EDITORIAL

The event study in international business research: Opportunities, challenges, and practical solutions

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Abstract
The event study or event study method (ESM) is an empirical technique for capturing investors’ reaction to an event affecting one or more publicly traded firms. The ESM has been little employed in international business (IB) research despite its frequency in accounting, economics, and finance; for example, only two percent of the empirical articles in JIBS over 1970–2019 include an event study. While this scarcity could indicate a lack of demand, we argue that the field of IB studies offers many interesting and important research opportunities for an event study. We believe that the challenges arise primarily from the supply side, because conducting an event study involves overcoming a variety of data and analytical hurdles. We examine these methodological challenges and offer practical solutions designed to encourage adoption of the ESM. An online appendix with coding and examples provides additional resources.

Keywords: event; event study; event study method; announcements; abnormal returns; stock market reaction; valuation; international finance; research methods; best practices; Brexit

INTRODUCTION
In recent years, international business (IB) scholars have become more interested in causality. As Reeb, Sakakibara, and Mahmood note, “Empirical research in international business (IB) is difficult …we are seldom afforded the luxury of a randomized controlled experiment” (2012: 211). While the challenge of linking cause and effect is widespread in the social sciences, it is particularly steep in IB, where increased complexity adds layers of difficulty. Complexity in IB research is rooted in three factors: multiplicity, multiplexity, and dynamism. Multiplicity refers to “the number and variety of actors, industries, countries, institutions, etc.”; multiplexity refers to the “number and variety of ties or relationship among these entities” (e.g., dyadic factors, such as affinity/animosity and bilateral investment treaties); and dynamism reflects the “changing nature of the international business system” (Eden & Nielsen, 2020: 1609–1610).
As an example to illustrate the causality challenge, consider the longstanding IB research stream on whether multinationality is associated with better firm performance. Multinationality as the cause (e.g., through leverage of firm-specific advantages) is difficult to distinguish from multinationality as the effect (e.g., better-performing firms go abroad). Moreover, the relationship between cause and effect depends significantly on the context and time period; that is, on the multiplicity of actors and their environs, the multiplexity of their cross-border interactions, and the dynamism of the global system.

Reeb et al. (2012) discuss several methodologies for addressing causality. Our article adds the event study to the tools in IB researchers’ observational-data kit. Also referred to as the event study method (ESM), the event study is an empirical technique designed to capture the financial impact of an event by examining the behavior of stock prices around the event announcement (Campbell, Lo & MacKinlay, 1997; McWilliams & Siegel, 1997).

ESM can help identify causality in addition to providing researchers with other advantages. By focusing on information arriving at the stock market, ESM is able to isolate shocks, in effect assigning firms to treatment groups (those affected by the event) and control groups, a design that aids identification. In our MNE-performance example above, in countries with weak corporate governance, firms may expand abroad despite internationalization’s hurting firm value, with shareholders unable to prevent performance-reducing expansion undertaken for managerial benefit. Using ESM, researchers can look at the value of firms announcing international expansion, and see whether changes associated with the announcement are related to hypothesized factors.

ESM has been widely adopted in accounting, economics, and finance in areas of interest to IB research, such as internationalization (Doukas & Travlos, 1988), internalization theory (Morck & Yeung, 1992), and cross-border acquisitions and divestitures (Borisova, John, & Salotti, 2013). However, ESM has been used infrequently by IB scholars. We estimate that only 29 articles, about two percent of the empirical articles in the Journal of International Business Studies (JIBS) during its first 50 years (1970–2019), include an event study. We found a similar pattern in Strategic Management Journal where only 15 articles in international/cross-border settings and 57 articles in domestic settings included an event study over the period 1987–2019.

Because high-quality IB empirical research necessitates high-quality research methods (Eden, Nielsen and Verbeke, 2020), the limited use of ESM by IB researchers suggests the problem may lie with inadequate demand or supply, or both. Perhaps the method does not lend itself to interesting and important IB research questions (i.e., lack of demand), and/or there are data access hurdles and programming complications (i.e., high costs of supply) that discourage using this method.

