

Corporate Social Responsibility, Corporate Governance, and Investment Efficiency: Evidence from an Asian Emerging Market

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Abstract

This paper is the first to investigate the effects of the relationship between corporate social responsibility (CSR) and corporate governance on investment efficiency among firms in Taiwan, an emerging Asian market. The empirical results show that CSR significantly mitigates agency problems and information asymmetry and, thus, leads to less investment inefficiency after controlling for other predictors of investment efficiency and potential endogeneity. More importantly, CSR involvement has a more pronounced effect on reducing investment inefficiency when corporate governance is strong among firms in the emerging Taiwanese market. These findings have investment and management implications for Taiwanese investors, firm managers and authorities.

Keywords: Corporate Social Responsibility, Corporate Governance, Investment Efficiency, Emerging Market, Taiwan

JEL classification: G32, G34, M10, M14, O16

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1. Introduction

Corporate Social Responsibility (CSR) has become a pervasive topic in academic research. Many studies aim to enhance the understanding of performance management by investigating the relationship between CSR and firm financial performance (Arora and Dharwadkar, 2011; Kim et al., 2014; Kim and Statman, 2012). Several scholars suggest that high CSR involvement is associated with higher earnings (Dowling, 2006; Schuler and Cording, 2006), firm performance and firm value (Jo and Harjoto, 2011 and 2012; Ruf, 2001). Furthermore, socially responsible firms have higher ethical standards and exhibit higher-quality accounting information (Kim et al., 2012), thus leading to lower financial risk (Bouslah et al., 2013; Humphrey et al., 2012) and easier access to finance (Cheng et al., 2014). These results imply that high-CSR firms may enjoy more favorable competitive conditions (Porter and Kramer, 2006). Hence, Benlemlih and Bitar (2015) and Cook et al. (2015) argue that high CSR involvement is associated with high investment efficiency.

However, CSR activities may generate conflicts of interest among stakeholders (Krüger, 2015). Due to the lack of the reliability and validity of CSR information, managers' motivations for engaging in CSR are rarely identified as their own interest

or that of society (McWilliams et al., 2006). A possible explanation of this result is that management is more likely to use CSR to obscure their misbehaviors (Hemingway and Maclagan, 2004), which lead to the agency problems – that is, conflicts of interest between shareholders and management. Therefore, McWilliams et al. (2006) and Barnett (2005) argue that CSR implementation will increase operating costs and enlarge agency problems between shareholders and management. Undoubtedly, CSR involvement may lead to the improper use of a firm's resources (Vance, 1975). As a result, CSR may have an adverse influence on investment efficiency and decrease firm value.

Specifically, existing papers focus on the impact of CSR on investment efficiency in a developed market – the U.S. – and fail to consider the effect of corporate governance on investment efficiency when controlling for the influence of CSR. However, Chen and Chen (2012) find that firms with more effective corporate governance have better investment efficiency. Whether firms with strong corporate governance genuinely engage in CSR activities more than firms with weak governance and, thus, experience higher investment efficiency remains an interesting question. More importantly, in emerging Asian markets, the relevant CSR research has yet to investigate the impact of CSR on investment efficiency under corporate governance. Moreover, Lee (2016) indicates that the Taiwan Stock Exchange (TWSE)

established CSR Best Practice Principles for companies listed on the TWSE and Gre Tai Securities Market (GTSM) in 2010. CSR remains in a premature stage in Taiwan. In addition, Lee and Chuang (2007) emphasize that corporate governance is not well established in Taiwan. Hence, this paper aims to test the impact of CSR on investment efficiency under corporate governance in a major Asian emerging market, Taiwan.

This paper provides several contributions to the CSR literature. First, previous papers focus on the influence of CSR on investment efficiency in the U.S. Benlemlih and Bitar (2015) find strong evidence that U.S. firms with high CSR involvement have a significantly positive effect on investment efficiency. Cook et al. (2015) also argue that U.S. firms with greater CSR levels have more efficient investments. However, all these authors fail to discuss the influence of corporate governance on investment efficiency. This paper aims to investigate the relationship between CSR and investment efficiency under corporate governance in a major Asian emerging market, hence filling this research gap and enriching the CSR literature.

Second, this paper is the first to investigate the effect of CSR on investment efficiency under corporate governance in Taiwan. As of February 2015, Taiwan's weight on the MSCI Global Emerging Markets Index and the Global Markets index was 12.43% and 1.32%, respectively. The total market capitalization of the TWSE amounted to US\$919.60 billion, ranking ninth in Asia. These figures clearly show that

the Taiwanese stock market is an important market in both Asian and global stock markets. The results of this paper can provide information to that may help investors and firm management in their decision-making process to increase profits.

Third, this paper offers useful information for policy-makers in emerging markets. According to Blowfield and Frynas (2005), CSR is a bridge connecting the arenas of business and social development, and the effects and implications of CSR in emerging markets require special attention. In fact, CSR is valued by authorities and by society. CSR awards for Taiwanese firms were created by Global Views Magazine and Common Wealth Magazine, which were founded in 2005 and 2007, respectively. Furthermore, the TWSE announced CSR Best Practice Principles for companies listed on the TWSE and GTSM in 2010. Moreover, CSR has already been promoted in Asian emerging markets, including India and South Korea; however, disagreement remains as to whether CSR is related to firms' investment efficiency. The results of this paper can thus offer policy-makers guidance for creating an environment that enables CSR in emerging markets.

