the most influential factor on FDI. In the future, the disclosure of subsidiaries data in China could enhance the in-depth research on FDI study.

## Conflict of Interests

The authors have not declared any conflict of interests.

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academicJournals

Vol. 6(2), pp. 30-37, September, 2014
DOI: 10.5897/JAT2014.0142
Article Number: F05F3CC47420
ISSN 2141-6664

http://www.academicjournals.org/JAT

Journal of Accounting and Taxation

*Full Length Research Paper*

# The market impact of mergers and acquisitions on acquiring firms in the U.S.

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Received 30 April 2014, Accepted 18 August, 2014

**Previous studies have examined acquiring firms undergoing mergers and acquisitions along with the impact that these events have on firm security prices. These studies have had mixed results. Some indicate negative impact on stock prices while others conclude that there is a positive effect. This study extends these previous studies by increasing both the number of firms sampled and the years evaluated. The first finding indicates that when acquiring firms are compared to firms not engaged in M&A activities, the acquiring firms' stock price effect is significantly negative, while the non-M&A firms' stock price effect is significantly positive. When the acquiring firms are evaluated by industry membership, findings suggest that firms engaged in M&A activities in all industries evaluated exert a significantly negative effect on stock prices, with the exception of the oil and gas industry along with the banking and financial services industry. These two industries were found to have a significantly positive effect on stock prices. These findings are important because they provide investors, managers and others with additional insight to the effects of mergers and acquisitions, from the acquiring firm's perspective, on security prices. This study indicates that firms in certain industries may be more positively impacted, from a stock price perspective, than firms in other industries.**

**Key words:** Mergers, acquisitions, security prices, acquiring firms.

## INTRODUCTION

Wall Street dealmakers are off to a busy start to 2014, as some of corporate America's most recognizable names have become involved in multi-billion-dollar mergers and acquisitions (M&A). American Airlines and US Airways announced they would be merging in an $11 billion deal, while private equity firm 3G and Warren Buffett's Berkshire Hathaway announced a $28 billion joint acquisition of food conglomerate H.G. Heinz. These two deals follow a $24.4 billion leveraged buyout of Dell by private equity firm Silver Lake Partners and the firm's founder, Michael Dell.

According to data from *Deallogic*, U.S. companies have spent $219 billion on M&A in 2013, a sharp increase from 2012, when firms spent just $85 billion during the same period. The uptick in mergers and acquisitions is said to have begun during 2009, with a near doubling over the previous year (2008). In 2014, U.S. firms are on pace to have the biggest year in M&A activity since 2000.

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**JEL:** G3, M41, N2.

While all this activity may have the potential of benefiting shareholders of acquired firms — as well as lots of Wall Street investment bankers — what does it say about the acquiring firms and the overall health of the economy? Since the later part of the 20th century, M&A has tended to come in waves, spurred by the availability of credit, changes in government policy, or bursts of private-sector innovation. Deregulation, for instance, motivated a wave of mergers in the airline industry in the 1970s and the consolidation of the banking industry in the 1990s. But perhaps the most important factor in motivating these bursts of M&A is economic conditions, particularly the strength of the stock market. Mergers in particular are often financed with stock, and high stock values give companies the resources with which to make purchases.

According to *Forbes Magazine* (3/7/14), the stock market has been doing pretty well for a few years now, with the Standard and Poor's (S&P) 500 up more than 138% since its bear-market lows of 2008. So why are we now seeing the M&A boom? Surely one reason is that today's market is heavily fortified by quantitative easing. *Forbes* goes on to state that the Federal Reserve has taken unprecedented action to keep interest rates low in both the short and long term, and those efforts have kept stock prices high despite the weak economy. In other words, given central bank stimulus, a rising stock market is not quite the indicator it used to be.

In addition to predicting M&A activity, the stock market is also considered a leading indicator of economic growth, meaning increases in GDP generally follow bull markets. This is because stock prices reflect investors' expectations for a company's future income. A high stock price today represents investors' belief in big profits tomorrow. Taken in the aggregate, a surging stock market index is a predictor of increases in GDP down the line.

*Forbes* is quick to point out that the huge gains seen in stock prices since 2009 have also not been followed by robust economic growth. It is noted that this is probably because Fed action has done more to promote stock price increases than economic fundamentals. But this is exactly why we should be encouraged by this fast start to M&A activity in 2014, especially if it keeps up in the coming months. It may mean that recent stock market gains are once again reflecting confidence about future profits, and not just central bank stimulus.