We conjecture that a core problem stems directly from the specific models used by ESM to determine the impact of an event on investors’ expected returns. These models (e.g., the traditional domestic market model and several multi-factor models; Fama & French, 1993, 2015) were developed for the US stock market, which has stronger regulatory and enforcement institutions governing trading and information disclosure than do most countries. As a result, transporting models from the US to other countries usually necessitates adjustments. In addition, incorporating cross-border financial flows can also affect the way ESM is implemented. The single-country, closed-economy setting of the US in the 1960s when ESM was first developed is clearly a different setting than the semi-globalized and semidigitalized world of the twenty-first century. These issues, in conjunction with the scarcity of ESM studies in IB, provide the motivation for our paper.

Our goal is to encourage the use of a valuable analytical technique by novice ESM users, yet simultaneously demonstrate to experienced ESM users the importance of flexibility and consistency in a variety of IB settings. To achieve this goal, we examine the research opportunities and methodological challenges of using ESM, and suggest practical solutions designed to encourage the adoption of this valuable method by IB scholars. Our paper starts with an overview of the event study, focusing on its advantages and limitations. After showcasing research opportunities for using ESM in IB research, we argue that the limited use of ESM by IB scholars can be attributed, in part, to the method being conceptualized too narrowly, as useful primarily for estimating stock market reactions to self-announcements by firms. Our analysis of the 29 JIBS articles over 1970–2019 that include an event study supports this conjecture.

We then examine methodological challenges arising in the IB context. ESM requires that IB
scholars understand the method, overcome data-access hurdles and analytical barriers, and follow best practices applying the method to their research questions. We explore methodological challenges and outline a variety of practical solutions, stressing that context still matters despite increases in both financial market integration and institutional strength of national stock markets. To illustrate the practical solutions, we include an example applying ESM to Brexit, the UK-wide referendum to leave the European Union on June 23, 2016. Our example examines the wealth effects associated with Brexit using ESM: investors’ reaction to home-country (British) firms and EU-member (French) firms. An online appendix contains the annotated STATA coding for the Brexit example.

THE EVENT STUDY METHOD

Overview
ESM captures investors’ reactions to changes in information that affect their perception of future profits of affected firms, i.e., the stock market’s perceptions of (and investment responses to) increases and decreases in the future profit stream of the affected firms. Because stock prices are assumed to reflect all publicly available information, prices only change in response to the arrival of information that is new to investors (Fama, Fisher, Jensen, & Roll, 1969). Information matters rather than actions themselves; for example, both the announcement of an international joint venture and the announced start of its operations are events. Indeed, the ESM literature uses the terms events, announcements, news, and shocks largely interchangeably.

In ESM, the researcher looks for evidence of an “abnormal return” (AR), which reflect the unanticipated wealth effect of the event on the firm’s value. For time periods longer than one day (“event windows”), the daily ARs are added and referred to as “cumulative abnormal returns” or CARs (Brown & Warner, 1980, 1985). The researcher determines whether the stock market response is abnormal by comparing actual and expected returns, which are estimated based on modeling and data prior to the event window (“estimation window”) (McWilliams & Siegel, 1997). Expected returns refers to the returns (changes in a firm’s stock price, plus dividend, if any) that investors would have expected had the event not occurred (the counterfactual). Estimates of the expected returns typically build on the Capital Asset Pricing Model (CAPM), which holds that investors are compensated in the form of expected returns only for systematic (i.e., non-diversifiable) risk.

A problem for IB scholars is that the assumptions underlying the CAPM are unlikely to hold in international settings. For example, unless purchasing-power parity holds, exchange rate changes are a source of systematic risk. As a result, anticipated currency appreciation or depreciation affects expected returns, and a domestic-market model is inappropriate (Solnik & McLevey, 2009).

