

RESEARCH ARTICLE

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

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The purpose of this paper is to test opposing views of the relationship between corporate social responsibility (CSR) and investment efficiency in a major Asian emerging stock market. The empirical results show that CSR significantly mitigates investment inefficiency among Taiwanese firms. This finding is consistent with the notion that socially responsible Taiwanese firms have fewer agency problems and lower information asymmetry, thus reducing investment inefficiency. The empirical results also show that CSR has a more pronounced effect in mitigating investment inefficiency for Taiwanese firms with more effective corporate governance. In particular, due to the mandatory preparation of CSR reporting, CSR is associated with lower investment inefficiency for Taiwanese firms with weak governance mechanisms during the period 2014–2017. The findings of this paper have implications for government authorities, firm managers, and investors in terms of CSR policy formation, the implementation of CSR programs, and the management of investment portfolios.

**Keywords:** corporate governance, corporate social responsibility, emerging market, investment efficiency, Taiwan

**JEL Classifications:** E22; G11; G30; G34; M14

Corporate social responsibility (CSR) has become a pervasive topic in academic research. Previous studies have presented two conflicting views on CSR. Many studies aim to enhance the understanding of performance management by investigating the relationship between CSR and a firm's financial performance (Arora & Dharwadkar, 2011; Kim, Li, & Li, 2014; Kim & Statman, 2012). Several scholars suggested that high CSR involvement is associated with higher earnings (Dowling, 2006; Schuler & Cording, 2006), firm performance and firm

value (Jo & Harjoto, 2011, 2012; Ruf, Muralidhar, Brown, Janney, & Paul, 2001). Furthermore, socially responsible firms have higher ethical standards and exhibit higher-quality accounting information (Kim, Park, & Wier, 2012), thus leading to lower financial risk (Bouslah, Kryzanowski, & M'Zali, 2013; Humphrey, Lee, & Shen, 2012) and easier access to finance (Cheng, Ioannou, & Serafeim, 2014). These results imply that high-CSR firms may enjoy more favorable competitive conditions (Porter & Kramer, 2006). Hence, Benlemlih and Bitar (2015) and Cook,

Romi, Sanchez, and Sanchez (2018) argued 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, Siegel, & Wright, 2006). A possible explanation of this result is that management is likely to use CSR to obscure their misbehaviors (Hemingway & Maclagan, 2004), which lead to the agency problems—that is, conflicts of interest between shareholders and management. Therefore, McWilliams et al. (2006) and Barnett (2007) argued that CSR implementation would 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) found that U.S. 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, experiencing higher investment efficiency remains an interesting question. More importantly, in emerging Asian markets, relevant CSR research has yet to investigate the impact of CSR on investment efficiency under corporate governance. The purpose of this paper aims to test the impact of CSR on investment efficiency under corporate governance in Taiwanese firms in a major Asian emerging market.

This paper provides several contributions to the CSR literature. First, previous studies focus on the influence of CSR on investment efficiency among U.S. firms in developed markets. In contrast to developed markets like the U.S., governance mechanisms in emerging markets like Taiwan require further improvement, and CSR practices are at an elementary stage (Frynas, 2006; Lee & Chuang, 2007). Therefore, the relationship between CSR and investment efficiency in developed markets may differ from that in

emerging markets. Hence, research on this relationship in emerging markets is clearly necessary. The results of this study could provide useful guidance to create an environment that enables CSR policies and practices for Asian emerging markets.

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 was 12.43%. The total market capitalization of the TWSE<sup>1</sup> amounted to US\$919.60 billion, ranking ninth in Asia. More importantly, shares belonging to foreign investors accounted for 40% of Taiwan stock market capitalization in 2016 (Shih & Lee, 2016). These figures clearly show that the Taiwan stock market is an important market in both Asian and global emerging stock markets. The results of this paper can provide information that may aid the decision-making processes of investors and firm management to increase profits.<sup>2</sup>

Third, when studying the influence of CSR, previous studies have failed to investigate the influence of corporate governance on the association between CSR and investment efficiency in Taiwan. By contrast, this study examines the combined influence of CSR and corporate governance on investment efficiency. This study found that the influence of CSR on investment efficiency depends on the corporate governance of firms and shows that CSR will result in improvements in capital allocation and investment efficiency only for firms with strong corporate governance. The results of this study have implications for shaping CSR policies and practices for Asian 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.

## Literature Review

This study aims to explore the effect of corporate governance on the association between CSR and investment efficiency. The existing literature has not examined this issue. Previous studies either examine the influence of CSR on investment efficiency or the effect of corporate governance on investment efficiency. Therefore, this section reviews the two streams of literature separately.

### ***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) argued that firms could 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 & 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, El Ghoul, Guedhami, & Wang, 2014).

In particular, agency problems and information asymmetry are two important factors affecting investment inefficiency (Chen, Hope, Li, & Wang, 2011; Cutillas Gomariz & Sánchez Ballesta, 2014; Hovakimian, 2011; Jiang, Kim, & Pang, 2011; McLean, Zhang, & Zhao, 2012; Stein, 2003). 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. Another argument is that 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, Hilary, & Verdi, 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 failed 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, Chen, & Tseng, 2013). From a reputation perspective, firms with high CSR activities tend to have better reputations (Fombrun, 2005; Hillenbrand & Money, 2007). Moreover, CSR involvement can mitigate agency conflicts due to free cash flow (Mann & Sicherman, 1991) and reduce the investment inefficiency that results from agency costs (Akpınar, Jiang, Gomez-Mejia, Berrone, & Walls, 2008; Beaudoin, 2008; Gomes, 2000).