The remainder of this paper is structured as follows. Section 2 reviews the literature. Section 3 describes the sample, variable measurements, and research design. Section 4 presents the empirical results. Section 5 concludes the study.

2. Literature review

2.1. CSR and investment efficiency

Modigliani and Miller's (1958) capital structure irrelevance theory shows that, in a world without friction, investment opportunities should be valued by firms when making investment decisions. Hayashi (1982) argues that firms can use financing for positive net present value (NPV) projects and continue to invest in these projects until the marginal benefit of investment equals its marginal cost (Modigliani and Miller, 1958). However, Modigliani and Miller's (1958) capital structure irrelevance theory is still debated; firms are not likely to execute all positive NPV projects because of financing constraints (Hubbard, 1998) and capital market frictions (Chen et al., 2014).

In particular, agency problems and information asymmetry are two important factors affecting investment inefficiency (Chen et al., 2011; Cutillas Gomariz and Sánchez Ballesta, 2014; Hovakimian, 2011; Stein, 2003). This argument is also supported by Jiang et al. (2011) and McLean et al. (2012). According to the agency problems mentioned by Jensen and Meckling (1976), conflicts of interest between shareholders and managers may cause managers to make inappropriate investment choices for their own self-interest, thus leading to investment inefficiency. Adverse selection creates asymmetric information on firms' funding shortages. Therefore, managers have an incentive to abandon positive NPV investment projects due to financing constraints (Biddle et al., 2009), resulting in investment inefficiency.

An overview of arguments on investment inefficiency, information asymmetry and agency problems indicates that investment inefficiency can be enlarged by market frictions. However, all of above papers fail to consider an important factor – CSR is firms' continuing commitment to adhere to high ethical standards of conduct and contribute to economic development while improving the quality of social life (Hsu et al., 2013). Therefore, firms engaging in CSR can help themselves to build a good reputation (Fombrun, 2005; Hillenbrand and Money, 2007). Meanwhile, these firms must also enthusiastically implement CSR activities to build and maintain their good reputation (Argenti and Druckenmiller, 2004). From the reputation perspective, CSR involvement can mitigate agency conflicts due to free cash flow (Mann and Sicherman, 1991) and reduce the investment inefficiency that results from agency costs (Gomes, 2000). Beaudoin (2008) also indicates that CSR involvement can alleviate agency problems.

The implementation of CSR can also reduce firms' information asymmetries (Cho et al., 2013). Akpınar et al. (2008) suggest that CSR can help reduce information asymmetries and mitigate agency problems between stakeholders and managers. Additionally, Kim et al. (2012) express that socially responsible firms should have higher ethical standards, less earnings management and higher accounting quality. Gelb and Strawser (2001) show that such firms also have better financial disclosure

and higher financial reporting transparency.

More importantly, Benlemlih and Bitar (2015) find that CSR involvement decreases investment inefficiency among U.S. firms during the 1998-2012 period. Cook et al. (2015) also test the influence of CSR on investment efficiency among U.S. firms over the 1992-2009 period. Consistent with the results of Benlemlih and Bitar (2015), they find that CSR in U.S. firms is significantly and negatively related to investment inefficiency.

However, Chih et al. (2014) argue that CSR is used as a tool to cover up firms' resource waste, thus leading to larger information asymmetry and higher agency problems. According to the selfish interest motivation perspective, managers' motivation for implementing CSR is obviously the fuzzy status attributable to the lack of good reliability and validity of CSR information (McWilliams et al., 2006). Hence, CSR strategies may be influenced by managers' morality, resulting in increased agency costs (Levis, 2006) and information asymmetry. From the shareholder wealth maximization view, the goal of managers is to maximize shareholder wealth (Friedman, 1970; Jensen and Meckling, 1976); however, CSR activities increase agency problems because firms may be placed at an economic disadvantage by managers pursuing their own self-interest (Cronqvist et al., 2009; Krüger, 2015; Surroca and Tribó, 2008). These arguments are supported by Lantos (2001) and

Beltratti (2005), who find that CSR practices are harmful to shareholder wealth due to the expense of more internal resources, which leads to larger agency problem. Hillman and Kei, (2001), McWilliams et al. (2006) and Barnea and Rubin (2005) also support these arguments, suggesting that CSR activities generate additional costs, waste firm resources, and reduce earnings management, leading to poor firm performance and more agency conflicts among managers and shareholders. Additionally, more asymmetric information is likely to lead to the implementation of CSR to cover up firm misbehavior and managers' bad news hoarding behavior (Hemingway and Maclagan, 2004). Based on the above studies, agency problems and information asymmetry are more likely to arise from the implementation of CSR, thus leading to higher investment inefficiency.

Existing papers focus on the influence of CSR on investment efficiency in developed markets in the U.S.. The present paper extends these works to further investigate the relationship between CSR and investment efficiency among firms in the Asian emerging market of Taiwan. The results of this paper can provide useful guidance to investors and firms that seek to reduce inefficient investment in emerging markets.

2.2. Corporate governance and investment efficiency

According to the concepts of asymmetric information and agency problems, one

of most pervasive and important factors affecting firms' efficient investment is corporate governance (Stein, 2003). This view is supported by Bertrand and Mullainathan (2003), who find that firms with more effective governance have better information disclosure, less asymmetric information between managers and outside investors (Healy and Palepu, 2001), and fewer agency problems, all of which result in more efficient investment decisions (Bizjak et al, 1993;. Datta et al, 2001). Therefore, good corporate governance leads to more efficient investment (Chen and Chen, 2012).

