The Event Study Method in Logistics Research: Overview and a Critical Analysis

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ABSTRACT

Logistics researchers often want to understand how particular management changes or external factors influence a firm. While this can be accomplished using operational or survey data, the authors outline an alternative approach using the event study method where inferences are made with the estimated magnitude and direction of abnormal returns. The calculated abnormal returns can be used as a dependent variable in a cross-sectional regression to understand which managerial decisions may affect these outcomes. As the method remains little used by logistics researchers, the authors outline key assumptions and design considerations. They review recent articles and provide suggestions for logistics researchers improve the rigor of their research designs. This article aims to provide an overview of the method for logistics and supply chain researchers with a focus on developing the capability to design an effective study and to evaluate research articles to assess methodological weaknesses that may lead to untrustworthy results.

KEYWORDS

Event Study, Literature Review, Logistics Research, Research Methods

1. INTRODUCTION

The event study method is a valuable and powerful technique that has helped logistics researchers to better understand the impact of changes from different logistics management approaches. It is an analysis of the impact of a given event. The method allows researchers to determine whether or not there is an abnormal change in the stock return, above and beyond a change that is otherwise expected, associated with the event; that is, whether it is believed (by stock market investors) that the event will make a substantial difference to the fortunes of the firm. Examining these abnormal returns allows researchers to infer whether or not the event was useful or valuable for the firm, based or the magnitude, direction, and overall significance of the event. From this, a logistics manager would be able to understand costs associated with a negative event – this may help them to invest in preventative measures. Alternatively, they can more clearly understand the positive returns that may accrue from taking particular management actions (e.g., implementing new technologies or changing business models).

The method has been used extensively in accounting and finance research. In management literature, however, the approach has been more widely used to examine a range of different scenarios including how firms becoming sustainable (Cheung, 2011), the impact of new executives joining the
firm (Hendricks, Hora, & Singhal, 2014), the impact and management of recalls (Chen, Ganesan, & Liu, 2009; Ni, Flynn, & Jacobs, 2014; Wood, Wang, Olesen, & Reiners, 2017b), research into sustainable practices in construction (Kajander, Sivunen, Vimpuri, Pulkka, & Junnila, 2012), the response to food safety issues (Dai, Kong, & Wang, 2013; Hammoudi, Hoffmann, & Surry, 2009; Mazzocchi, Ragona, & Fritz, 2009), or the impact of outsourcing business processes (Duan, Grover, Roberts, & Balakrishnan, 2014).

For logistics management researchers, a major focus is determining whether or not a logistics technique or management approach is capable of providing a substantial benefit to a firm. While a small number of firms, as highlighted in case studies, can successfully make use of an approach does not mean that, overall, it is capable of providing a benefit when generalized to other firms and circumstances. While logistics research is sometimes conducted with surveys, it can prove challenging to extract objective and reliable data using surveys. In contrast, finance researchers have found it valuable to use the event study analysis to determine the impact of an event. While a finance specialist may be more interested in the impact of a stock split, an operations manager might focus on the impact of a quality improvement program.

While it is true that operations managers and finance managers rarely worry about the same issues, the end impact of changes made in the firm can flow through and influence the stock returns for the firm. For an operations manager, stock returns are likely not to be the primary day-to-day driver of interest. Rather, an operations manager may be more inclined to worry about more pressing operationally focused metrics; e.g., stock turns. However, exceptional operational performance (whether positive or negative) should be transformed into stock returns that exceed what we otherwise expect to observe. In this way, the positive and advantageous logistical or operational changes made by the manager should result in improved operational performance; in turn, this should flow to improved financial returns. There several important steps in the causality and the measurement of stock returns is only one method of evaluating the success of these managerial changes. A more direct measurement might include assessing the impact of the event directly on the operational measures. Practically, if we wanted to evaluate this change with a privately held company, it would require the firm to disclose sensitive information. Using publicly listed companies, however, enables researchers to evaluate changes in operating performance with the proviso that the operating performance is captured over a longer period and other factors or events might be influencing the change in operating performance, not just the event of interest. Examples of operating performance in logistics and operations event studies are provided in Huey-Lian and Tang (2000) and Holder-Webb, Lopez, and Regier (2005). In contrast, this article focuses on the examination of the change in stock prices over a short period (a matter of days) to estimate the overall perceived impact of the event on the firms; see for example, Gong, Firth, and Cullinane (2008) and Park, Park, and Zhang (2003).

Using these research approaches relying on secondary data ensures that the researcher is relying on more unbiased or more objective forms of data. The approach, therefore, avoids forms of social desirability bias as can be found in survey research. The problems of social desirability bias are particularly acute when investigating potentially sensitive issues such as sustainability outcomes (Walker, Miemczyk, Johnsen, & Spencer, 2012) but may also be a problem when asking respondents to evaluate the success of an improvement project due to the subjective nature of the questioning, the wording of the question, the ordering of questions, the scales used in the question, and the way that many respondents reported make little mental effort to answer the question accurately (Bertrand & Mullainathan, 2001). The bias in reporting on improvements may cause the research results (which, specifically, are the respondents’ perceptions of improvements) to appear more positive or show a stronger effect size than exists. Therefore, the use of operational or financial performance changes can better support researchers that seek to understanding the impact of events or changes.

The purpose of this article is to provide logistics researchers with an overview of the event study method with a focus on how to ensure effective research design decisions are made to gain trustworthy results. We illustrate the strengths and benefits of using the method, highlight the weaknesses and
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