The implementation of CSR can also reduce firms' information asymmetries (Akpınar et al., 2008; Cho, Lee, & Pfeiffer, 2013). Additionally, Kim et al. (2012) expressed that socially responsible firms should have higher ethical standards, less earning management, and higher accounting quality. Gelb and Strawser (2001) showed that such firms also have better financial disclosure and higher financial reporting transparency.

More importantly, Benlemlih and Bitar (2015) found that CSR involvement decreases investment inefficiency among U.S. firms during the 1998–2012 period. Cook et al. (2018) also tested the influence of CSR on investment efficiency among U.S. firms over the 1992–2009 period and found that CSR in U.S. firms is significantly and negatively related to investment inefficiency.

However, Chih, Miao, and Chuang (2014) argued 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 & 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, Heyman, Nilsson, Svaleryd, & Vlachos, 2009; Krüger, 2015; Surroca & Tribó, 2008) at the expense of more internal resources (Beltratti, 2005; Lantos, 2001). From the firm resources view, 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 (Barnea & Rubin, 2005; Hillman & Keim, 2001; McWilliams et al., 2006). 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 & 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 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.

### ***Corporate Governance and Investment Efficiency***

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

The current Taiwanese system of independent directors and supervisors began in 2001 (Sue, Lu, & Chin, 2009). Corporate governance in Asian emerging markets remains at a very early stage (Wu, Cheng, & Hsiao, 2011). In particular, corporate governance risk management has been disregarded in Taiwan over very long time periods (Aebi, Sabato, & Schmid, 2012; Kirkpatrick, 2009; Lee, 2016), leading to inferior corporate governance monitoring functions. However, Lin and Liu (2004) indicated that the governance mechanism plays an important role in Taiwanese firms' operations. Lee (2015a) also found that the governance mechanism has a significant impact on Taiwanese firms' leverage.

More importantly, previous studies have failed to investigate the influence of corporate governance on investment efficiency when studying the influence of CSR. Hence, this paper further tests the impact of corporate governance on investment efficiency in a major emerging Asian stock market.

## **Research Hypotheses, Research Methodology, and Data Sources**

### ***Research Hypotheses***

The existing literature fails to provide evidence of whether firms with strong corporate governance engage more authentically in CSR activities—and thus have higher investment efficiency—than those with weak corporate governance. Hemingway and Maclagan (2004) suggested that management is likely to use CSR to obscure their misbehaviors. Hence, this paper proposes the following hypotheses:

- H<sub>1</sub> : CSR is associated with higher investment efficiency under strong corporate governance.
- H<sub>2</sub> : CSR is associated with lower investment efficiency under weak corporate governance.

### ***Empirical Methodology***

Benlemlih and Bitar (2015) suggested that endogeneity may exist between CSR and investment efficiency. This paper conducts two-stage least squares (2SLS)<sup>3</sup> 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, equation (2), as independent variables. This paper further employs Arellano's (2003) method to adjust the panel robust standard error of the parameter estimates that examine the correlation between CSR and investment efficiency. Furthermore, to avoid the effects of the possible non-normality of the regression residuals, the bootstrap method, which involves resampling residuals 1,000 times, is used to obtain the p-values for statistical significance tests of the regression coefficients.

The first-stage equation is as follows:

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

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

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 Investigation of Taiwanese Benchmark Enterprises' Reputation (ITBER) and Excellence in Corporate Social Responsibility Award (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), which will be defined later, but also three firm characteristic variables:  $TESO_{i,t}$ ,  $ROE_{i,t}$ , and  $OGR_{i,t}$ .  $TESO_{i,t}$  is equal to 1 if firm  $i$  in year  $t$  is listed on the TWSE, and zero otherwise.  $ROE_{i,t}$  is the return on equity of firm  $i$  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 & 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 investment inefficiency, the left-hand side variable of equation (2), 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:

$$\begin{aligned} IEFY_{i,t} = & b_0 + b_1 \hat{CSR}_{i,t} + b_2 SIZE_{i,t} + b_3 SCASH_{i,t} \\ & + b_4 LOGAge_{i,t} + b_5 TANGA_{i,t} + b_6 SROA_{i,t} + b_7 TOBINQ_{i,t} \\ & + b_8 FCONS_{i,t} + b_9 LOSS_{i,t} + b_{10} CASHFW_{i,t} + b_{11} LEV_{i,t} \\ & + b_{12} CGIP_{i,t} + \hat{CSR}_{i,t} \times D_{2014} + \text{Industry Fixed Effect} \\ & + \text{Year Fixed Effect} + v_{i,t} \end{aligned} \quad (2)$$

In equation (2),  $IEFCY_{i,t}$  is the investment inefficiency of firm  $i$  in year  $t$ . This paper follows Biddle et al.'s (2009) and Chen et al.'s (2011) approach in evaluating the magnitude of inefficiency.<sup>4</sup> Specifically, this paper uses the residuals from equation (3) as investment inefficiency ( $IEFCY_{i,t}$ ).