The current Taiwanese system of independent directors and supervisors began in 2001 (Sue et al., 2009). Notably, corporate governance in Asian emerging markets remains in a very early stage (Wu et al., 2011). Additionally, the mechanisms of corporate governance in Taiwan are not well established (Lee and Chuang, 2007). In particular, corporate governance risk management is disregarded in Taiwan over very long time periods (Aebi et al., 2012; Kirkpatrick, 2009; Lee, 2016), leading to inferior corporate governance monitoring functions. However, Lin and Liu (2004) indicate that the governance mechanism plays an important role in Taiwanese firms' operations. Lee (2015a) also finds that the governance mechanism has a significant impact on Taiwanese firms' leverage.

More importantly, previous studies fail to investigate the influence of corporate governance on investment efficiency when studying the influence of the CSR. Hence,

this paper further tests the impact of corporate governance on investment efficiency in a major emerging Asian stock market.

3. Research hypotheses, research methodology, and data source

3.1 Research hypotheses

The existing literature shows only that corporate governance is likely to affect firms' investment efficiency; however, it fails to control for an important factor, CSR. Meanwhile, many papers also investigate the impact of CSR on firms' investment efficiency; however, they do not control for corporate governance variables. More importantly, the literature fails to address the question of whether, firms with strong corporate governance would more authentically engage in CSR activities – and, thus, have higher investment efficiency – than those with weak corporate governance. Hence, this paper proposes the following hypotheses:

H₁₁ : CSR is associated with higher investment efficiency under strong corporate governance.

H₁₂ : CSR is associated with less investment efficiency under weak corporate governance.

3.2 Empirical methodology

Benlemlih and Bitar (2015) suggest that endogeneity may exist between CSR

and investment efficiency. This paper conducts two-stage least squares (2SLS)¹ estimations to address the bias and inconsistency associated with endogeneity problems. In the first stage, equation (1) is a logit model that estimates the predictive values of CSR. In the second stage, the predictive values are then placed into the investment efficiency model regression as independent variables. This paper further employs Arellano's (2003) method to adjust the panel robust standard error of the parameter estimates to examine the correlation between CSR and investment efficiency.

The first-stage equation is as follows:

$$P(CSR_{i,t} = 1 | z_{i,t}) = 1 / (1 + e^{-z_{i,t}}), \text{ where}$$

$$z_{i,t} = a_0 + a_1 TESO_{i,t} + a_2 ROE_{i,t} + a_3 OGR_{i,t} + a_4 SIZE_{i,t} + a_5 SCASH_{i,t} + a_6 LOGAge_{i,t} + a_7 TANGA_{i,t} + a_8 SROA_{i,t} + a_9 TOBINQ_{i,t} + a_{10} FCONS_{i,t} + a_{11} LOSS_{i,t} + a_{12} CASHFW_{i,t} + a_{13} LEV_{i,t} + a_{14} CGIP_{i,t} + \text{Industry Fixed Effect} + \text{Year Fixed Effect} \quad (1)$$

In equation (1), $CSR_{i,t}$ is equal to one if firm i in year t is on three lists of CSR awards, including the ITBER and ECSRA of Taiwan CommonWealth magazine or the CSRA issued by Global Views magazine, and zero otherwise. This equation includes not only the exogenous variables in equation (2) but also three firm characteristic variables: $TESO_{i,t}$, $ROE_{i,t}$, and $OGR_{i,t}$. $TESO_{i,t}$ is equal to one if firm i in year t is listed on the TWSE, and zero otherwise. $ROE_{i,t}$ is the return on equity of firm

¹ This paper also conducts regressions using the Heckman (1979) two-stage estimation procedure. The findings of this paper are very similar to those obtained using the 2SLS method.

i in year t . $OGR_{i,t}$ is the sales growth rate of firm i in year t . These variables are included in the first-stage equation (1) because of their usefulness in building an instrumental variable for CSR that, despite resembling CSR, is uncorrelated with the error term of equation (2) (Gujarati and Porter, 2009; Lee, 2016).

Specifically, $TESO_{i,t}$ is included because more mature firms may have a greater willingness to implement CSR. $ROE_{i,t}$ is included because higher returns on stockholders' equity may have a greater opportunity to reach the required rates of return on investments and are thus likely to have higher levels of CSR implementation. $OGR_{i,t}$ is included because firms with higher sales growth rates have higher firm growth and engagement in CSR is more likely to be supported by stakeholders. The exogenous variables in equation (2) are included because they are determinants of $IEFCY_{i,t}$, which is correlated with $CSR_{i,t}$ and should be related to $CSR_{i,t}$. More importantly, these variables are supported by the weak instrument test and the over-identification restriction test presented in the empirical results section. $\hat{CSR}_{i,t}$, which represents the predictive values of $P(CSR_{i,t} = 1 | z_{i,t})$ obtained from equation (1), is inserted into the equation for investment efficiency to control for endogeneity problems.