Recent empirical studies (Girma, 2008; Hu, 2009; Yen and Andre, 2010; Kemal, 2011; Chatterjee, 2011), as detailed below, indicate that M&A activity may in fact have a negative impact on the acquiring firm's profits and subsequent stock price. But yet, given what has been described above, it appears that M&A has in fact helped to lift the stock market, and ultimately, acquiring firms' bottom lines and stock prices. So what impact does M&A in fact have on the stock price of acquiring firms? To resolve this issue, individual mergers and acquisitions must be analyzed and their impact on security prices evaluated.

## PURPOSE

This study examines the market response to mergers and acquisitions from the acquiring firms' perspective. As previously noted, data provided from *Deallogic*, indicate that mergers doubled from 2008 to 2009 and increased to 158% in 2013 over 2012. *Forbes* magazine indicates that the market impact of these activities have been confounded by the effect of efforts by the Federal Reserve. This study will seek to analyze M&A activities of acquiring firms in the U.S. over a selected study period (2009-2012) and compare the market price effect to similar size firms in the same industries not engaging in M&A activities over the same study period. In addition, the M&A acquiring firms' study period will also be related to a base study period (2004-2007) for the same firms when they were not in the M&A process. The analyses of these results will help us better focus on the market effect of mergers and acquisitions, and if, in fact, they will help lift the overall economy in the long run.

## LITERATURE REVIEW

Over the decades, there have been several extant studies conducted on the effect of M&A activities. Holmstrom (2001) found that mergers and acquisitions of acquiring firms improved not only the productivity but the corporate governance mechanism of U.S. firms. Olinger et al. (2006) found that mergers and acquisitions in the U.S. rose during the period from 1980-1999 mainly due to leveraged hostile takeovers and buyouts. Kemal (2011) found that the effects of M&A activities on the acquiring firm included a worsening of financial ratios, particularly those relating to liquidity, along with a pronounced drop in security prices. Chatterjee (2011) also notes a reduction in security prices of acquiring firms in the U.S. possibly as a result of direct and indirect acquisition costs. Altunbas and Ibanes (2004), on the other hand, found evidence of improvement in acquiring firms' return ratios and security prices. Hu (2009) examines post-acquisition periods of acquiring firms and finds mixed financial results with some acquiring firms posting a worsening security price effect while others showing a positive effect. This finding is furthered by Girma (2008) who finds post-acquisition security prices higher for predominantly larger firms and negative for predominantly smaller firms, though the sample size is small. Some firms have abnormal positive returns while other firms have abnormal negative returns. Hu (2009) concludes that the industry and year of acquisition play a role in subsequent return on the acquiring firm.

From a profitability perspective, Mantravadi and Reddy (2008) found evidence that acquiring firms experience

increases in profitability; however, the impact is strongest for firms in textile, banking and finance, and healthcare. Wong et al. (2009) conducted research focusing on security returns of acquiring firms, but their research was limited to firms in the Asian markets. Their findings indicated that the buying firms' market shares receive abnormal positive returns in periods after the M&A announcement. In contrast to this study, Yen and Andre (2010) surveyed a limited number of mergers and acquisitions in the U.S. and found that acquiring firms either suffer losses as the result of the activity, or at best, breakeven. Yen and Andre (2010) also found no evidence of immediate positive returns on security prices of the acquiring firms, and in fact discovered an associated decline in security prices among these firms, although corporate governance procedures seemed to improve.

One of the explanations of how such studies might have such differing results associated with mergers and acquisitions is offered by Williams (2010). Williams (2010) indicated that researchers often overlook the marketing synergies that may result from mergers and acquisitions, which lay at the heart of either failure or success of the endeavor by the acquiring firm. Williams (2010) found that horizontal integration offers the best chance at success and profitability of acquiring firms. Also, Williams (2010) discovered that the more established the acquiring firm is (that is, more long-lived) the greater likelihood it has of realizing increased profitability. Williams (2010) also notes limitations in time periods studied. Ismail et al. (2011) also suggest that reasons for conflicting results from various studies on M&A activities may be because of the scope (which is limited in both numbers of mergers and acquisitions and time frames covered) of the studies and most of the above studies focus on a single industry, with the exceptions of Hu (2009) and Mantravadi and Reddy (2008), which assess U.S. acquiring firms' security prices by industry for limited time periods. Also, Ismail et al. (2011) find that past studies do not adequately assess firm size or time in industry, both of which might have an effect on results.

