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Non-financial performance in product market and capital expenditure☆

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ABSTRACT

This paper analyzes the antecedent conditions of capital expenditure to fill a gap in the literature. This paper argues that non-financial performance measures related to product status and product market may influence corporate capital investment decisions. Industrial product market competition also compels companies to adopt incentives for capital expenditures. This paper further describes the impact of agency costs for firms on the relationship between non-financial performance and capital expenditure, because corporate investment decision involves management discretion. In a Taiwanese sample consisting of 5815 firm-years during 2005–2012, the findings demonstrate a negative relationship between two current non-financial performance measures as follows: 1. defect-free rate and 2. market share rate and future capital expenditures. When industry faces competition pressure, a firm will not increase future capital expenditures. The agency costs may inversely affect the relationship between non-financial performance measures and future capital expenditures.

1. Introduction

For major business investment projects, capital expenditures use enormous resources and the investment period is more than a few years long. The overall and long-term impact of capital expenditures on a firm is far-reaching and important. Rational investment decisions will help to improve company value. Capital expenditures are used to improve product quality to reduce costs or improve production performance as well as increases customer satisfaction about the products to promote the growth of future revenues. Previous studies examine the relationship between capital expenditure decision and firm value (Chan, Gau, & Wang, 1995; Chung, Wright, & Charoenwong, 1998; Cooper, Gulen, & Schill, 2008; Larcker, 1983; McConnell & Muscarella, 1985; Titman, Wei, & Xie, 2004). The purpose of capital expenditures is explicit; however, not all capital expenditures have favorable outcomes. For example, Titman et al. (2004) find a negative relationship between abnormal capital investment and stock returns. This relationship becomes stronger for firms that have greater investment discretion. To avoid capital investment inefficiency, it is crucial to understand the ex-ante state of the company before conducting capital investments. The position of a firm's main product is an essential foundation for the profitability of a firm and creates future value and capital investment as the strategic means to achieve that goal. Accordingly, this paper focuses on the conditions of product market as a precursor of corporate capital expenditures.

Previous studies provide evidence that non-financial performance measures are essential in providing relevant information to improve firm value (Davila & Venkatachalam, 2004; Riley, Pearson, & Trompeter, 2003). In addition, boards of directors use financial performance and non-financial information to reward CEOs. In Taiwan, Tsai (2003) finds that compensation is more closely related to future performance when accounting-based and market-based measures are less precise and sensitive. Huang, Chang, and Chow (2013) discover that non-financial performance measures positively mediate the relationship between innovation capital and organizational performance. Thus, some non-financial performance measures related to product status and product market may provide incremental information in corporate capital investment decisions.

Among various non-financial performance measures, defect-free rate, and market share rate are directly related to corporate capital investment decisions. Regarding capital expenditures as a growth opportunity to create firm value, improved product quality and inspiring sales growth to dominate the market are effective factors to determine future capital expenditures. The benefits of improved product quality fit with production performance purposes to reduce costs as well as to raise customer satisfactions to prompt future sales growth. Lin and Chen (2011) show that when market share is high, there is a positive association

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when the company's earnings decline and myopic R&D investment. If current product quality is good, companies may not necessarily raise capital expenditures in the next year. On the other hand, if the product of the company is market dominant, then it is difficult for the company to expand its market share rate. Accordingly, this article proposes that the worse the current non-financial performance (defect-free rate and market share rate) is, the higher the future capital expenditures are.

In addition to non-financial performance, the degree of market competition in product market may be another way to influence manager capital investment decisions and to reduce negligent behaviors. The effect of market competition is two-fold. Previous studies argue that market competition can result in better company performance and reduce agency problems. For this, Griffith (2001) argues that the product market competition degree promotes a company to improve production efficiency, particularly in the case of companies with serious agency problems. Guadalupe and Perez-Gonzalez (2011) consider that the degree of market competition could reduce management's favoritism behaviors. Baggs and De Bettignies (2007) find that competition has a significant direct pressure effect as well as a significant agency effect. Both effects increase the importance for firms to place on product quality improvements and cost reductions. Therefore, product market competition may play a role in determining future corporate capital investment.

Moreover, Fama (1980) states that market competition degree may regulate corporate behavior and will reduce a company's free cash flow. Jensen (1986) argues that when the company has a substantial surplus, to meet the desires of managers to avoid paying a large amount of dividends, it will expand the business scale, resulting in over-investment. They will accept investment projects with negative net present value to the detriment of shareholders' equity. If there is too much free cash flow, agency problems are likely to occur. Haye (1997) finds that when the product is from an industry with a low degree of competition, it will be more difficult for the company's product market monitoring mechanism to function. Hoberg, Phillips, and Prabhala (2014) argue that in a competitive environment, the company's management will prefer not to pay cash dividends and keep capital in the company. In this way, the company will have more free cash flow. Consequently, the degree of competition in the corporate environment can strengthen the internal management mechanism, so that corporate performance will be better.

