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CAUSES AND CONSEQUENCES OF CASH FLOW SENSITIVITY: EMPIRICAL TESTS OF THE US LODGING INDUSTRY

**Amit Sharma
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ABSTRACT

The purpose of this paper is to investigate the causes and consequence of cash flow sensitivity. While cash flow has been regarded as an agency problem, empirical investigations in context of managerial conservatism or optimizing behavior are limited. In this paper we investigate two key aspects of cash flow sensitivity: whether cash flow sensitivity causes variations in fixed asset investments; and if cash flow variations are caused by managerial conservatism. Theoretical models are empirically tested in the US lodging sector. This overall understanding of cash flow sensitivity in the lodging industry through our study contributes to hospitality literature to the study of liquidity management practices, capital formation, and investment behavior, and how these are related to overall risk profile of the firm.

Introduction

Cash flows are critical for operational success of businesses, especially those in the hospitality industry due to the shorter lifecycle of transactions, demand uncertainty, and high levels of fixed costs. Variations in the level of internal cash flows can place financial restraints on the firm and force it to either source external financing for operational and investment needs, or relinquish opportunities. There are two aspects to this issue: first, how variations in cash flows impact investments; and second, what causes variations in cash flows. Relationship between cash flow sensitivity and investment behavior of firms has been studied extensively outside of the hospitality industry, and remains a highly controversial issue. Part of the literature shows that cash flow variance does impact investments while the other part of the literature claims that this relationship is influenced by the financial constraints of the firm. Investigating how this relationship exists in hospitality firms could provide interesting results. If cash flow demands in these firms are indeed higher than in other industries, then one would expect that investments will remain highly correlated to cash flow variations despite financial constraints.

However, what remains relatively obscure, are the reasons for variations in cash flows. Two possible explanations could be hypothesized: the first reason can be that the firm is financially constrained, assuming it is maximizing profitability. The second reason is that the management is somehow unable to act in the interest of the owners, thereby producing suboptimal returns and internal cash flows. The second reason has been conceptualized in the literature but has not been empirically tested due to difficulties in identifying observable proxies for management actions. In this paper we present a model and empirically test it to understand how management actions may be causing cash flow sensitivities.

Two critical contributions of this investigation are as follows: first, investigating the causes of cash flow variance will be a contribution to mainstream finance literature, and second, understanding the correlation between cash flow variance and investments in the lodging industry will provide an added perspective to the controversy surrounding this issue. Overall, this paper will also help explain how lodging firms manage liquidity and make investments in this context.

Literature Review

Fazzari et al (1988) discuss that most investment models are based on the assumption that firms are able to respond, through their cost of capital, to the prices set by centralized securities market. An alternative way of analyzing investments is to emphasize the importance of internal cash flows due to their relatively lower costs versus external funds. This approach has led to the emergence of the literature that has analyzed correlations between cash flows and investments. Recent imperfections that been discovered in debt and equity markets have further given credence to this notion that firms that do not have access to external markets must mostly rely on internal sources of funds. The paper by Fazzari et al (1988) marks the beginning of this discussion (and controversy) that later emerged regarding cash flows-investments correlation. Their investigation reveals that cash flows are indeed correlated to investments and this correlation is particularly stronger in those firms that are financially constrained. This later finding is challenged by Kaplan and Zingales (1997). They based their investigation on Fazzari et al's (1988) results and show an almost reverses relationship – firms that are less financially

constrained have higher correlation between investments and cash flows versus those that have higher financial constraints. Based on these results they emphasize that higher cash flow sensitivities cannot be interpreted as evidence that firms are financially constrained. Later Fazzari et al (2000) admit that indeed cash flow-investment sensitivity is lower in financially constrained firms but disagree with a theoretical framework proposed by Kaplan and Zingales (1997) to explain the correlation between financial constraints and cash flows. This discussion is continued by Kaplan and Zingales (2000) in their later response. Surrounding this argument there have been numerous other investigations to explain possible correlations between cash flow-investment sensitivities. Hubbard (1998) presents an overview of this literature and the underlying theoretical arguments.