Recent merger and acquisition literature is conflicted in its analysis of the results associated with acquiring firms. Some studies indicate a negative impact on the acquiring firm and its stockholders (Girma, 2008; Hu, 2009; Yen and Andre, 2010; Chatterjee, 2011; Kemel, 2011), while other studies find abnormal positive results (Altunbas and Albanes, 2004; Hu, 2009; Girma, 2008; Wong et al., 2009). Because M&A activities have hit new highs over recent years, it is important that we obtain a better understanding of the effect of such activities on the acquiring firm and their stockholders. This study will attempt to do just that by analyzing the effect of mergers and acquisitions on the acquiring firms' stock price by year and industry from 2009-2012, thus increasing the scope of the study and providing a broader base by which to statistically measure any security price impact of mergers and acquisitions on acquiring firms.

**Hypothesis development**

As previously noted, extant studies assessing the effects of mergers and acquisitions contain many varying results. These studies indicate minimal, negative and even positive impact on stock prices of acquiring firms. In order to better place in perspective the stock price effect of mergers and acquisitions, acquiring firms that have engaged in M&A activities between 2009-2012 are compared to similar size firms that have not engaged in M&A activities over the same period. This time period was selected because it represents the post-financial crisis period of the U.S. Economic recovery was said to have begun in the first quarter of 2009 (*U.S. Bureau of Labor Statistics*). By utilizing both increased sample periods and total numbers of firms (in continuance of the Ismail et al., (2010)'s study) and comparing to a control group of non-M&A firms, the results of this study can then be compared to past studies and assessed for areas of conformity and departure. This gives rise to the first hypothesis, stated in the null form:

*H1: The share price responses to unexpected earnings of acquiring firms engaged in merger and acquisition activities is not significantly different from those of firms not engaged in merger and acquisition activities.*

Some past merger and acquisition studies (Hu, 2009; Mantravadi and Reddy, 2008), which assess U.S. acquiring firms' security prices by industry for limited time periods indicate that the effect of M&A activities on security prices varies by industry, with certain industries showing a greater effect than others. In order to assess this phenomenon, the group of acquiring firms that have engaged in M&A activities between 2009-2012 is broken down by major industry and the industry effect is analyzed. This gives rise to the second hypothesis, stated in the null form:

*H2: The share price responses to unexpected earnings of acquiring firms engaged in merger and acquisition activities is not significantly different when assessed by industry category.*

Still other studies in the area of mergers and acquisitions attribute the effect of M&A activities on stock prices to time-specific metrics (Ismail et al., 2011; Williams, 2010). In order to assess this, a sensitivity analysis is conducted for both acquiring firms engaging in M&A activities during the study period 2009-2012, and firms not engaging in M&A activities during this same time period. These two groups of firms are then compared to a base study period (2004-2007). This study period was selected since it:

1. Represents a time period when mergers and acquisitions were slightly down in the U.S.; and
2. It represents a time period prior to the onset on the

**Table 1.** Sample of acquiring firms engaged in M&A activities, 2009-2012.

| | Number of acquiring firms |
|---|---|
| Total U.S. firms | 2,049 |
| Firms eliminated due to insufficient Compustat data | 123 |
| Firms eliminated due to insufficient CRSP data | 208 |
| Total sample firms | 1,718 |

Sources: EDGAR, Compustat, CRSP.

**Table 2.** Sample of acquiring firms engaged in M&A activities by industry 2009-2012.

| Industrials | 301 |
|---|---|
| Oil/Gas | 288 |
| Utilities | 244 |
| Real Estate | 229 |
| Transportation | 204 |
| Banking/Financial Services | 196 |
| Healthcare | 177 |
| Other | 79 |
| Total sample firms | 1,718 |

Source: Compustat.