Advantages and Limitations
ESM has several key advantages. First, as mentioned in the Introduction, ESM facilitates examination of causality. The multi-layered, complex nature of the IB field (Eden & Nielsen, 2020; Sun, Doh, Rajwani, & Siegel, 2021) makes efforts to disentangle driving forces and their effects particularly challenging, even impossible, in “large-n” cross-sectional, time-series datasets. By focusing on investors’ reactions, ESM facilitates controlling for some factors, allowing examination of those of interest. In some cases, it can be the only feasible way to establish causality, while in other studies, it can be an effective way to complement other approaches as long as the shocks are exogenous and not fully anticipated (Atanasov & Black, 2016).

Second, ESM is a timely method. It uses high-frequency (typically daily) stock market data; in contrast, most datasets are annual or at best quarterly. Thus, the method can be used to analyze events very quickly, almost in real time. In addition to rapid availability of extensive data, ESM is also timely because asset prices (including stock prices) are forward-looking; they depend on expected future cash flows and risk. By analyzing expected outcomes rather than waiting for them to materialize, scholars need not wait years to analyze interesting and important phenomena. For example, ESM has already been used to analyze the impact of the COVID-19 pandemic on Chinese firms (He, Sun, Zhang, & Li, 2020) and US firms (Albuquerque, Koskinen, Yang, & Zhang, 2020).2

Third, ESM can be used when event outcomes cannot be clearly separated from overall firm financial performance, or from each other. For example, it can be difficult to disentangle the impact on a British firm’s return on assets (ROA) of a strategic decision, such as CEO turnover, that occurs after Brexit. Was the yearly change in the firm’s ROA due to CEO turnover or Brexit?
However, the IB researcher may be able to separately compute the change in the firm’s market value using ESM for the Brexit referendum and the CEO turnover announcement, i.e., ESM has the benefit of event precision. Moreover, with high-frequency data, an event study can estimate the expected impact of new information – e.g., a new joint venture or a CEO’s termination package – when researchers cannot observe the financial details. For instance, ESM has been used to assess strategic decisions (e.g., Merchant & Schendel, 2000), financial decisions (e.g., Errunza & Miller, 2003), and how a focal firm’s strategic actions affect rivals (e.g., Clougherty & Duso, 2009, 2011; Oxley, Sampson, & Silverman, 2009). ESM allows scholars to examine, from the investors’ viewpoint, research questions such as, “To what extent do announcements of bribery allegations differentially affect value creation of MNEs based on the MNE’s home-country environment?” or, “Do CEO terminations have a stronger market reaction in countries with high uncertainty avoidance?” ESM can also provide insight into the consequences of an event for firm performance. ESM can also generate the wealth effect (i.e., the cumulative abnormal returns, or CARs), which can be used as the dependent variable in multivariate regression analysis to assess firm-, industry-, country-, and event-level determinants (e.g., Eden, Juarez & Li, 2005).

A fifth advantage is that ESM can be used to analyze event patterns. ESM offers the opportunity to pinpoint investors’ reaction to an event for many firms. Therefore, the identification and accumulation of investors’ reactions over a period of time (and/or at different points in time) make it possible for scholars to study not only the short-term impact of firm activities but also the long-term impact and whether the impact varies over time (Ball & Brown, 1968). In many studies, the short-term and long-term effects are consistent but they can differ, which suggests strategic implementation is also important (Zollo & Meier, 2008). ESM is also ideal for studying events that affect many firms, and potentially identifying firm behaviors/characteristics as well as market features that differentially influence investors’ reactions to some firms versus others. Another use of ESM is to examine the impact of macro-shocks, such as foreign exchange crises or natural disasters (King, 2015).

It is important to note that ESM metrics for firm performance capture ex ante expectations, which are not necessarily correlated with long-term financial or market performance. Zollo and Meier (2008: 69), for example, in their review of the literature on mergers and acquisition (M&A), found that ESM “short-term” measures of acquisition performance were not correlated with longer-term performance metrics. The authors cautioned that “market expectations at the time of the announcement” may have little relationship with acquisition performance at the process, acquisition, or firm levels. This result may have contributed to the limited use of ESM by management scholars.