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

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) suggested that firm size is negatively associated with investment inefficiency. Similar to the argument in Chen et al. (2011), Mohammadi (2014) argued that larger firms have lower 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 & Hilary, 2006; Conyon & 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 nonfinancial 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 & 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 the sign of the 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, the 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 & Bitar, 2015). This study, therefore, does not predict the sign of the correlation between asset utilization ratios and investment inefficiency.

As a proxy for a firm's growth opportunities,  $TOBINO_{i,t}$  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 & Bitar, 2015) because of managers' negligent investment management. This study does not posit the sign of the 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 & Bitar, 2015). Therefore, this paper does not predict the sign of the relationship between financial constraints and investment inefficiency.

The  $LOSS_{i,t}$  variable in this paper is a dummy variable that takes the value of 1 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 & 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 & 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 sign of 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 a more inefficient investment (Jensen, 1986). However, firms with higher leverage ratios must pay more interest, whereas debt holders play a monitoring role in reducing investment inefficiency (Benlemlih & Bitar, 2015; Jensen, 1986). This study is also unable to predict the sign of 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, Kao, Tsao, and Wu (2007). Based on the information asymmetry and agency problem points of view, Stein (2003) and Bertrand and Mullainathan (2003) argued that corporate governance has a significant effect on investment efficiency. They found that better-governed firms have more information disclosure, less information asymmetry (Healy & 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 suggested that better-governed firms have a more efficient investment. However, Lee and Chuang (2007) indicated 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

significantly positive or negative effects on investment efficiency.

The interaction term ( $C\hat{S}R_{it} \times D_{2014}$ ):  $C\hat{S}R_{it}$  represents the predictive values of  $CSR$ , and  $D_{2014}$  is a dummy variable that takes a value of 1 if firm  $i$  is in the year 2014 through 2017 and zero otherwise.<sup>5</sup> Because the mandatory preparation of corporate social responsibility reporting annually from 2015 for specified Taiwanese listed firms was announced by Taiwanese authorities on February 12, 2014 (Taiwan Stock Exchange, 2014), Taiwanese listed firms would be motivated to implement CSR initiatives. The association between CSR and investment inefficiency may, therefore, have changed. Thus, an interaction term is added in equation (2). Consequently, it is argued here that the predictive values of CSR have a more pronounced effect on reducing investment inefficiency in the period of 2014–2017 than in the period of 1997–2013.

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) argued 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).

### Data Description

This paper focuses on firms listed on the TWSE and the GTSM during the period from 1997 to 2017 due to data availability. This paper obtains CSR data from three lists of CSR awards, including the ITBER and ECSRA from Taiwan CommonWealth magazine from 1997 to 2017 and the CSRA (Corporate Social Responsibility Award) for the 2005–2017 period. Financial and corporate governance data were 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 21-year sample period, the sample includes 21,032 firm-year observations and represents 1,430 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.

## Empirical Results

### 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% level. These results show that these instrumental variables all are strong instruments. Hence, the regression coefficients can be consistently estimated in this paper.

Table 2 presents the results of testing the over-identification restrictions of the sets of models. The

**Table 1.** The First-Stage Weak Instrumental Variable Tests

	Entire sample	Less effective corporate governance	More effective corporate governance
F-test	13.926 ***	7.970 ***	14.431 ***
p-value	4.56e-009	2.63e-005	2.28e-009

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	0.210	7.538 e-007	0.103
p-value	0.6466	0.9993	0.7482

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

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

### **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 but statistically nonsignificant at the 5% level. The investment inefficiency of CSR firms is not significantly less than that of non-CSR firms. The results indicate that firms engaging in CSR are not associated with less inefficient investment under corporate governance among Taiwanese firms in the emerging Asian stock market. This result is not consistent with the arguments of Cook et al. (2018) and Benlemlih and Bitar (2015). It suggests that CSR involvement insignificantly mitigates agency problems and information asymmetry between managers and stakeholders, thus leading to the insufficient reduction of inefficient investment among Taiwanese firms in the emerging Asian stock markets. Surprisingly, the coefficients for  $C\hat{S}R_{it} \times D_{2014}$  in model 1 and model 2 are negative and significant at the 5% level, implying that firms with CSR practices see a more significant and negative effect on mitigating investment inefficiency for the period 2014–2017 compared with firms that fulfilled CSR practices during the period of 1997–2013. Therefore, this result obtains empirical support for Taiwan's mandatory regulation on the preparation of CSR reporting.

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), a 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 are 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 that may lead to more inefficient investment. Contrary to the arguments of Benlemlih and Bitar (2015) and Jensen (1986), higher leverage ratios ( $LEV$ ) for firms 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. 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.