**Table 3.** Sample of firms not engaged in M&A activities by industry 2009-2012.

| Industrials | 290 |
|---|---|
| Oil/Gas | 215 |
| Utilities | 199 |
| Real Estate | 150 |
| Transportation | 188 |
| Banking/Financial Services | 202 |
| Healthcare | 158 |
| Other | 98 |
| Total sample firms | 1,500 |

Source: Compustat.

financial crisis in the U.S. Results would provide additional information on whether the effect is time-specific. This gives rise to the third hypothesis, stated in the null form:

*H3: The share price responses to unexpected earnings of acquiring firms engaged in merger and acquisition activities and those not engaged in such activities is not significantly different when compared to the same firms in a base study period.*

## Sample selection

The aim of this study is to investigate the share price behavior of publicly traded firms that are identified as the acquiring firm in a merger and acquisition in the U.S. A database was assembled for the study years 2009-2012 utilizing a Lexis-Nexis and Electronic Data-Gathering, Analysis and Retrieval (EDGAR) search. The database was compiled to capture all announced mergers and acquisitions along with the announcement release date. The availability of earnings and security return information was then assembled for these firms using Compustat and Center for Research on Security Prices (CRSP) data bases for earnings and security price information respectively. Table 1 indicates the total number of U.S. firms identified as the acquiring firm in a merger and acquisition activity. It also indicates the numbers of firms disqualified for insufficient Compustat and/or CRSP data for the study years.

Table 1 reflects the total sample of acquiring firms during a merger and acquisition during the study period 2009-2012.

In order to assess any industry differences among the acquiring firms, a further database was compiled detailing the above M&A firms by industry. Table 2 indicates the industry breakdown of the 1,718 firms in the study sample.

Table 2 reflects the acquiring firms presented in Table 1 broken done by major industry during the study period 2009-2012.

Because some prior studies indicate that the stock reaction to M&A activities of acquiring firms may perhaps be firm or time-specific, an additional sample is assessed of firms not engaged in M&A activities during the study period, that are the same general size and from similar industries. This sample consists of 1,500 firms identified by industry in Table 3.

Table 3 reflects a sample of similar firms not engaged in merger and acquisition activities during the study period 2009-2012. This sample is used for comparative purposes.

Although the above hypotheses and sample selection overcome deficiencies of past studies (that is, expanded sample, expanded time periods, more full analysis of industries and comparison to a base period), they do not overcome all of the criticisms posed by Ismail, et al. (2011) who find that past studies do not adequately assess firm size or time in industry, both of which might have an effect on results. To the extent these issues are

not addressed, their absence poses a limitation to the overall findings of the study.

## METHODOLOGY

Ordinary least squares (OLS) regression was used to test the models for all hypotheses. The reason for using OLS measurement was to remain consistent with the approach used by prior researchers (Williams, 2010; Kemal, 2001; Altunbas and Albanes, 2004; Holmstram, 2001), thus insuring comparability to prior studies. Cross-sectional dependence and heteroskedasticity are not likely to be present in stock return metrics since sample firms are not affected by common event dates (Binder, 1985; Bernard, 1987; Grammatikos and Yourougou, 1990). However, whenever a set of multiple regression variables are employed, there is a probability of the presence of multicollinearity within the set of independent variables which may be problematic from an interpretive perspective. To assess the presence of multicollinearity, the Variance Inflation Factor (VIP) was utilized. This approach was used in Hu (2009), Andre (2010), Kemel (2011), Ismail et al. (2010) and Wong et al. (2009). When the VIP factor exceeds a value of 10, multicollinearity is said to be present (O'Brien, 2007).

### Hypothesis one methodology

The purpose of the test of the first hypothesis is to assess the relative information content of unexpected earnings to share prices in a cross sectional analysis of all 1,718 acquiring firms involved in merger and acquisition activities for the study period 2009-2012. In addition, an assessment of unexpected earnings to share prices in a cross sectional analysis of all 1,500 firms of similar size and industry not involved in similar M&A activities is also made during the same study period. The results of both groups are then analyzed for any similarities or differences. The following regression model (similar to that used in Williams, 2010; Kemal, 2001; Altunbas and Albanes, 2004; Holmstram, 2001) is used to test empirical results:

$$CAR_{it} = a + b_1UEM_{it} + b_2UENM_{it} + b_3MB_{it} + b_4B_{it} + b_5MV_{it} + e_{it} \quad (1)$$