The second-stage equation is as follows:

$$\begin{aligned}
IEFCY_{i,t} = & b_0 + b_1 \hat{CSR}_{i,t} + b_2 SIZE_{i,t} + b_3 SCASH_{i,t} + b_4 LOGAge_{i,t} \\
& + b_5 TANGA_{i,t} + b_6 SROA_{i,t} + b_7 TOBINQ_{i,t} + b_8 FCONS_{i,t} \\
& + b_9 LOSS_{i,t} + b_{10} CASHFW_{i,t} + b_{11} LEV_{i,t} + b_{12} CGIP_{i,t} \\
& + Industry\ Fixed\ Effect + Year\ Fixed\ Effect + v_{i,t}
\end{aligned} \tag{2}$$

In equation (2), $IEFCY_{i,t}$ is the investment inefficiency of firm i in year t . This paper follows Biddle et al. (2009) and Chen et al.'s (2011) approach to evaluate the magnitude of inefficiency. Specifically, this paper uses the residuals from equation (3) as investment inefficiency ($IEFCY_{i,t}$).

$$Investment_{i,t} = \gamma_0 + \gamma_1 SGROWTH_{i,t-1} + \varepsilon_{i,t} \tag{3}$$

where $Investment_{i,t}$ is calculated as a net increase in property, plant, equipment and intangible assets and divided by the lagged book value of total assets of firm i in year t . $SGROWTH_{i,t-1}$ is the rate of sales growth change for firm i in year $t-1$.

As a proxy for firm size, the $SIZE_{i,t}$ variable is the natural logarithm of the market value of equity of firm i in year t . Chen et al. (2011) suggest that firm size is negatively associated with investment inefficiency. Similar to the argument in Chen et al. (2011), Mohammadi (2014) argue that firm size has a positive effect on investment efficiency. Thus, firm size is likely to have a negative and significant effect on inefficient investment.

$SCASH_{i,t}$, as a proxy for cash flow sensitivity, is defined as the standard deviation of cash and short-term investment and scaled by the book value of total assets before firm i during the period from $t-3$ to $t-1$. Based on the information

asymmetry or agency problem views, firms with higher cash flow volatility would have more inefficient investments (Biddle and Hilary, 2006; Conyon and Murphy, 2000). This argument is also supported by Benlemlih and Bitar (2015). Hence, this study suggests that cash flow sensitivity has a positive effect on investment inefficiency.

As a proxy for non-financial variables, firm age ($LOGAge_{i,t}$) in this study is the natural logarithmic value of the number of years between the year firm i was founded and the fiscal year in year t . Older firms are more likely to have more years of investment experience and higher firm investment efficiency (Benlemlih and Bitar, 2015). Older firms are more likely to be in a mature stage and have more free cash flow, thus leading to higher investment inefficiency. Therefore, this paper does not predict a significant correlation between firm age and inefficient investment.

The ratio of tangible assets ($TANGA_{i,t}$), as a proxy for collateral value on assets, is calculated as the fixed assets to total book assets of firm i in year t . A higher ratio of tangible assets indicates a higher collateral value of assets. A higher ratio can allow managers to raise financing too easily and lead to lower investment efficiency. This argument is supported by Benlemlih and Bitar (2015). Thus, this paper infers that the ratio of tangible assets may have a negative effect on investment efficiency.

As a proxy for the asset utilization ratio, standard deviation of return on assets

($SROA_{i,t}$) is the standard deviation of net income after tax scaled by total assets for firm i during the period from $t-3$ to $t-1$. Asset utilization ratios provide measures of management effectiveness hence, firms with higher asset utilization ratios are likely to have higher investment efficiency, In other words, higher asset utilization ratios can lead to lower investment inefficiency. However, these ratios are also more likely to have a pronounced effect on investment inefficiency (Benlemlih and Bitar, 2015). This study does not predict a significant correlation between asset utilization ratios and investment inefficiency.

As a proxy for a firm's growth opportunities, $TOBINQ_{i,t}$ is the ratio of the total market value of the firm divided by the total asset value of firm i in year t . Firms have lower investment inefficiency when they have more growth opportunities. However, greater growth opportunity indicates higher investment inefficiency (Benlemlih and Bitar, 2015) because of managers' negligent investment management. This study does not posit a significant relationship between firms' growth opportunities and investment inefficiency.

As a proxy for financial constraints, the $FCONS_{i,t}$ variable in this paper is the KZ index of Kaplan and Zingales (1997) for firm i in year t . Firms facing more severe financial constraints are subject to a greater fund shortage, thus leading to investment inefficiency; however, managers may have to make good investment choices, which

may result in increasing investment efficiency (Benlemlih and Bitar, 2015). Therefore, this paper does not indicate a relationship between financial constraints and investment inefficiency.

The $LOSS_{i,t}$ variable in this paper is a dummy variable that takes the value of one if net income from continuing operations items is negative for firm i in year t , and zero otherwise. Managers' investment behavior may become more cautious and very conservative when firms present net operating losses, which would lead to less investment inefficiency (Benlemlih and Bitar, 2015). Thus, this paper claims that firms' net operating losses are likely to have a negative effect on investment inefficiency.

As a proxy for free cash flow, $CASHFW_{i,t}$ is the ratio of cash flow to total assets for firm i in year t . Firms with larger levels of operating cash flows may have greater agency problems because of firms with more financial resources, leading to increased investment inefficiency (Benlemlih and Bitar, 2015). By contrast, management is likely to increase more positive NPV projects when firms have higher levels of free cash flow, thus decreasing investment inefficiency. This paper does not forecast the relationship between the level of free cash flow and investment inefficiency.