**Table 3.** 2SLS Regression Analysis of the Effect of CSR on Investment Inefficiency

Variables	Predictive signs	Model1			Model2		
		Coefficients	p-values	VIF	Coefficients	p-values	VIF
Constant		-0.1008**	0.000		-0.1079**	0.000	
$\hat{C}\hat{S}R$	?	-0.0181	0.133	2.450	-0.0201	0.103	2.444
SIZE	-	0.0050**	0.000	2.074	0.0054**	0.000	2.052
SCASH	+	0.2299**	0.000	1.251	0.2259**	0.000	1.228
LOGAge	?	-0.0106**	0.000	1.681	-0.0111**	0.000	1.674
TANGA	-	0.0988**	0.000	1.421	0.0983**	0.000	1.418
SROA	?	-0.0196	0.088	1.128			
TOBINQ	?	0.0070**	0.000	1.465	0.0069**	0.000	1.448
FCONS	?	0.0000	0.066	1.011			
LOSS	-	-0.0253**	0.000	1.208	-0.0262**	0.000	1.173
CASHFW	?	-0.0366**	0.004	1.038	-0.0351**	0.007	1.037
LEV	?	0.0255**	0.000	1.284	0.0242**	0.000	1.276
CGIP	?	-0.0003	0.657	1.057			
$\hat{C}\hat{S}R \times D_{2014}$	-	-0.0207*	0.027	1.507	-0.0227*	0.020	1.507
Industry Fixed Effect			Yes			Yes	
Year Fixed Effect			Yes			Yes	
N			21,032			21,032	
Adj. R Square			0.0845			0.0845	

Notes: Table 3 presents the regression results for a 2SLS analysis of the effect of CSR on investment inefficiency. This paper uses Arellano's (2003) approach to adjust the parameter estimate of the panel robust standard error. \* and \*\* indicate significance at the 5% and 1% levels, respectively. Dependent variables: IEFCY is the investment inefficiency for 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 is 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 1 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  $t$ .  $\hat{C}\hat{S}R \times D_{2014}$  is defined as an interaction term between  $\hat{C}\hat{S}R$  and  $D_{2014}$ .  $D_{2014}$  is a dummy variable that takes a value of one if firm  $i$  is in year 2014 through year 2017, and zero otherwise. Year Fixed Effect is a set of year dummy variables. Industry Fixed Effect is a set of industrial dummy variables.

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, which is a major emerging Asian market (Lee & Chuang, 2007). Moreover, risk management is overlooked by managers over very long periods (Aebi et al., 2012; Kirkpatrick, 2009; Lee, 2015b).

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. A possible reason is that Taiwanese governance firms might not achieve genuine CSR

implementation resulting in a nonsignificant decline in investment inefficiency because these firms attempt to cover up the agency problems and information asymmetry.

Strikingly, the results are consistent with the findings in Table 3, also showing that the coefficients on the interaction term ( $C\hat{S}R_{i,t} \times D_{2014}$ ) are negative and significant across both model 1 and model 2 at the 5% level. Among firms with less effective corporate governance, those that engage in CSR have a more significant reduction in investment inefficiency in the 2014–2017 period than those that engage in CSR in the 1997–2013 period. Therefore, this result also provides supporting evidence for mandatory regulations on the preparation of CSR reporting among firms with less effective corporate governance. This finding may suggest that the effect of CSR mitigates investment inefficiency for Taiwanese weak governance firms

**Table 4.** 2SLS Regression Analysis of the Effect of CSR on Investment Inefficiency for Firms With Less Effective Corporate Governance

Variables	Predictive signs	Model1			Model2		
		Coefficients	p-values	VIF	Coefficients	p-values	VIF
Constant		-0.1197**	0.000		-0.1303**	0.000	
$C\hat{S}R$	?	-0.0383	0.283	6.172	-0.0467	0.204	6.151
SIZE	-	0.0057**	0.002	5.268	0.0062**	0.001	5.227
SCASH	+	0.2530**	0.000	1.286	0.2502**	0.000	1.266
LOGAge	?	-0.0101**	0.000	1.697	-0.0104**	0.000	1.694
TANGA	-	0.1012**	0.000	1.432	0.1012**	0.000	1.427
SROA	?	-0.0124	0.211	1.108			
TOBINQ	?	0.0078**	0.001	1.466	0.0077**	0.000	1.443
FCONS	?	0.0000	0.137	1.014			
LOSS	-	-0.0252**	0.000	1.194	-0.0255**	0.000	1.146
CASHFW	?	-0.0179	0.229	1.043			
LEV	?	0.0291**	0.000	1.315	0.0280**	0.001	1.310
$C\hat{S}R \times D_{2014}$	-	-0.0542*	0.030	2.888	-0.0555*	0.026	2.886
Industry Fixed Effect			Yes			Yes	
Year Fixed Effect			Yes			Yes	
N			14,506			14,506	
Adj. R Square			0.1042			0.1020	

Notes: Table 4 presents the regression results of a 2SLS analysis of the effect of CSR on investment inefficiency 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 5% and 1% levels, respectively. The definitions of the variables in Table 4 are the same as those for the variables in Table 3.

since 2014 because mandatory CSR reporting might improve their behaviors of CSR implementation, resulting in the reduction of agency problems and information asymmetry.

Similar to the results in Table 3, most control variables in Table 4 have strong 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% 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, older firms and those with 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% level.