Where: $CAR_{it}$ = Cumulative abnormal return firm i, time t
A = Intercept term
$UEM_{it}$ = Unexpected earnings for firm i, time t, for all merger firms in sample
$UENM_{it}$ = Unexpected earnings for firm i, time t, for all non-merger firms in sample
$MB_{it}$ = Market to book value of equity as proxy for growth and persistence
$B_{it}$ = Market model slope coefficient as proxy for systematic risk
$MV_{it}$ = Market value of equity as proxy for firm size
$e_{it}$ = error term for firm i, time t

The coefficient "a" measures the intercept. The coefficient $b_1$ is the earnings response coefficient (ERC) for all merger firms in the sample (1,718). The coefficient $b_2$ is the ERC for all non-merger firms in the sample (1,500). The coefficients $b_3$, $b_4$, and $b_5$, are assessed for any potential contributions to the ERC for all firms in the sample. To investigate the effects of the information content of earnings on security prices, there must be some control for variables shown by prior studies to be determinants of ERC. For this reason, the variables represented by coefficients $b_3$ through $b_5$ are included in the study. Unexpected earnings ($UE_i$) is measured as the difference between the actual earnings ($EA_i$) and security market participants' expectations for earnings proxied by consensus analyst following as per Investment Brokers Estimate Service(IBES) (EXi). The unexpected earnings are scaled by the firm's stock price ($P_i$) 180 days prior to the forecast:

$$UE_i = \frac{(EA_i - EX_i)}{P_i} \quad (2)$$

For each cross sectional sample firm, an abnormal return ($AR_{it}$) is generated for event days –1, 0, and +1, where day 0 is defined as the release date of the M&A activity identified by EDGAR. The Dow Jones News Retrieval Service (DJNRS) is also reviewed to insure that confounding factors, such as change of corporate ownership or form, or management change, are minimized by excluding any firms which contain these events. The market model is utilized along with the CRSP equally-weighted market index and regression parameters are estimated between –290 and –91. Abnormal returns are then summed to calculate a cumulative abnormal return ($CAR_{it}$). Hypotheses 1 is tested by examining the coefficients associated with the unexpected earnings of the two samples (that is, $b_1$, and $b_2$).

### Hypothesis two methodologies

The purpose of the test of the second hypothesis is to assess the relative information content of unexpected earnings to share prices in a cross sectional analysis of all 1,718 acquiring firms involved in merger and acquisition activities by industry membership for the study period 2009-2012. This test will help determine if certain industries demonstrate stronger security price reaction while undergoing M&A activities. In assessing empirical results by industry, a regression model similar to the one used in hypothesis one, and in conformance with that used in Hu (2009) and Mantravadi and Reddy (2008), is replicated. The following model used is:

$$CARit = a + b_1UEI_{it} + b_2\ UEG_{it} + b_3UEU_{it} + b_4UER_{it} + b_5UET_{it} + b_6UEB_{it} + b_7UEH_{it} + B_8UEO_{it} + b_9MB_{it} + b_{10}B_{it} + b_{11}MV_{it} + e_{it} \quad (3)$$

Where: CARit = Cumulative abnormal return firm i, time t
a = Intercept term
UEIit = Unexpected earnings for firm i, time t, for all industrial firms in sample
UEGit = Unexpected earnings for firm i, time t, for all oil/gas firms in sample
UEUit = Unexpected earnings for firm i, time t, for all utility firms in sample
UERit = Unexpected earnings for firm i, time t, for all real estate firms in sample
UETit = Unexpected earnings for firm i, time t, for all transportation firms in sample
UEBit = Unexpected earnings for firm i, time t, for all banking/financial services firms in sample
UEHit = Unexpected earnings for firm i, time t, for all healthcare firms in sample
UEOit = Unexpected earnings for firm i, time t, for all other firms in sample
MBit = Market to book value of equity as proxy for growth and persistence
Bit = Market model slope coefficient as proxy for systematic risk
MVit = Market value of equity as proxy for firm size
eit = error term for firm i, time t

### Hypothesis three methodology

While hypothesis one assess differences on security prices among acquiring firms engaged in M&A activities versus those not engaged in M&A activities during the same time period, it does not adequately assess the effect of time-specific differences. In order