The leverage ratio ($LEV_{i,t}$) is defined as firm i 's ratio of total debt to total assets

in year t . A higher leverage ratio may create greater agency problems when obtaining additional funds from financial institutions, leading to more inefficient investment (Jensen, 1986). However, firms with higher leverage ratios must pay more interest, while debt holders play a monitoring role in reducing investment inefficiency (Benlemlih and Bitar, 2015; Jensen, 1986). This study is also unable to predict the relationship between the leverage ratio and investment inefficiency.

Similar to Lee (2016), this study includes the corporate governance index of firm i in year t developed by Chen et al. (2007). Based on the information asymmetry and agency problem points of view, Stein (2003) and Bertrand and Mullainathan (2003) argue that corporate governance has a significant effect on investment efficiency. They find that better-governed firms have more information disclosure, less information asymmetry (Healy and Palepu, 2001), and fewer agency problems. Hence, firms are likely to make more efficient investment decisions (Bizjak et al., 1993; Datta et al., 2001). Chen and Chen (2012) also suggest that better-governed firms have more efficient investment. However, Lee and Chuang (2007) indicate that corporate governance mechanisms do not work perfectly in Taiwanese firms. Specifically, the risk management of corporate governance was neglected by Taiwanese managers (Aebi et al., 2012; Kirkpatrick, 2009; Lee, 2015b). Therefore, the corporate governance mechanisms in Taiwan may not play a more active and effective monitoring role in investment efficiency. Thus,

this paper cannot posit that corporate governance has a significant relationship with investment efficiency.

Firms' investment efficiency may vary by year and across industries. Therefore, this paper adds two dummy variables for industry and year fixed effects to the regression model.

Wooldridge (2002) argues that the 2SLS approach yields inconsistent estimators of all parameters when instrumental variables show very low correlation with the endogenous variables (Lee, 2015a). Therefore, this study employs Stock and Yogo's (2005) method of weak instrumental variables to test appropriate instrumental variables (Lee, 2015a). At the same time, following Gujarati and Porter (2009), this paper also tests over-identifying restrictions (Hausman test) to examine the exogeneity of instrumental variables (Lee, 2015a).

3.3 Data description

This paper focuses on firms listed on the TWSE and the GTSM during the period from 1997 to 2013. This paper obtains CSR data from three lists of CSR awards, including the ITBER (Investigation of Taiwanese Benchmark Enterprises' Reputation) and ECSRA (Excellence in Corporate Social Responsibility Award) from Taiwan Commonwealth magazine from 1997 to 2013 or the CSRA (Corporate Social Responsibility Award) for the 2015-2013 period. Financial and corporate governance

data are drawn from the TEJ (Taiwan Economic Journal) database. Similar to Hsu et al. (2013), this paper excludes financial firms and firms with insufficient financial data. For the 17-year sample period, the sample includes 15,750 firm-year observations and represents 1,383 firms.

In the correlation analysis, the correlation coefficients between all variables excluding industry and year fixed effects are less than 0.8. Therefore, the regression analysis does not present serious multicollinearity problems.

4. Empirical results

4.1 Discussion of instrumental variables

Table 1 shows the results of examining whether instrumental variables are weak instruments in the 2SLS regression analysis. The F-test values for the entire sample, the less effective corporate governance sample and the more effective corporate governance sample are all positive and statistically significant at the 1 percent level. These results show that these instrumental variables all are strong instruments. Hence, the regression coefficients can be consistently estimated in this paper.

[Insert Table 1]

Table 2 presents the results of testing the over-identification restrictions of the sets of models. The values for Hausman tests in the entire sample, the less effective corporate governance sample and the more effective corporate governance all fail to reach the 10

percent significance level. The results show that the instrumental variables are consistent with the condition of exogenous variables.

[Insert Table 2]

4.2 Effect of CSR on investment efficiency

Table 3 presents estimates of equation (2) and introduces a backward elimination procedure for the 2SLS second-stage regressions. In models 1 and 2, the predictive values of CSR ($C\hat{S}R$) are negative and statistically significant at the 1 percent significance level. The investment inefficiency of CSR firms is 8.22 percent less than that of non-CSR firms. The results indicate that firms engaging in CSR are associated with less inefficient investment under corporate governance among Taiwanese firms in the emerging Asian stock market. Similar to the arguments of Cook et al. (2015) and Benlemlih and Bitar (2015), this result suggests that CSR involvement is more likely to mitigate agency problems and information asymmetry between managers and stakeholders, thus leading to the reduction of inefficient investment among Taiwanese firms in the emerging Asian stock market.

Turning to the discussion of control variables, this paper documents several positively significant relations. The coefficient of firm size ($SIZE$) is positive and statistically significant. Contrary to the results of Chen et al. (2011), larger firm size may induce relatively more inefficient investment because larger firms could have fewer

growth opportunities and fewer good investment activities. Cash flow sensitivity (*SCASH*) loads positive and statistically significant. Consistent with results of Conyon and Murphy (2000), Biddle and Hilary (2006) and Benlemlih and Bitar (2015), higher cash flow volatilities may lead to more inefficient investment due to information asymmetry or agency problems.