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 5% level. These results show that CSR firms have a 3.90% 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

**Table 5.** 2SLS Regression Analysis of the Effect of CSR on Investment Inefficiency for Firms With More Effective Corporate Governance

Variables	Predictive signs	Model1			Model2		
		Coefficients	p-values	VIF	Coefficients	p-values	VIF
<i>Constant</i>		-0.1418**	0.007		-0.1506**	0.001	
$\hat{C}\hat{S}R$	?	-0.0390*	0.013	1.810	-0.0440**	0.015	1.804
<i>SIZE</i>	-	0.0068**	0.001	1.944	0.0076**	0.001	1.903
<i>SCASH</i>	+	0.1833**	0.002	1.235	0.1863**	0.002	1.203
<i>LOGAge</i>	?	-0.0108**	0.000	1.707	-0.0126**	0.000	1.703
<i>TANGA</i>	-	0.1019**	0.000	1.447	0.0998**	0.000	1.436
<i>SROA</i>	?	-0.0350*	0.034	1.196	-0.0276	0.072	1.181
<i>TOBINQ</i>	?	0.0063**	0.010	1.672	0.0066**	0.006	1.665
<i>FCONS</i>	?	0.0000	0.065	1.019			
<i>LOSS</i>	-	-0.0241**	0.000	1.248	-0.0235**	0.000	1.205
<i>CASHFW</i>	?	-0.0808**	0.003	1.038	-0.0734**	0.006	1.037
<i>LEV</i>	?	0.0190	0.102	1.286			
$\hat{C}\hat{S}R \times D_{2014}$	-	0.0159	0.735	1.153			
<i>Industry Fixed Effect</i>			Yes			Yes	
<i>Year Fixed Effect</i>			Yes			Yes	
<i>N</i>			6,526			6,526	
<i>Adj. R Square</i>			0.0847			0.0842	

Notes: Table 5 presents the regression results of a 2SLS analysis of the effect of CSR on investment inefficiency 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 5% and 1% levels, respectively. The definitions of the variables in Table 5 are the same as those for the variables in Table 3.

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 0.07% larger than that in Model 1 of Table 4. This figure shows that CSR firms with more effective corporate governance have a 0.07% 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.

The coefficients on the interaction term ( $CSR_{i,t} \times D_{2014}$ ) are positive but not significant. Thus, the results, contrary to the results in Tables 3 and 4, suggest a nonsignificant reduction in investment inefficiency for firms that engage in CSR during the period of 2014–2017 compared with firms that engage in CSR in the 1997–2013 period because mandatory CSR reporting does not alter their behaviors of genuine CSR implementation for Taiwanese strong governance firms.

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 firms, and those with greater losses also see statistically significant and greater negative impacts on inefficient investment.

## 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) CSR has a more pronounced effect on reducing inefficient investment among Taiwanese firms with more effective corporate governance; (2) CSR involvement does not have a statistically significant effect on reducing inefficient investment among Taiwanese firms with less effective corporate governance; (3) Compared to firms with weak governance mechanisms engaging in CSR during the period 1997–2013, CSR is associated with a more significant reduction in investment inefficiency for firms with weak corporate governance during the period 2014–2017; (4) Those Taiwanese firms with strong corporate governance engaging in CSR do not have significantly lower investment inefficiency over the period 2014–2017 than those not engaging in CSR over the period 1997–2013; and (5) Firm size, cash flow sensitivity, collateral value, and growth opportunities have significantly positive effects on investment inefficiency in Taiwan among Asian emerging markets. *LOGAge* and *LOSS* are significantly associated with lower investment inefficiency for Taiwanese firms among Asian emerging markets.

The results of this study provide useful information for investors, stakeholders, and firm managers seeking to reduce inefficient investment in emerging markets and guidance for policymakers aiming to enable CSR practices in emerging markets. In particular, weak governance firms should be mandatorily required to prepare CSR reporting to mitigate against their investment inefficiency. Specifically, to obtain the expected benefits from promoting CSR activities, authorities should first find ways to promote the enforcement of effective corporate governance among firms. To identify firms with expected profits, investors and stakeholders should utilize a combination of information on CSR activities and corporate governance.

Although the present study offers useful information about CSR practices in an Asian emerging market, Taiwan, it still has inherent limitations. Owing to the limitations in collecting CSR data from listed firms of other Asian emerging markets, the present article fails to supply strong arguments based on analytical comparability given the condition of other Asian emerging markets. Suggestions for future research

might focus on investigating the impacts of CSR on investment efficiency for analytical comparability across multiple Asian emerging markets. On the other hand, the scores of CSR rating are also omitted from this study due to lack of Taiwanese CSR rating data and similar observations without trust scores over the sample period. Thus, future research might attempt to further examine the relationship between CSR rating scores and investment efficiency by collecting complete score data.

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## Notes

- 1 Taiwan Stock Exchange Corporation is represented by the abbreviation TWSE.
- 2 High CSR firms have a greater chance of benefit by achieving a competitive advantage, resulting in higher returns on investment for stakeholders (Eccles, Ioannou, & Serafeim, 2012). Hence, the results of this study can offer useful guidance to intranational investors and firm management seeking to increase profits in their decision-making.
- 3 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.
- 4 The approach of Biddle et al. (2009) and Chen et al. (2011) is used to predict the normal level of investment and then estimate the deviation from the expected optimal investment to evaluate the magnitude of inefficiency.
- 5 When the dummy variable takes a value of 1 if firm  $i$  is in year 2015 through year 2017 and zero otherwise, the results of this paper remain qualitatively similar.

