EVENT STUDIES FOR FINANCIAL RESEARCH

A COMPREHENSIVE GUIDE

DORON KLIGER AND GREGORY GUREVICH

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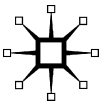

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To my father, with endless longing…
—Doron

To my family and friends, near and far.
—Gregory

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Chapter 1

Introduction

Event studies are overwhelmingly widespread in financial research. They encompass tools that are well suited for assessing the impact of numerous types of finance-related episodes on security prices and trading activity of publicly traded firms. Furthermore, they are capable of capturing the flow of information into security prices, shedding light, by doing so, on the efficiency of capital markets.

The event study approach (ESA) is considered one of the major instruments of modern corporate finance research. Its importance and wide usage are evident from the vast and still growing research literature. The scope of activities amenable to this analysis is very broad. It includes, naming just a few, such events as earnings announcements; releases of quarterly and annual financial reports; announcements of dividends, stock splits, and mergers; as well as initial public offerings.

Mastering the ESA is essential to researchers and practitioners. The goal of this book is to serve as a guide to event studies and help readers to become familiar with the capacities and facets of ESA. The book enables the readers to acquire hands-on experience with conducting event studies and gain the required technical skills for devising their own comprehensive event studies. It is accompanied by an online library of exercises and solutions, in the shape of spreadsheet templates, facilitating down-to-practice experimentation of the introduced empirical tools. The links for accessing chapter-specific data sets for practice are contained throughout this volume.

The sophistication of state-of-the-art statistical methods often renders the research literature that is dealing with event studies virtually inaccessible

for many potential users. Our aim is to help the readers to overcome this obstacle by providing a concise summary and detailed application of the approach. We hope our target audience of researchers (including graduates and senior undergraduates) and practitioners (including financial analysts, fund managers, and institutional and private investors) would benefit from gaining access to this multipurpose tool through this focused guide.

The chapters of this book are organized in a way that permits gradual acquaintance with the subject, starting from theoretical background and introduction of ESA down to practical applications accompanied by spreadsheet templates, walkthrough instructions, and complete solutions.

Chapter 2 provides the background of ESA, focusing on the celebrated efficient market hypothesis (EMH). Specifically, the chapter outlines the theoretical foundations of EMH and its three (weak, semistrong, and strong) versions and presents some well-known empirical studies of EMH and the diversity of their results. In particular, the chapter delves into the aspects of EMH that are most pertinent for ESA and discusses their implications for conducting event studies.

Chapter 3 is the core theoretical chapter. It introduces the basic logic behind ESA, proceeds with technical specifications that are essential for the implementation of the approach, and concludes by presenting the nature of the results, their interpretation, and possible implications for market efficiency and information content of the analyzed events.

Chapter 4 presents a simplified ESA example, which is aimed at facilitating the more technical discussion presented in chapters 5 and 6 and the hands-on exercises in chapters 7 and 8. Specifically, we investigate the impact of air crashes on stock prices of involved airline companies. We construct the example on a very small data specimen to make the analysis as transparent as possible and concentrate on the core features of data processing, leaving various potentially complicating caveats for the sequel.

Chapter 5 introduces a basic, yet complete, ESA design. Specifically, it describes the main stages of data manipulation, hypothesis testing, construction of test statistics, and corresponding statistical analysis. Toward the end of the chapter, we devise a couple of hypothetical ESA cases and illustrate how they may be used to (1) quantify share price reactions to the studied events and (2) shed light on the question of market efficiency.

Chapter 6 draws a map of a smorgasbord of issues in ESA design that are likely to be encountered in practice and shows how they could be

addressed. In particular, we discuss the issues of event clustering, nonparametric ESA design, bidirectional hypotheses, bond and whole-firm reactions, long-run reactions, and return frequency.

Chapter 7 is the core practical chapter. It provides readers with basic hands-on experience in the form of a complete ESA exercise. The chapter is accompanied by a spreadsheet template (one from the online library of templates and solutions), which is predesigned to accommodate the event study solution steps. Guiding instructions are presented, which would take the readers hand-in-hand through the solution process. For solving the exercise, the readers may either choose to follow the guiding instructions and fill the provided template or download a copy of the dataset and work independently. The chapter concludes with a detailed explanation of the exercise results.

Chapter 8 offers further hands-on exercises, based on the data provided in the previous chapter. In particular, it addresses several of the event study-related issues raised in previous chapters. The chapter is enforced by spreadsheet templates, for all of which complete solutions are provided. Specifically, templates and solutions (downloadable from the online library) are included for the following issues: conducting a clustering-adjusted event study procedure, applying nonparametric testing tools, applying the single-factor model of returns as an alternative benchmark of normal returns (the naïve model is applied in the basic exercise in chapter 7; both models are introduced in chapter 3), analyzing the effect of the magnitude of the surprise embedded in the disseminated information, and dissecting the sample to discover differential effects by the companies' sectors. As in the previous chapter, the readers may either solve the exercises by following the guiding instructions and filling the provided templates or download a copy of the dataset and work independently.

Chapter 9 provides concluding remarks and the book's summary.

Chapter 2

Infrastructure: The Efficient Market Hypothesis

During the past several decades, the efficient market hypothesis (EMH) has been recognized as one of the basic building blocks of modern financial economics. Due to the profound effect of EMH on financial thought, researchers and practitioners nowadays perceive the rationale behind it as intuitive. In a nutshell, it asserts the following: as investors strive to earn profit from market trading, they exploit every useful piece of data, thereby causing market prices to reflect all of the relevant information at any given moment.

Apparently, the origins of this idea of "wisdom of the crowds" are quite old. As Robert Shiller points out (1992, 438), attempts to provide a formal representation of the concept may be traced as far back as 1889, when George Gibson wrote in his book on major stock exchanges: "When shares become publicly known in an open market, the value which they acquire there may be regarded as the judgment of the best intelligence concerning them."

Following this logic, news arriving at the market must bring about an immediate and appropriate market reaction, and because news, by definition, relates to the unexpected component of the information, the future conduct of market prices is unpredictable. Consequently, traders' inability to consistently "beat" the market, that is, generate systematic excess gains by trading, is a sign of market efficiency.[1]

Such theoretical considerations led Louis Bachelier, in 1900, to the first formulation of what we know today as *random walk theory*, an immediate consequence of EMH. Random walk theory states that prices in efficient markets move randomly, thus precluding any possibility of using available information for generating sustained extra trading profits.