Similar to the argument of Benlemlih and Bitar (2015), the estimated coefficient on the tangible assets ratio (*TANGA*) is positive and significant. This coefficient shows that more tangible assets help to more easily raise money, thus leading to more inefficient investment. The coefficient of growth opportunities (*TOBINQ*) is positive, and the estimate is significant. The results are consistent with Benlemlih and Bitar's (2015) research, which shows that firms with higher growth opportunities are associated with higher investment levels, which may lead to more inefficient investment. Contrary to the arguments of Benlemlih and Bitar (2015) and Jensen (1986), firms with higher leverage ratios may indicate more inefficient investment because highly leveraged firms have higher additional funds and induce greater agency problems. This finding explains the positive coefficient on the leverage ratio.

This paper also documents that several control variables have negatively significant coefficients. Firm age (*LOGAge*) has a negative and significant coefficient. This coefficient is consistent with the expectation that older firms are more likely to

have greater investment experience and reduce investment inefficiency. The coefficient estimate of the asset utilization ratio (*SROA*) is negatively significant. A greater asset utilization ratio is more likely to reduce the inefficient investment phenomenon due to more effective asset management. Consistent with the results of Benlemlih and Bitar (2015), firm losses (*LOSS*) lead to significantly less inefficient investment because managers become more prudent and conservative in their investment plans. Higher free cash flow (*CASHFW*) can also decrease investment inefficiency because of greater investment in positive NPV projects.

Contrary to arguments of Bizjak et al. (1993), Datta et al. (2001), and Chen and Chen (2012), corporate governance (*CGIP*) is not associated with investment inefficiency, possibly because corporate governance mechanisms do not work perfectly in Taiwan, a major emerging Asian market (Lee and Chuang, 2007). Moreover, risk management is overlooked by managers over very long periods (Aebi et al., 2012; Kirkpatrick, 2009; Lee, 2015b).

[Insert Table 3]

Perhaps under various scenarios, the governance mechanism may have different effects on the link between CSR and investment inefficiency. In the first scenario, CSR may have a negative and significant effect on investment inefficiency for firms with less effective governance. In another scenario, CSR is also more likely to be negatively

significantly associated with investment inefficiency for firms with more effective governance. This study further splits the overall sample into two subsamples according to the mean value of the corporate governance index. Thus, this study further investigates the impact of CSR on investment inefficiency based on corporate governance. The results of the 2SLS second-stage regressions for two subsamples are shown in Tables 4 and 5.

Table 4 presents the results of 2SLS regression for the samples with less effective corporate governance. The coefficient of predicted CSR is negative but not significant. This empirical result shows a negative but not significant relationship between predicted CSR and investment inefficiency for Taiwanese firms with less effective corporate governance. However, among firms with less effective corporate governance, those that engage in CSR do not have a more pronounced reduction in investment inefficiency than those that do not engage in CSR. Moreover, CSR involvement cannot significantly reduce inefficient investment because managers attempt to cover up the agency problems and information asymmetry that result from weak corporate governance. Therefore, firms with weak corporate governance do not achieve genuine CSR implementation, causing an insignificant decline in investment inefficiency.

Similar to the results in Table 3, most control variables in Table 4 have strongly positive coefficients. Firm size, cash flow sensitivity, collateral value, growth opportunities, and the leverage ratio all have positive signs and are statistically

significant at the 1 percent level. The effects of these control variables are associated with more inefficient investment among Taiwanese firms with less effective corporate governance.

Additionally, similar to the results in Table 3, several control variables in Table 4 – except for ample cash – have significantly negative relations. Among Taiwanese firms with less effective corporate governance, those with older age, higher asset utilization ratios, and larger losses have statistically significant and greater negative impacts on inefficient investment. For similar reasons as those in Table 3, the effects of these control variables on inefficient investment are also all negative and statistically significant at the 1 percent level.

[Insert Table 4]

Table 5 exhibits the results of 2SLS regression for the sample of firms with more effective corporate governance. In models 1 and 2 in Table 5, the predictive values of CSR are statistically significant and negative at the 1 percent level. These results show that CSR firms have a 5.39 percent lower inefficient investment than non-CSR firms. Moreover, these results seem to indicate that the mitigating effect of CSR involvement on inefficient investment is more pronounced for Taiwanese firms with more effective corporate governance. Among these firms, those engaging in CSR are likely to have significantly less inefficient investment because CSR involvement can

efficiently alleviate agency problems and information asymmetry. This result indicates that firms with strong corporate governance achieve the genuine implementation of CSR, thus resulting in a significant decline in investment inefficiency.

In particular, the predictive value of CSR in Model 1 of Table 5 is 1.01 percent larger than that in Model 1 of Table 4. This figure shows that CSR firms with more effective corporate governance have 1.01 percent lower inefficient investment than CSR firms with less effective corporate governance. Overall, this result indicates that the effect of CSR is more likely to mitigate inefficient investment for Taiwanese firms with more effective corporate governance, but this effect does not appear to have a statistically or economically significant influence on firms with less effective corporate governance. Relative to firms with weak corporate governance, firms with strong corporate governance achieve more genuine CSR implementation, thus leading to a greater decline in investment inefficiency

Similar to the results in Tables 3 and 4, the estimated coefficients of the control variables in Table 5 – except financial gearing – strongly imply that larger firm size, higher cash flow sensitivity, superior collateral value, and better growth opportunities are significantly and positively associated with more inefficient investment among Taiwanese firms with more effective corporate governance.

Moreover, similar to the results in Tables 3 and 4, among Taiwanese firms with

more effective corporate governance, older age, higher asset utilization ratios, and bigger losses also have statistically significant and greater negative impacts on inefficient investment.