## References

- Aebi, V., Sabato, G., & Schmid, M. (2012). Risk management, corporate governance, and bank performance in the financial crisis. *Journal of Banking and Finance*, 36, 3213–3226. doi:10.1016/j.jbankfin.2011.10.020
- Akpınar, A., Jiang, Y. L., Gomez-Mejia, L. R., Berrone, P., & Walls, J. L. (2008). *Strategic use of CSR as a signal for good management* (Working Paper No. WP08-25). IE Business School. <http://dx.doi.org/10.2139/ssrn.1134505>
- Arellano, M. (2003). *Panel data econometrics*. Oxford, UK: Oxford University Press.
- Arora, P., & Dharwadkar, R. (2011). Corporate governance and corporate social responsibility (CSR): The moderating roles of attainment discrepancy and organization slack. *Corporate Governance: An International Review*, 19, 136–152. doi:10.1111/j.1467-8683.2010.00843.x
- Barnea, A., & Rubin, A. (2005). *Corporate social responsibility as a conflict between owners* (Working Paper No. March 2). Retrieved from <http://195.130.87.21:8080/dspace/bitstream/123456789/1163/1/Corporate%20social%20responsibility%20as%20a%20conflict%20between%20owners.pdf>
- Barnett, M. L. (2007). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of Management Review*, 32, 794–816. doi:10.5465/AMR.2007.25275520
- Beaudoin, C. A. (2008). *Earnings management: The role of the agency problem and corporate social responsibility* (Unpublished doctoral dissertation). Drexel University, Philadelphia, PA. Retrieved from <https://idea.library.drexel.edu/islandora/object/idea%3A2805/datastream/OBJ/view>
- Beltratti, A. (2005). The complementarity between corporate governance and corporate social responsibility. *Geneva Papers on Risk and Insurance - Issues and Practice*, 30, 373–386. doi:10.1057/palgrave.gpp.2510035
- Benlemlih, M., & Bitar, M. (2015). Corporate social responsibility and investment efficiency. *Academy of Management Proceedings*, 2015 (1). Retrieved from <https://doi.org/10.5465/ambpp.2015.12768abstract> doi: 10.5465/AMBPP.2015.12768abstract
- Bertrand, M., & Mullainathan, S. (2003). Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of Political Economy*, 111, 1043–1075. doi:10.1086/376950
- Biddle, G. C., & Hilary, G. (2006). Accounting quality and firm-level capital investment. *Accounting Review*, 81, 963–982. doi:10.2308/accr.2006.81.5.963
- Biddle, G. C., Hilary, G., & Verdi, R. S. (2009). How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics*, 48, 112–131. doi:10.1016/j.jacceco.2009.09.001
- Bizjak, J. M., Brickley, J. A., & Coles, J. L. (1993). Stock-based incentive compensation and investment behavior. *Journal of Accounting and Economics*, 16, 349–372. doi:10.1016/0165-4101(93)90017-A
- Bouslah, K., Kryzanowski, L., & M'Zali, B. (2013). The impact of the dimensions of social performance on firm risk. *Journal of Banking and Finance*, 37, 1258–1273. doi:10.1016/j.jbankfin.2012.12.004
- Chen, A., Kao, L., Tsao, M., & Wu, C. (2007). Building a