ESM has several major limitations. First, and most important, is that ESM can only be used with listed (i.e., publicly traded) firms. Thus, the method cannot be used with privately held or wholly state-owned firms, where there are no stock market data. However, ESM can be used for listed but partially state-owned (i.e., hybrid or mixed) enterprises (see, e.g., Carvalho & Guimaraes, 2018). Second, ESM can be challenging to implement when there are multiple events, as mentioned above. One problem is multiple simultaneous announcements during or close to the same time window (i.e., confounding events) that make it impossible to disentangle their effects. The observations involving a confounding event can be removed, although this may adversely affect sample size (McWilliams & Siegel, 1997; Khan, Kalelkar, Miller & Sanders, 2018). Sorescu, Warren and Ertekin (2017) recommended testing with and without the observations.

Third, ESM assumes stock markets are informationally efficient; i.e., all publicly available information relevant to a firm’s future prospects is fully reflected in its stock price, both before and after the announcement (Fama et al., 1969). Hence, an event needs to be at least partially unexpected by investors; otherwise, there will be no abnormal returns, as the information contained in the announcement has already been impounded in the stock price. Thus, ESM is inappropriate when market prices do not fully and accurately reflect available information. The most common source of informational inefficiency is illiquidity. Some stocks are thinly traded, especially for small and medium-sized enterprises in emerging markets, or listed on regional stock exchanges or over-the-counter in developed countries. As a result, their stock prices may be stale (not reflect current information) and, thus, not suitable for ESM.

Absence of stock-market reaction to an announcement may also be due to other sources
of market inefficiency, such as information leakages and insider trading (e.g., Bhattacharya, Daouk, Jorgenson, & Kehr, 2000). Inefficiencies are likely to be more endemic in developing countries where market institutions are weaker, but such problems also occur in developed markets. ESM may still be feasible, but researchers may need to examine abnormal returns prior to the typical event window (days \(-1, 0, \) and \(+1\)). For example, Miller, Li, Eden and Hitt (2008) used an event window that started 10 days before the public announcement due to concerns and evidence of weak institutions in a study of international joint ventures by Chinese firms. Clougherty and Duso (2011) started their study of international joint ventures by Chinese concerns and evidence of weak institutions in a market institutions are weaker, but such problems also occur in developed markets. ESM may still be feasible, but researchers may need to examine abnormal returns prior to the typical event window (days \(-1, 0, \) and \(+1\)). For example, Miller, Li, Eden and Hitt (2008) used an event window that started 10 days before the public announcement due to concerns and evidence of weak institutions in a study of international joint ventures by Chinese firms. Clougherty and Duso (2011) started their event window 50 days before the public announcement of the horizontal mergers by US and European firms. However, a wider event window may lead to more confounding events, which makes it more difficult to unbundle the market reaction to the event under study.

Fourth, ESM requires announcements to be viewed as credible by investors. Announcements typically become salient to the investment community when they appear in reliable sources, which may be problematic in countries with government-controlled media, or unverifiable claims by powerful actors. For example, Morck, Yeung and Yu (2000) found that stock prices of emerging-market firms move synchronously, suggesting that they reflect country-level factors, as investors do not view firm-specific information as reliable.

Lastly, a few studies have recognized potential issues with using ESM in multi-country settings. Chan, Karolyi and Stulz (1992) and Eun and Shim (1989) noted that, as financial markets have become more integrated, a firm’s stock returns may be related not only to its home country’s market returns but also to other countries’ financial markets. Park (2004) suggested that a firm’s stock market returns are influenced by country returns. Using ESM in a multi-country setting may therefore require adjustments for financial integration, global trade, and country differences in institutional strength.

THE EVENT STUDY IN IB RESEARCH: OPPORTUNITIES AND CHALLENGES

Opportunities

We believe that the event study method has been underutilized by IB researchers, and that opportunities to contribute to the IB literature are many and rich. To document our conjecture, we used keywords to search through the Springer online database of JIBS articles, and then read the papers to identify those that included an event study in their empirical work. We counted the numbers by decade. The results are shown in Table 1, and the list of JIBS articles is provided in Appendix A.