Previous studies find that capital expenditures have a positive impact on the value of a company. However, most of these articles do not take into account the impact of non-financial performance and market competition for the company's products on capital expenditures. In addition, corporate investing decisions involve management discretion, so the question remains whether the amount of the agency costs of the company will affect the impact of the foregoing factors on capital expenditure. This article further explores the impact of non-financial performance of companies and the agency costs on capital expenditure. Thus, to fill the gap of previous capital expenditure literature, this paper analyzes the antecedent conditions of capital expenditures. Considering the ex-ante statuses may have a better effect on corporate capital investment and lead to higher levels of performance.

In a Taiwanese sample consisting of 5815 annual observations during 2005–2012, a fixed effects model is used to examine the effect of non-financial performance in product market to capital expenditures. In addition, for the sake of the endogenous nature of capital expenditure decisions, the impact of the current period capital expenditures on the next period capital expenditure is also controlled. The empirical findings show that when current non-financial performance of defect-free rate is poorer and product market share is lower, the company's capital expenditure investment in the next period will be higher. When product competitiveness is considered, the company's current defect-free rate and product market share still have negative impacts on the next period capital expenditure. Hence, the empirical findings in consideration of industrial competition are consistent with the impact of non-financial performance on capital expenditure. In addition, when the company product's current market competitiveness is higher, the next period's capital expenditure investment will be lower. On the other hand, the interaction terms of agency costs and non-financial performance indicators suggest that agency costs have a positive impact on non-financial performance and the next period capital expenditure relationship, although the impact of agency costs to product quality is unclear. Additionally, the positive impact of agency costs to current product market competition on the next period capital expenditures is significantly observed.

We employ a fixed effects model to investigate the above relationship by focusing on the effect of individual independent variables and the interaction item of independent variables on capital expenditures. However, we cannot observe the combination effect of all main independent variables on capital expenditures. To produce a comprehensive explanation of how non-financial performance on capital expenditures, we use a different method, fuzzy set qualitative comparative analysis (FSQCA). The findings of FSQCA may explain capital expenditure by the interaction among non-financial performance, agency cost, and other possible variables. Probably, this method could be a good alternative to explore the findings that a traditional analysis of fixed-effect regression with interaction terms can do.

In Section 2, we review related literature and establish research hypotheses. In Section 3, we present the research design, regression models, and data collection. Next, in Section 4, the findings are described. Finally, Section 5 concludes this paper.

2. Literature and hypothesis development

The goal of firms to conduct capital investment is to generate future values. Not all capital expenditure is valuable unless carefully realize some antecedent conditions. Non-financial performance is value relevance to firm value. Riley et al. (2003) find that accounting earnings, changes in abnormal earnings, and non-financial performance variables are significantly associated with stock returns. When non-financial performance metrics, earnings, and changes in abnormal accounting earnings are included in the same model, non-financial performance variables show incremental value relevance over traditional accounting metrics. Davila and Venkatachalam (2004) use a sample of airline firms' documents of passenger load factor, an important non-financial measure for firms in this industry, is positively associated with CEO cash compensation. This association is significant after controlling for traditional accounting performance measures (return on assets) and financial performance measures (stock returns). These studies demonstrate that non-financial performance measures are essential in providing relevant information.

In Taiwan, Tsai (2003) finds that the relationship between compensation and future performance is significantly positive after controlling for current accounting-based and market-based measures, and that compensation is more closely related to future performance when accounting-based and market-based measures are less precise and sensitive. The findings provide indirect evidence supporting the assertion that boards of directors use non-financial information to reward CEOs. Huang et al. (2013) survey financial and accounting officers from 97 public companies in Taiwan's electronics sector and find that these companies do make considerable use of non-financial performance measures. The sample companies' use of non-financial performance measures has a positive link to organizational performance. Additionally, they find evidence that non-financial performance measures positively mediate the relationship between innovation capital and organizational performance.

Product market status may be an important predecessor of corporate capital expenditures, because the quality and the market power of a firm's main product are the bases for a firm to make profits and to create future value. In the perspective of product market, the first non-financial performance measure in this study is defect-free rate. The benefits of improving product quality are to fit in with production performance purpose to reduce costs and to raise customer satisfactions to