- corporate governance index from the perspectives of ownership and leadership for firms in Taiwan. *Corporate Governance: An International Review*, 15, 251–261. doi:10.1111/j.1467-8683.2007.00572.x
- Chen, F., Hope, O., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The Accounting Review*, 86, 1255–1288. doi:10.2308/accr-10040
- Chen, R., El Ghouli, S., Guedhami, O., & Wang, H. (2014). Do state and foreign ownership affect investment efficiency? Evidence from privatizations. *Journal of Corporate Finance*, 42, 408–421. doi:10.1016/j.jcorpfin.2014.09.001
- Chen, S., & Chen, I. (2012). Corporate governance and capital allocations of diversified firms. *Journal of Banking and Finance*, 36, 395–409. doi:10.1016/j.jbankfin.2011.07.013
- Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal*, 35, 1–23. doi:10.1002/smj.2131
- Chih, H. H., Miao, W. C., & Chuang, Y. C. (2014). Is corporate social responsibility a double-edged sword? Evidence from fortune global 500 companies. *Journal of Management*, 31, 1–19.
- Cho, S. Y., Lee, C., & Pfeiffer, R. J., Jr. (2013). Corporate social responsibility performance and information asymmetry. *Journal of Accounting and Public Policy*, 32, 71–83. doi:10.1016/j.jaccpubpol.2012.10.005
- Conyon, M. J., & Murphy, K. J. (2000). The prince and the pauper? CEO pay in the United States and United Kingdom. *Economic Journal*, 110, 640–671. doi:10.1111/1468-0297.00577
- Cook, K. A., Romi, A. M., Sanchez, D., & Sanchez, J. M. (2018). The influence of corporate social responsibility on investment efficiency and innovation. *Journal of Business Finance and Accounting*, 46(3–4) 494–537.
- Cronqvist, H., Heyman, F., Nilsson, M., Svaleryd, H., & Vlachos, J. (2009). Do entrenched managers pay their workers more? *Journal of Finance*, 64, 309–339. doi:10.1111/j.1540-6261.2008.01435.x
- Cutillas Gomariz, M. F., & Sánchez Ballesta, J. P. (2014). Financial reporting quality, debt maturity and investment efficiency. *Journal of Banking and Finance*, 40, 494–506. doi:10.1016/j.jbankfin.2013.07.013
- Datta, S., Iskandar-Datta, M., & Raman, K. (2001). Executive compensation and corporate acquisition decisions. *Journal of Finance*, 56, 2299–2336. doi:10.1111/0022-1082.00406
- Dowling, G. (2006). How good corporate reputations create corporate value. *Corporate Reputation Review*, 9, 134–143. doi:10.1057/palgrave.crr.1550017
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2012). The impact of a corporate culture of sustainability on corporate behavior and performance. Retrieved from <https://www.eticanews.it/wp-content/uploads/2012/10/Studio-Harvard.pdf>
- Fombrun, C. J. (2005). A world of reputation research, analysis and thinking - Building corporate reputation through CSR initiatives: Evolving standards. *Corporate Reputation Review*, 8, 7–12. doi:10.1057/palgrave.crr.1540235
- Friedman, M. (1970, September 13). The social responsibility of business is to increase its profits. *The New York Times*, pp. 32–33, 122–124.
- Frynas, J. G. (2006). Introduction: Corporate social responsibility in emerging economies. *Journal of Corporate Citizenship*, 2006, 16–19. doi:10.9774/GLEAF.4700.2006.wi.00003
- Gelb, D. S., & Strawser, J. A. (2001). Corporate social responsibility and financial disclosures: An alternative explanation for increased disclosure. *Journal of Business Ethics*, 33, 1–13. doi:10.1023/A:1011941212444
- Gomes, A. (2000). Going public without governance: Managerial reputation effects. *The Journal of Finance*, 55, 615–646. doi:10.1111/0022-1082.00221
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). New York: McGraw-Hill.
- Hayashi, F. (1982). Tobin's marginal q and average q: A neoclassical interpretation. *Econometrica*, 50, 213–224. doi:10.2307/1912538
- Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31, 405–440. doi:10.1016/S0165-4101(01)00018-0
- Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, 47, 153–162. doi:10.2307/1912352
- Hemingway, C. A., & MacLagan, P. W. (2004). Managers' personal values as drivers of corporate social responsibility. *Journal of Business Ethics*, 50, 33–44. doi:10.1023/B:BUSI.0000020964.80208.c9
- Hillenbrand, C., & Money, K. (2007). Corporate social responsibility and corporate reputation: Two separate concepts or two sides of the same coin? *Corporate Reputation Review*, 10, 261–277. doi:10.1057/palgrave.crr.1550057
- Hillman, A. J., & Keim, G. D. (2001). Shareholder value, stakeholder management, and social issues: What's the bottom line? *Strategic Management Journal*, 22, 125–139. doi:10.1002/1097-0266(200101)22:2<125::AID-SMJ150>3.0.CO;2-H
- Hovakimian, G. (2011). Financial constraints and investment efficiency: Internal capital allocation across the business cycle. *Journal of Financial Intermediation*, 20, 264–283. doi:10.1016/j.jfi.2010.07.001
- Hsu, Y. S., Chen, C. H., & Tseng, Y. L. (2013). The