In the midst of this discussion and controversy researchers have still not responded to a critical issue: what may be the possible causes of cash flow sensitivity. Kaplan and Zingales (2000) propose that bringing in the agency cost views may provide insightful perspectives to this question. Specifically, they suggest that possible managerial conservatism or non-optimization behavior may be possible causes of cash flow-investment sensitivities. Pawlina and Renneboog's (2005) investigation is one of the few that has looked at the influence of agency. They show that inside ownership can result in cash flow sensitivity of investment and external stakeholders like financial institutions and government can possibly reduce this sensitivity through effective monitoring. Calomiris and Hubbard (1995) also investigate how costs of managerial control can impact cash flow-investment sensitivity, although they do so by observing differences in cost of capital and variations in cash flows.

While mainstream finance literature has analyzed cash flow-investment sensitivity, hospitality financial management literature has yet to investigate these relationships in lodging and foodservice industries. Therefore this investigation, to the best of knowledge, is the very first of its kind. Moreover, while recent investigations in mainstream literature have gotten closer to linking cash flow-investment sensitivity to agency costs, they still haven't investigated a direct relationship between management decision-making. This paper adds to the literature of linking cash flow-investment sensitivity and agency costs by investigating links to managerial conservatism and non-optimizing behavior. This paper investigates the following research question:

1. Are investments sensitive to variations in cash flows in US lodging firms?
2. What causes cash flow sensitivity? Is it managerial conservatism or their non-optimizing behavior?

Data and Methodology

Financial data for 53 hotel companies will be sourced from COMPUSTAT North America. *Cash flow* will be defined as the sum of EARNINGS BEFORE EXTRAORDINARY ITEMS (COMPUSTAT item 18) and DEPRECIATION (COMPUSTAT item 14) (Kaplan and Zingales, 1997). *Investment or Capital expenditure* will be defined as COMPUSTAT item 128 and market-book value will be defined as a lagged market to book value (proxy for investment opportunities). There are relatively fewer proxies for managerial conservatism and non-optimizing behavior. One way to proxy managerial conservatism in the literature is to factor in

firm risk, and even break it down into its systematic and unsystematic components. Therefore, proxy of *Total firm risk* will be the log(variance of daily stock return over firm's fiscal year, annualized); for *systematic risk* the log(variance of the product of firm BETA and the market daily returns, annualized); and for *unsystematic risk* log(variance of the residual from the market model, annualized) (Low, 2005). Other proxies for management incentives will be *equity based compensation of management*, *CEO's ownership*, and *CEO's option holdings* (Low, 2005). This information will be incorporated in the model using dummy variables. As stated earlier, there are few or no proxies that have been used to model non-optimizing behavior. We propose to use *change in operating profits (before fixed charges)* as a proxy for managements' non-optimizing behavior. Control variable of *market capitalization*, *assets*, *sales*, *MB*, *ROA*, and *size* will also be incorporated into the model.

The following three hypotheses will be tested using this data:

1. There is a positive correlation between firms' cash flows and investment/capital expenditure.

$$\frac{I_t}{K_{t-1}} = \alpha + \beta_1 \frac{CF_t}{K_{t-1}} + \beta_2 \frac{MV_{t-1}}{BV_{t-1}} + \varepsilon_t$$

2. Firms' cash flows are negatively correlated with firms' risk in the absence of managerial incentives.

3. Firms' cash flows are negatively correlated with firms' changes in operating profits.

Contribution

To the best of our knowledge, this is the first investigation of its kind to analyze cash flow-investment sensitivity in the hospitality industry. Most importantly, it is one of the few investigations in finance literature analyzing the impact of managerial behavior on cash flow sensitivity. Overall, this paper will contribute to improve our understanding of hospitality industries' liquidity management practices and their impact on investment expenditure.

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