**Table 4.** Stock price effect of merger and non-merger firms, test of hypothesis 1.

| a | $b_1$ | $b_2$ | $b_3$ | $b_4$ | $b_5$ | Adj. $R^2$ |
|---|---|---|---|---|---|---|
| .04 | -.04 | .07 | .12 | 05 | .19 | .195 |
| (.60) | (2.47)[a] | (2.59)[a] | (.38) | (.44) | (.29) | |

Model: $CAR_{it} = a + b_1UEM_{it} + b_2UENM_{it} + b_3MB_{it} + b_4B_{it} + b_5MV_{it} + e_{it}$; $b_1$ = information content of all acquiring firms in the sample (1,718); $b_2$ = information content of all non-merger firms in the sample (1,500); $b_3$ = control variable for growth and persistence; $b_4$ = control variable systematic risk; $b_5$ = control variable firm size; a = significant at .01 level; study period = 2009-2012.

to assess this, a comparison must be made of the relative information content of unexpected earnings to share prices in a cross sectional analysis of all 1,718 acquiring firms involved in merger and acquisition activities for the study period 2009-2012 to the same firms in periods which they are not undergoing M&A activities (2004-2007). These results are then assessed against the relative information content of unexpected earnings to share prices in a cross sectional analysis of all 1,500 firms not involved in merger and acquisition activities for the study period 2009-2012 compared to the same firms in a similar base period (2004-2007). Results are then compared to help determine if time is a factor in determining the effect of stock price changes, thus overcoming the criticism of prior studies by Williams (2010), and Ismail et al. (2011). The following regression model is used:

$$CAR_{it} = a + b_1D_1UE_{it} + b_2D_2UE_{it} + b_3MB_{it} + b_4B_{it} + b_5MV_{it} + e_{it} \quad (4)$$

Where: $CAR_{it}$ = Cumulative abnormal return firm i, time t
a = Intercept term
$D_1UE_{it}$ = Dummy variable for unexpected earnings for firm i, time t, for all merger firms in sample where 1= 2009-2012, 0= 2004-2007
$D_2UE_{it}$ = Dummy variable for unexpected earnings for firm i, time t, for all non-merger firms in sample where 1= 2009-2012, 0= 2004-2007
$MB_{it}$ = Market to book value of equity as proxy for growth and persistence
$B_{it}$ = Market model slope coefficient as proxy for systematic risk
$MV_{it}$ = Market value of equity as proxy for firm size
$e_{it}$ = error term for firm i, time t.

## RESULTS

### Hypothesis one results

Results for Hypothesis one are indicated in Table 4. Findings indicate that when assessing the impact of mergers and acquisitions from the acquiring firm's perspective for the time period 2009-2012, there tends to be a significant negative impact on stock prices of the acquiring firms, quite possibly as a result of associated high acquisition costs as posited by Hu (2009; Yen and Andre, 2010). Firms not engaged in merger or acquisition activities during the same period tend to reflect a significant positive impact on stock prices. This finding runs contra to extant research (Altunbas and Albanes, 2004; Girma, 2008; Hu, 2009; Wong et al., 2009), that indicates minimal to positive security price impact of acquiring firms. Hypothesis one, which suggests no difference between the two sample groups must, therefore, be rejected.

In addition, whenever a set of multiple regression variables are employed, there is a probability of the presence of multicollinearity within the set of independent variables which may be problematic from an interpretive perspective. To assess the presence of multicollinearity, the Variance Inflation Factor (VIP) was utilized. Values of VIP exceeding 10 are often regarded as indicating multicollinearity. In the test of hypothesis 1, a VIP of 1.2 was observed, thus indicating the non-presence of significant multicollinearity.

Table 4 reflects the results of the assessment of information content through the running of the regression formula above. For the total sample of firms engaged in mergers and acquisitions ($b_1$ variable) the Earnings Response Coefficient is negative (-0.04) and significant at the .01 level. For the total sample of firms not engaged in merger and acquisition activities ($b_2$ variable) the Earnings Response Coefficient is positive (0.07) and significant at the .01 level. This indicates that firms undergoing merger activities during the study period have a negative effect on stock prices while those not in the process of merger activities have a positive effect on stock prices. Other variables assessed in the model are not significant at traditional levels.