[Insert Table 5]

5. Conclusion

This study explores the relationship between CSR and inefficient investment among Taiwanese firms in the emerging Asian market. To the best of our knowledge, this study is the first to test the impact of CSR and corporate governance on inefficient investment for these firms. This study reports the following findings: (1) Consistent with the findings of Cook et al. (2015) and Benlemlih and Bitar (2015), Taiwanese CSR firms have lower agency problems and information asymmetry between managers and stakeholders, and thus less inefficient investment. (2) More importantly, CSR has a more pronounced effect on reducing inefficient investment among Taiwanese firms with more effective corporate governance. (3) CSR involvement does not have a statistically significant effect on reducing inefficient investment among Taiwanese firms with less effective corporate governance.

The results of this study provide useful information for investors and firms seeking to reduce inefficient investment in emerging markets and guidance for policy-makers aiming to enable CSR practices in emerging markets. More importantly,

this study's results provide useful information for investors making investment decisions and managing risk management decisions for Taiwanese firms. Finally, the authorities should be the first to promote Taiwanese firms' CSR activities.

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Table 1: The first-stage weak instrumental variable tests

	Entire sample	Less effective corporate governance	More effective corporate governance
F-test	22.116 ***	12.916 ***	17.122 ***
p-value	2.76e-014	2.03e-008	4.66e-011

Notes: Table 1 presents the results of testing whether the instrumental variables are weak instruments in the 2SLS regression. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 2: The second-stage over-identifying restriction tests

	Entire sample	Less effective corporate governance	More effective corporate governance
Hausman test	0.367	0.177	0.356
p-value	0.5447	0.6739	0.5509

Notes: Table 2 presents the results of the over-identification restriction tests. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 3: 2SLS regression analysis of the effect of CSR on investment inefficiency

Variables	Model1		Model2	
	Coefficients	t-values	Coefficients	t-values
<i>Constant</i>	-0.2341	-6.44***	-0.2420	-6.16***
<i>CŜR</i>	-0.0822	-3.03***	-0.0901	-3.06***
<i>SIZE</i>	0.0078	4.97***	0.0083	4.81***
<i>SCASH</i>	0.2139	6.79***	0.2120	6.76***
<i>LOGAge</i>	-0.0120	-5.54***	-0.0129	-6.17***
<i>TANGA</i>	0.1170	13.24***	0.1158	13.34***
<i>SROA</i>	-0.0458	-2.67***	-0.0447	-2.64***
<i>TOBINQ</i>	0.0102	7.22***	0.0106	7.26***
<i>FCONS</i>	0.0000	-0.94		
<i>LOSS</i>	-0.0256	-10.03***	-0.0256	-10.04***
<i>CASHFW</i>	-0.0330	-2.49**	-0.0325	-2.46**
<i>LEV</i>	0.0251	3.06***	0.0238	3.03***
<i>CGIP</i>	0.0001	0.09		
<i>Industry Fixed Effect</i>	Yes		Yes	
<i>Year Fixed Effect</i>	Yes		Yes	
<i>N</i>	15,750		15,750	
<i>Adj. R Square</i>	0.0952		0.0915	

Notes: Table 3 presents the regression results for a 2SLS analysis of the effect of CSR on investment efficiency. This paper uses Arellano's (2003) approach to adjust the parameter estimate of the panel robust standard error. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively. Dependent variables: *IEFCY* is the investment inefficiency of firm *i* in year *t*. Independent variables: *CŜR* is the predictive values of $P(CSR_{i,t} = 1 | z_{i,t})$ obtained from equation (1) of firm *i* in year *t*. *SIZE* is the natural logarithm of the market value of equity of firm *i* in year *t*. *SCASH* is defined as the standard deviation of cash and short-term investment and scaled by the book value of total assets for firm *i* in year *t*. *LOGAge* is the natural logarithmic value for the number of years between the year firm *i* was founded and the fiscal year in year *t*. *TANGA* is calculated as the ratio of fixed assets to total book assets of firm *i* in year *t*. *SROA* is the standard deviation of net income after tax scaled by total assets for firm *i* during the period from *t-3* to *t-1*. *TOBINQ* is the ratio of the total market value of the firm divided by the total asset value for firm *i* in year *t*. *FCONS* is the KZ index for firm *i* in year *t*. *LOSS* is a dummy variable that takes the value of one if net income from continuing operations items is negative for firm *i* in year *t*, and zero otherwise. *CASHFW* is the ratio of cash flow to total assets for firm *i* in year *t*. *LEV* is defined as the ratio of total debt to total assets for firm *i* in year *t*. *CGIP* is the corporate governance index of firm *i* in year *t*. *Year Fixed Effect* is a set of year dummy variables. *Industry Fixed Effect* is a set of industrial dummy variables.