- relationship between corporate social responsibility and credit rating index, Soochow. *Journal of Accounting*, 5, 1–26.
- Hubbard, R. (1998). Capital-market imperfections and investment. *Journal of Economic Literature*, 35, 193–225.
- Humphrey, J. E., Lee, D. D., & Shen, Y. (2012). Does it cost to be sustainable? *Journal of Corporate Finance*, 18, 626–639. doi:10.1016/j.jcorpfin.2012.03.002
- Jensen, M. C. (1986). Agency cost of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76, 323–329.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305–360. doi:10.1016/0304-405X(76)90026-X
- Jiang, L., Kim, J., & Pang, L. (2011). Control-ownership wedge and investment sensitivity to stock price. *Journal of Banking and Finance*, 35, 2856–2867. doi:10.1016/j.jbankfin.2011.03.017
- Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of Business Ethics*, 103, 351–383. doi:10.1007/s10551-011-0869-y
- Jo, H., & Harjoto, M. A. (2012). The causal effect of corporate governance on corporate social responsibility. *Journal of Business Ethics*, 106, 53–72. doi:10.1007/s10551-011-1052-1
- Kaplan, S. N., & Zingales, L. (1997). Do financing constraints explain why investment is correlated with cash flow? *Quarterly Journal of Economics*, 112, 168–216.
- Kim, Y., Li, H., & Li, S. (2014). Corporate social responsibility and stock price crash risk. *Journal of Banking and Finance*, 43, 1–13. doi:10.1016/j.jbankfin.2014.02.013
- Kim, Y., Park, M. S., & Wier, B. (2012). Is earnings quality associated with corporate social responsibility? *Accounting Review*, 87, 761–796. doi:10.2308/accr-10209
- Kim, Y., & Statman, M. (2012). Do corporations invest enough in environmental responsibility? *Journal of Business Ethics*, 105, 115–129. doi:10.1007/s10551-011-0954-2
- Kirkpatrick, G. (2009). The corporate governance lesson from the financial crisis. *OECD Journal: Financial Market Trends*, 2009, 61–87.
- Krüger, P. (2015). Corporate goodness and shareholder wealth. *Journal of Financial Economics*, 115, 304–329. doi:10.1016/j.jfineco.2014.09.008
- Lantos, G. P. (2001). The boundaries of strategic corporate social responsibility. *Journal of Consumer Marketing*, 18, 595–632. doi:10.1108/07363760110410281
- Lee, M. T. (2015a). The influence of venture capital financing on the capital structure of Taiwanese firms, Cross Strait. *Banking and Finance*, 3, 67–98.
- Lee, M. T. (2015b). Corporate governance, global financial crisis, and firm leverage: Does board size affect firm leverage? *Taiwan Academy of Management Journal*, 15, 25–47.
- Lee, M. T. (2016). Corporate social responsibility and stock price crash risk. *Managerial Finance*, 42, 963–979. doi:10.1108/MF-10-2015-0278
- Lee, S. P., & Chuang, T. H. (2007). An empirical study between the corporate governance mechanisms and firm performance, Soochow. *Journal of Economics and Business*, 57, 1–27.
- Levis, J. (2006). Adoption of corporate social responsibility codes by multinational companies. *Journal of Asian Economics*, 17, 50–55. doi:10.1016/j.asieco.2006.01.007
- Lin, Y. F., & Liu, V. W. C. (2004). Firm performance, corporate governance, compensation, and CEO turnover in Taiwan. *Asia Pacific Management Review*, 9, 603–619.
- Mann, S. V., & Sicherman, N. W. (1991). The agency costs of free cash flow: Acquisition activity and equity issues. *Journal of Business*, 64, 213–227. doi:10.1086/296534
- McLean, R. D., Zhang, T., & Zhao, M. (2012). Why does the law matter? Investor protection and its effects on investment, finance, and growth. *Journal of Finance*, 67, 313–350. doi:10.1111/j.1540-6261.2011.01713.x
- McWilliams, A., Siegel, D. S., & Wright, P. M. (2006). Corporate social responsibility: Strategic implications. *Journal of Management Studies*, 43, 1–18. doi:10.1111/j.1467-6486.2006.00580.x
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance, and the theory of investment. *American Economic Review*, 48, 261–297.
- Mohammadi, S. M. (2014). The relationship between financial reporting quality and investment efficiency in Tehran stock exchange. *International Journal of Academic Research in Business and Social Sciences*, 4, 104–113. doi:10.6007/IJARBS/v4-i6/930
- Porter, M. E., & Kramer, M. R. (2006). Strategy and society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, 84(December), 78–93.
- Ruf, B. M., Muralidhar, K., Brown, R. M., Janney, J. J., & Paul, K. (2001). An empirical investigation of the relationship between change in corporate social performance and financial performance: A stakeholder theory perspective. *Journal of Business Ethics*, 32, 143–156. doi:10.1023/A:1010786912118
- Schuler, D. A., & Cording, M. (2006). A corporate social performance-corporate financial performance behavioral model for consumers. *Academy of Management Review*, 31, 540–558. doi:10.5465/AMR.2006.21318916
- Shih, J. J. & Lee, C. H. (2016). Taiwan Stock Exchange-

- Invigorate Economic Development [2016 Annual Report of Taiwan Stock Exchange]. Retrieved from [https://www.twse.com.tw/downloads/zh/about/company/annual\\_105.pdf](https://www.twse.com.tw/downloads/zh/about/company/annual_105.pdf)
- Stein, J. (2003). Agency, information, and corporate investment. In G. Constantinides, M. Harris, & R. Stulz (Eds.), *Handbook of the economics of finance* (pp. 111–165). Amsterdam: Elsevier Science.
- Stock, J. H., & Yogo, M. (2005). Testing for weak instruments in linear IV regression. In D. W. K. Andrew & J. H. Stock (Eds.), *Identification and inference for econometric models: Essays in honor of Thomas Rothenberg* (pp. 80–108). Cambridge: Cambridge University Press.
- Sue, S. H., Lu, C. J., & Chin, C. L. (2009). The association between family firms and earnings quality: Ownership, management and control. *NTU Management Review*, 19, 35–70.
- Surroca, J., & Tribó, J. A. (2008). Managerial entrenchment and corporate social performance. *Journal of Business Finance and Accounting*, 35, 748–789. doi:10.1111/j.1468-5957.2008.02090.x
- Taiwan Stock Exchange. (2014, February 12). *Taiwan first Asian market to implement mandatory GRI G4 CSR reporting from 2015* [Press Release]. Retrieved from <https://cgc.twse.com.tw/pressReleases/promoteNewsArticleEn/153>
- Vance, S. C. (1975). Are socially responsible corporation good investments risk? *Management Review*, 64, 18–24.
- Wooldridge, J. M. (2002). *Economic analysis of cross section and panel retrieved from data*. Boston, MA: MIT Press.
- Wu, C. C., Cheng, Y. L., & Hsiao, S. H. (2011). The study of credit cooperative governance in Taiwan—The prospective of corporate governance. *Operating Management Reviews*, 4, 55–70.