Lessard, Wells and Brandt (1983) was probably the first JIBS article to discuss ESM, and the first empirical article to use the method was Cosset and Doutriaux de la Rianderie (1985). As Table 1 shows, the number of JIBS articles employing ESM grew slowly in the 1990s, peaked at 14 articles in the 2000s, and dropped to 8 articles in the last decade. Of the 1,265 empirical articles published in JIBS over 1970–2019, only 29 include an event study, representing 4.65% of archival quantitative, 2.64% of quantitative, and 2.29% of all empirical studies.

In Table 2, we explore the characteristics of JIBS articles that have used ESM. First, 24 of the 29 JIBS articles involved self-announcements by the focal firm; only 5 studies were based on announcements by other actors. Almost all the articles (25 of 29) used a stock market for testing hypotheses; 3 articles used other high-frequency markets (foreign exchange and Euro-bond markets), and 1 article examined stock market volatility. In terms of research questions, 20 of the 29 studies examined stock price effects of corporate expansion announcements (18 cross-border alliances, M&As, and joint ventures, and 2 cross-listings). In sum, our review of the 29 JIBS articles using ESM in Table 2 suggests that IB scholars have employed the method fairly narrowly: to investigate accounting or finance questions involving self-announcements.

We believe that the range of possible IB research questions suitable for ESM is far broader than those covered in the 29 articles in JIBS, especially given the inherent complexity of IB research (Eden & Nielsen, 2020). In Table 3, we provide examples of hypothetical IB research questions that can be (and some that have been) addressed using an event study. We view these examples as opportunities for IB scholars to expand our range of testable research questions by thinking more broadly about how ESM could be used to tackle questions that cannot be well addressed – or addressed in real time – by other research methods. Table 3 organizes these research questions by the source of the event (endogenous or exogenous to the firms examined). Endogenous events include proactive “good news,” as well as to voluntary disclosures of “bad news.”
One firm’s announcements may also have spillover effects on other firms. Exogenous events can range from scandals to government policy changes or macro-economic crises. Also, an exogenous event can be viewed through various lenses, which we demonstrate below in our case study of Brexit. A key advantage of ESM is its ability to address these questions from an ex ante perspective using high-frequency data, with potential follow-up studies using annual data on firm financials or other outcome measures (e.g., surveys of executives) as a means of triangulation.

We also encourage IB scholars to think more broadly about research questions that focus on the reactions of actors other than investors. The digital economy may provide non-traditional ESM opportunities using new forms of high-frequency datasets. Examples include Baek and Elbeck (2015) investigating the volatility of Bitcoin; Xie, Wu and Du (2019) using digital currency markets to study changes in valuations of industry peers relative to industry leaders; and Benamar, Foucault and Vega (2021) suggesting that clickstream data “can be used to forecast the price impact of future news and therefore future volatility.”

The rapid growth of Big Data techniques may also expand research opportunities by facilitating analysis of qualitative data. For example, many companies use social media to diffuse information. Quotes or “tweets” from MNE executives can be analyzed using textual analysis (e.g., Linguistic Inquiry and Word Count or “LIWC” (Pennebaker, Francis & Booth, 2001), and the textual analysis combined with ESM to examine stock market reactions to press releases, CEO statements, customer reactions, and so on. To explore these new research opportunities, the IB researcher would need to build a suitable model for “predicted changes” in order to determine “abnormal changes”, and justify the length of the event window, just as scholars
currently draw upon Fama et al. (1969), Brown and Warner (1980, 1985), and Fama and French (1993, 2015) stock-market-based event studies.

Challenges
From a methodological perspective, the limited use of ESM in IB research could be due to researcher unfamiliarity with the method (knowing when and how to use ESM), data challenges (knowing what data to gather and how to gather it), and/or analytical hurdles (accessing/creating a statistical program to execute the event study). Moreover, since ESM was developed for a single-country setting, extending the method to multi-country settings introduces further hurdles. We explore these challenges below.