### Hypothesis two results

As indicated in Table 5, the response coefficients $b_1$ through $b_8$ represent unexpected earnings for all acquiring firms engaged in M&A activities during the study period 2009-2012, broken down by industry. Only firms falling into the oil/gas and banking and financial services industries tend to have positive impact on se-curity prices at conventional significance levels. All other industries reflect a negative security price association at conventional significance levels. This result helps to clarify previous studies that reflect positive security price association while other studies reflect negative security price association. Clearly, when an industry analysis is conducted it is evident that some industries on whole reflect a move in one direction while other industries reflect a move in an opposite direction. These results could be as a result of the size of the firms in the industries or the duration of the firms in the industries

**Table 5.** Stock price effect of merger firms by industry, test of hypothesis 2.

| a | $b_1$ | $b_2$ | $b_3$ | $b_4$ | $b_5$ | $b_6$ | $b_7$ | $b_8$ | $b_9$ | $b_{10}$ | $b_{11}$ | Adj. $R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .05 | -.05 | .10 | -.08 | -.15 | -.11 | .09 | -.13 | -.07 | .08 | .02 | .15 | .201 |
| (.42) | (2.36)[a] | (2.41)[a] | (1.97)[b] | (1.59)[c] | (1.46)[c] | (2.40)[a] | (2.51)[a] | (1.96)[b] | (.35) | (.51) | (.24) | |

Model: $CAR_{it} = a + b_1UEI_{it} + b_2\ UEG_{it} + b_3UEU_{it} + b_4UER_{it} + b_5UET_{it} + b_6UEB_{it} + b_7UEH_{it} + b_7UEO_{it} + b_8MB_{it} + b_9Bit + b_{10}MV_{it} + e_{it;}$ $b_1$ = information content for industrial firms; $b_2$ = information content for oil/gas firms; $b_3$ = information content for utility firms; $b_4$ = information content for real estate firms; $b_5$ = information content for transportation firms; $b_6$ = information content for banking financial services firms; $b_7$ = information content for healthcare firms; $b_8$ = information content for all other firms; $b_9$ = control variable for growth and persistence; $b_{10}$ = control variable systematic risk; $b_{11}$ = control variable firm size; a = significant at .01 level; b = significant at .05 level; c= significant at .10 level; study period = 2009-2012.

**Table 6.** Stock price effect of merger and non-merger firms compared to a base study period, test of hypothesis 3.

| a | b1 | b2 | b3 | b4 | b5 | Adj. R2 |
|---|---|---|---|---|---|---|
| .05 | -.03 | .07 | .11 | .04 | .22 | .223 |
| (.60) | (2.45)[a] | (.59) | (.36) | (.49) | (.21) | |

Model: $CAR_{it} = a + b_1D_1UE_{it} + b_2D_2UE_{it} + b_3MB_{it} + b_4B_{it} + b_5MV_{it} + e_{it;}$ b1 =dummy variable for information content of all acquiring firms in the sample (1,718); b2 = dummy variable for information content of all non-merger firms in the sample (1,500); b3 = control variable for growth and persistence; b4 = control variable systematic risk; b5 = control variable firm size; a = significant at .01 level; study period = 2009-2012 if $D_1/D_2$ =1, 2004-2007 if $D_1/D_2$ = 0.

which they comprise, as posited by Ismail et al. (2011). Hypothesis two, which suggests that the security price effect of acquiring firms engaged in M&A activities are not significantly different across industry must, therefore, be rejected. The Variance Inflation Factor (VIP) was again utilized to assess multicollinearity in the regression model. In the test of hypothesis 2, a VIP of 1.8 was observed, thus indicating the non-presence of significant multicollinearity. Table 5 reflects the results of the assessment of information content by industry through the running of the regression formula above. Only the oil and gas industry ($b_2$ variable) (.10) and the banking and financial services industry ($b_6$ variable) (.09) reflect an increase in stock prices while undergoing merger and acquisition activities during the study period. These results are significant at the .01 level. All other industries reflect a decrease in stock prices while undergoing merger and acquisition activities during the study period. Other variables assessed in the model are not significant at traditional levels.