Table 4: 2SLS regression analysis of the effect of CSR on investment inefficiency for firms with less effective corporate governance

Variables	Model1		Model2	
	Coefficients	t-values	Coefficients	t-values
<i>Constant</i>	-0.1904	-4.79***	-0.1458	-5.46***
$\hat{C}\hat{S}R$	-0.0438	-1.34		
<i>SIZE</i>	0.0057	3.20***	0.0036	3.20***
<i>SCASH</i>	0.2204	6.55***	0.2184	6.36***
<i>LOGAge</i>	-0.0115	-4.63***	-0.0107	-4.33***
<i>TANGA</i>	0.1217	11.63***	0.1221	11.65***
<i>SROA</i>	-0.0662	-2.79***	-0.0690	-2.90***
<i>TOBINQ</i>	0.0103	6.33***	0.0096	6.31***
<i>FCONS</i>	0.0000	0.20		
<i>LOSS</i>	-0.0262	-8.74***	-0.0262	-8.80***
<i>CASHFW</i>	-0.0116	-0.81		
<i>LEV</i>	0.0293	3.23***	0.0321	3.71***
<i>Industry Fixed Effect</i>	Yes		Yes	
<i>Year Fixed Effect</i>	Yes		Yes	
N	10,822		10,822	
Adj. R Square	0.1266		0.1265	

Notes: Table 3 presents the regression results of a 2SLS analysis of the effect of CSR on investment efficiency for firms with weak corporate governance. This paper uses Arellano's (2003) approach to adjust the parameter estimate of the panel robust standard error. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively. Dependent variables: *IEFCY* is the investment inefficiency of firm *i* in year *t*. Independent variables: $\hat{C}\hat{S}R$ is the predictive values of $P(CSR_{i,t} = 1 | z_{i,t})$ obtained from equation (1) for firm *i* in year *t*. *SIZE* is the natural logarithm of the market value of equity of firm *i* in year *t*. *SCASH* is defined as the standard deviation of cash and short-term investment and scaled by the book value of total assets for firm *i* in year *t*. *LOGAge* is the natural logarithmic value for the number of years between the year firm *i* was founded and the fiscal year in year *t*. *TANGA* is calculated as the ratio of fixed assets to total book assets of firm *i* in year *t*. *SROA* is the standard deviation of net income after tax scaled by total assets for firm *i* during the period from *t-3* to *t-1*. *TOBINQ* is the ratio of the total market value of the firm divided by the total asset value for firm *i* in year *t*. *FCONS* is the KZ index of firm *i* in year *t*. *LOSS* is a dummy variable that takes the value of one if net income from continuing operations items is negative for firm *i* in year *t*, and zero otherwise. *CASHFW* is the ratio of cash flow to total assets for firm *i* in year *t*. *LEV* is defined as the ratio of total debt to total assets for firm *i* in year *t*. *Year Fixed Effect* is a set of year dummy variables. *Industry Fixed Effect* is a set of industrial dummy variables.

Table 5: 2SLS regression analysis of the effect of CSR on investment inefficiency for firms with more effective corporate governance

Variables	Model1		Model2	
	Coefficients	t-values	Coefficients	t-values
<i>Constant</i>	-0.2211	-3.45***	-0.2243	-3.51***
<i>CŜR</i>	-0.0539	-2.45**	-0.0560	-2.57**
<i>SIZE</i>	0.0073	2.81***	0.0077	3.05***
<i>SCASH</i>	0.1938	2.94***	0.1846	2.83***
<i>LOGAge</i>	-0.0120	-2.60***	-0.0125	-2.66***
<i>TANGA</i>	0.1136	6.85***	0.1147	6.75***
<i>SROA</i>	-0.0359	-1.99**	-0.0329	-1.83*
<i>TOBINQ</i>	0.0075	2.56**	0.0074	2.51**
<i>FCONS</i>	0.0000	-2.29**	0.0000	-2.29**
<i>LOSS</i>	-0.0216	-5.18***	-0.0201	-5.11***
<i>CASHFW</i>	-0.0695	-2.73***	-0.0696	-2.74***
<i>LEV</i>	0.0160	1.12		
<i>Industry Fixed Effect</i>	Yes		Yes	
<i>Year Fixed Effect</i>	Yes		Yes	
<i>N</i>	4,928		4,928	
<i>Adj. R Square</i>	0.1120		0.1118	

Notes: Table 3 presents the regression results of a 2SLS analysis of the effect of CSR on investment efficiency for firms with strong corporate governance. This paper uses Arellano's approach (2003) to adjust the parameter estimate of the panel robust standard error. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively. Dependent variables: *IEFCY* is the investment inefficiency of firm *i* in year *t*. Independent variables: *CŜR* is the predictive values of $P(CSR_{i,t} = 1 | z_{i,t})$ obtained from equation (1) of firm *i* in year *t*. *SIZE* is the natural logarithm of the market value of equity of firm *i* in year *t*. *SCASH* is defined as the standard deviation of cash and short-term investment and scaled by the book value of total assets for firm *i* in year *t*. *LOGAge* is the natural logarithmic value of the number of years between year firm *i* was founded and the fiscal year in year *t*. *TANGA* is calculated as the ratio of fixed assets to total book assets of firm *i* in year *t*. *SROA* is the standard deviation of net income after tax scaled by total assets for firm *i* during the period from *t-3* to *t-1*. *TOBINQ* is the ratio of the total market value of the firm divided by the total asset value for firm *i* in year *t*. *FCONS* is the KZ index of firm *i* in year *t*. *LOSS* is a dummy variable that takes the value of one if net income from continuing operations items is negative for firm *i* in year *t*, and zero otherwise. *CASHFW* is the ratio of cash flow to total assets for firm *i* in year *t*. *LEV* is defined as the ratio of total debts to total assets for firm *i* in year *t*. *Year Fixed Effect* is a set of year dummy variables. *Industry Fixed Effect* is a set of industry dummy variables.