Databases
Datasets exist that provide information on events such as international joint ventures and cross-border acquisitions [e.g., Refinitiv Thompson Securities Data Corporation (SDC) and Zephyr databases], and CEO changes, M&As, and business expansion announcements (Capital IQ). However, not all IB researchers have access to these databases; moreover, their coverage varies, and the databases (e.g., SDC and Zephyr) have different strengths and weaknesses (Bollaert & Delanghe, 2015). For scholars interested in comparing and contrasting strategic actions by firms from different countries, identification of firms takes additional data collection effort, as well as decisions about cross-border comparability.

Event identification
In domestic event studies, which national media to search to identify events is usually straightforward. In contrast, multi-country studies may encounter differences across media reporting. Moreover, in some countries, media may not cover some types of announcements.

Estimation complexity
Even when the necessary financial market information is obtained, conducting an event study with cross-national data is complicated by estimation complexity. There are several ESM approaches to compute CARs (Brown & Warner, 1980; McWilliams & Siegel, 1997), of which the most frequently used is the "market model." The domestic market model is a single-factor model in which the focal firm’s returns serve as the dependent variable and its home-market returns represent the only independent variable. The domestic market model has its benefits, namely, its simplicity and availability with ESM software programs, such as Eventus and Event Study by WRDS. However, there can be drawbacks to using the existing ESM software.
programs in a multi-country setting. For example, using a domestic market model in a multi-country setting can lead to model misspecification (Park, 2004). Moreover, IB settings may create concerns about the way in which information reaches the investment community, suggesting that IB researchers need to carefully assess a suitable event window.

Nonsynchronous trading/financial integration
Stock markets open and close at different times across countries. Information diffusion may also be delayed due to nonsynchronous trading across countries. Further, countries differ in terms of information dissemination and trading liquidity. Exchange-rate changes affect cross-border return comparisons, and foreign-exchange markets differ across countries. Therefore, ESM users need to be careful with respect to estimating CARs.

In sum, IB researchers may need to gather additional financial market and currency data, and carefully handle estimation complexity and financial integration issues on a global level when conducting an event study. We turn now to some practical solutions for using ESM in IB research, where we introduce the example of market reaction to Brexit for three groups of firms.

THE EVENT STUDY IN IB RESEARCH: PRACTICAL SOLUTIONS
Given the data-collection challenges and data-analysis hurdles outlined above, IB researchers may miss out on opportunities for potentially impactful studies by not using ESM. In this section, we outline several practical solutions to help address these methodological challenges. While our recommendations are primarily aimed at IB scholars who have not used ESM, we hope our advice is also useful to seasoned ESM users who are interested in the unique challenges presented by the IB context. An online appendix provides an annotated program to help with computing CARs using STATA in a multi-country setting.

Firms and Events

Develop a comprehensive sample
Existing databases, such as Refinitiv/SDC and Capital IQ, offer convenient (although expensive) access to firms and events. For IB researchers who use existing databases and/or compile their own sample firm lists and events, we recommend searching multiple highly visible media sources (e.g., US: Wall Street Journal, Dow Jones News Retrieval; UK: Financial Times; Japan: Nikkei) rather than relying on one country’s media disclosure for events occurring in or involving firms from other countries. A variety of search words relevant to the event should be included to ensure a thorough and complete list of events and firms. Researchers can also employ data screening and cleaning procedures developed by Ince and Porter (2006).

Check for event dates and confounding events
If multiple announcements occur during the event window, it is not possible to associate CARs with a specific event. While this is true in domestic settings, it is more challenging to identify confounding events in an IB setting. Firms may be based in different countries, and a more extensive search for potential confounding events may be required. Researchers may need to search foreign sources for both foreign and domestic events. When an event is repeatedly reported by multiple media outlets, it is important to identify the first time the information is shared publicly. Announcements may be reported a day or two later by some news outlets, particularly when time-zone differences are involved. In some cases, the delay may not be consequential: for example, an event study using the unexpected death or incapacitation of a leader to examine the benefits of political connections should not be affected by delayed announcements, since the event is the announcement, not the leader’s death or incapacitation itself. The date range for investigating confounding events should parallel the event window.