## Hypothesis three results

As indicated in Table 6, the response coefficient $b_1$ is a dummy variable that represents the effect of the unexpected earnings for all acquiring firms engaged in M&A activities during the study period of 2009-2012 when compared to a base period outside the time frame of the M&A activities represented by years 2004-2007. Coefficient $b_2$ represents a dummy variable indicating the effect of the unexpected earnings for all firms not engaged in M&A activities during the study period of 2009-2012 when compared to the same base period of 2004-2007. The $b_1$ variable is significantly negative, while the $b_2$ variable is positive but not significant at conventional levels. These results indicate that when varying time periods are assessed, acquiring firms engaged in M&A activities possess significantly negative security price effects while engaged in those activities relative to periods when they are not undergoing M&A activities. With respect to firms not undergoing M&A activities, time period differences are not significantly different with regards to impact on security prices. Hypothesis three, which suggests that the security price effect of acquiring firms engaged in M&A activities are not significantly different from those of firms not engaged in M&A activities across time, must therefore, be rejected.

The Variance Inflation Factor (VIP) was again utilized to assess multicollinearity in the regression model. In the test of hypothesis 3, a VIP of 1.9 was observed, thus indicating the non-presence of significant multicollinearity. Table 6 reflects the results of the assessment of information content of comparing firms engaged in merger and acquisition activities for the study period 2009-2012 ($b_1$ variable) compared to firms not engaged in merger and acquisition activities during a base period of 2004-2007 ($b_2$ variable) through the running of the regression formula above. For the total sample of firms engaged in mergers and acquisitions ($b_1$ variable) the Earnings

Response Coefficient is negative (-0.03) and significant at the .01 level. For the total sample of firms not engaged in merger and acquisition activities during the base period ($b_2$ variable) the Earnings Response Coefficient is positive (0.07) and significant at the .01 level. This indicates that the timing element for non-merger firms is inconsequential in associating with firms undergoing merger activities. Other variables assessed in the model are not significant at traditional levels.

## Conclusion

The first finding indicates that when acquiring firms, totaling 1,718, are compared to firms not engaged in M&A activities, totaling 1,500, during the study period 2009-2012, the acquiring firms' stock price effect is significantly negative, while the non-M&A firms' stock price effect is significantly positive. Chatterjee (2011) finds that direct costs of the acquisition, such as the purchase price itself, along with indirect costs such as legal, accounting and other costs, may be responsible for some of the downward pressure on the stock price subsequent to the acquisition.

When the acquiring firms are evaluated by industry membership, findings suggest that firms in all industries evaluated exert a significantly negative effect on stock prices, with the exception of the oil and gas industry along with the banking and financial services industry. These two industries were found to have a significantly positive effect on stock prices. This could be as a result of firm size or duration in the industry as posited by Ismail et al. (2011).

In order to assess if time periods were a factor in sample differences, samples from both the acquiring firms and non-M&A firms for the study period 2009-2012 were compared against a base period when neither was undergoing merger or acquisition activities, 2004-2007. Findings suggest that for the non-merger sample, there is no significant difference between the time periods. However, for the acquiring firms' sample, the 2009-2012 period reflects significantly negative stock price effects as compared to the 2004-2007 base period. This could be as a result of the post-recession hype in acquisitions and loose Fed policies as posited by *Forbes*.

These findings are important because they provide investors, managers and others with additional insight into the effects of mergers and acquisitions, from the acquiring firm's perspective, on security prices. In particular are the results of the analysis of these firms by industry. This study indicates that firms in certain industries may be more positively impacted, from a stock price perspective, than firms in other industries. In other words, perhaps through the industry's sheer size of its firms or the length in the firms in those industries, some industries are able to overcome handicaps that place a drag on the security prices of other industries and their associated firms.

## Conflict of Interests

The author has not declared any conflict of interests

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### The 2014 EGPA Annual Conference
### Speyer (Germany) from 10-12 September 2014


### 12th Global Conference on Sustainable Manufacturing
### To be held in Johor Bahru, Malaysia on 22nd – 24th of September 2014.

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4th Global International Studies Conference, Frankfurt, Germany

5th Scandinavian Conference of Information Systems, Sørup Herregaard, Denmark

Academy of World Business, Marketing and Management Development Conference, Dubai, UAE

International Conference of Organizational Innovation, Manila, Philippines

3rd Biennial Kwame Nkrumah International Conference (KNIC3), British Columbia, Canada

### September 2014

15th Annual Conference of the International Speech Communication Association, Singapore, Singapore

BIT's 3rd Annual International Symposium Of Clean Coal Technology (CCT2014), Taiyuan, China

12th Global Conference on Sustainable Manufacturing, Johor Bahru, Malaysia

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