Cross-border data triangulation
If an announcement occurs outside the home country of the MNE, we encourage data triangulation, i.e., the inclusion of “multiple methodological alternatives within a study in a way that addresses the potential biases, errors, and limitations induced by any single option” (Nielsen, Welch, Chidlow, Miller, Aguzzoli, Gardner, Karafyllia, & Pegoraro, 2020). Host-country and home-country media announcements should be examined to ensure consistency in information. Researchers should check to see if some information is included by one country’s media but excluded by another. Additionally, they should pay attention to how the same information is received in the home country versus the host country.
Estimation

Once the dataset has been built, the researcher needs to specify a model to compute CARs. In the online appendix, we offer an annotated program to help with computing CARs using STATA. As a starting point, the program utilizes the widely employed market model. However, in an international context, the model itself varies, depending on barriers to portfolio capital movements into and out of the firm’s home country. If the event study involves firms in an economy closed to portfolio capital flows (a “segmented capital market”), only the return on the home stock market matters and a single-factor market model can be used. The domestic market model is:

\[
\begin{align*}
    r_{it} &= \alpha_i + \beta_i r_{hmt} + \epsilon_{it} \\
    \end{align*}
\]

where \( r_{it} \) is the ith firm’s stock returns at time \( t \), \( r_{hmt} \) is the home-market return at time \( t \), \( \alpha_i \) is a constant term, and \( \epsilon_{it} \) an error term.

When a country is completely open to portfolio capital flows (an “integrated capital market”), its firms’ home-market returns are irrelevant (Stulz, 1995). Instead, the market model includes world-market returns and currency returns, as follows:

\[
\begin{align*}
    r_{it} &= \alpha_i + \beta_i r_{wmt} + \gamma_i r_{ct} + \epsilon_{it} \\
    \end{align*}
\]

where \( r_{wmt} \) is the world-market returns at time \( t \), and \( r_{ct} \) is the currency returns at time \( t \).

Alternatively, if the study involves firms from a country open to portfolio capital flows, but with some barriers (a “partially segmented capital market”), then a three-factor model is needed that includes firms’ home-market returns, world-market returns, and currency returns:

\[
\begin{align*}
    r_{it} &= \alpha_i + \beta_i r_{hmt} + \gamma_i r_{wmt} + \delta_i r_{ct} + \epsilon_{it} \\
    \end{align*}
\]

To implement these models, IB researchers must obtain sample firms’ stock returns, home-market returns [e.g., S&P Global Market Intelligence, Datastream or CSMAR (for China-specific stock-market information)], world-market returns (e.g., the MSCI World Index or Global Dow Index), and currency returns. Moreover, no matter which model is selected, there are several common issues that need to be carefully addressed; we discuss practical solutions to these issues below.

Event window

The IB researcher must assess the context of the study and how it influences the dissemination of new information; i.e., the researcher should not simply adopt the typical 3-day event window used when analyzing developed-country domestic stock markets. Sometimes, the event window must be extended to days prior to the announcement of an event. In emerging markets, for example, weak institutions provide justification for using a wider event window to capture market reaction prior to event announcement due to insider trading (Bhattacharya et al., 2000; Miller et al., 2008).

Self-selection

A large portion of the JIBS articles using ESM involve self-announcements, which can affect the choice of technique. Announcements about firms can be made by others (e.g., governments, media, competitors, NGOs) or by managers of the firm whose abnormal returns are being estimated (“self-announcements”). For example, scandals and investigations are typically reported by the media, whereas entry into a new foreign market is instead often self-announced. The latter can potentially introduce bias into ESM because managers have private information that they believe advantageous to report. That is, firms intentionally “make the decisions that underlie the events; furthermore, these decisions are based on private firm information that is seldom known to investors” (Sorescu et al., 2017: 200). Kai and Prabhala (2007) provide a useful discussion of self-selection in finance research.

Nonsynchronous trading

Events happen around the clock, but stock trading hours vary by country. For instance, when Asian and Oceania markets open for trading, their new global information is from the previous day, not the current day, due to the location of the International Date Line. Therefore, the IB scholar may want to adopt a variation of the above three-factor model that uses a lag of world-market returns, as shown below:

\[
\begin{align*}
    r_{it} &= \alpha_i + \beta_i r_{hmt} + \gamma_i r_{wmt,t-1} + \delta_i r_{ct} + \epsilon_{it} \\
    \end{align*}
\]

Researchers can use not only multiple lags but also multiple leads of the stock market index (see Scholes-Williams 1977 and Dimson 1979).
**CARs as the dependent variable.** When CARs serve as the dependent variable in regression analysis, and the event study involves firms from multiple countries, we encourage IB researchers to verify whether the sample firms are using different accounting standards. If different standards are being employed, accounting-based measures (e.g., firm size, profitability, leverage) are likely to introduce problems of noncomparability across firms. Some multi-country databases do provide standardized measures for accounting information (e.g., Worldscope, Compustat Global). Otherwise, if financial data measured on a common standard (e.g., IFRS) or reconciled data are not available, researchers should consider using measures based on cash flow, or avoid mixing firms using different accounting systems in the same regressions. Additionally, all variables should be reported in a common currency.

**EXAMPLE: INVESTORS’ REACTION TO BREXIT**

To illustrate some issues and practical solutions when ESM is used in a multi-country setting, we examined investors’ reaction to the Brexit referendum for British and EU firms cross-listed on the London Stock Exchange.11 We used the Brexit vote date (June 23, 2016) as an event and an estimation window of 150 days (i.e., day – 31 to day – 180) to calculate expected returns. We dropped firms with fewer than 30 days in the estimation window, keeping only firms with at least 90 days of non-zero returns during the estimation window. The input file ("Brexit_Data.dta") is available online together with the online appendix.12 Our CAR results are provided in Table 4.

**British Firms (Leaving EU)**

Our sample consists of 866 publicly traded British firms on the London Stock Exchange. We obtained daily stock market prices from Compustat Global and calculated three sets of daily returns. World market returns were based on the MSCI World Index (source: MSCI); home market returns were the UK market index (we used daily country returns with dividends; source: S&P Global Market Intelligence); and currency returns were based on the Pound Sterling—Special Drawing Rights exchange rate.13 Since London is a global financial center, we consider the UK open to portfolio capital flows, and employ the 2-factor model (world returns and currency returns), in addition to the domestic 1-factor model and world 1-factor model. In Panel A of Table 4, the results show that CARs are

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**Table 4  Summary of ESM results with three Brexit examples**

**Panel A: British Firms on LSE (N=868)**

| Model                                    | Mean CARs\(^*\) | p-value |
|------------------------------------------|----------------|---------|
| Domestic 1-Factor Market Model           | -0.046         | 0.000   |
| World 1-Factor Market Model              | -0.056         | 0.000   |
| 2-Factor Model (World returns, Currency returns) | -0.044     | 0.000   |

* In Panel A, the mean CARs (in percent) are -4.6%, -5.6%, and -4.4%, respectively.

**Panel B: French Firms on Euronext N.V. (N=485)**

| Model                                    | Mean CARs\(^*\) | p-value |
|------------------------------------------|----------------|---------|
| Domestic 1-Factor Market Model           | -0.016         | 0.000   |
| World 1-Factor Market Model              | -0.025         | 0.000   |
| 2-Factor Model (World returns, Currency returns) | -0.028     | 0.000   |
| 3-factor model (home market returns, world returns, currency returns) | -0.016 | 0.000   |

* In Panel B, the mean CARs (in percent) are -1.6%, -2.5%, -2.8% and -1.6% respectively.
negative, similar in magnitude, and statistically significant for all the models.

**French Firms (EU member country)**

We also examined investor reaction for firms in EU member countries by focusing on French firms. Our data collection process was similar to that for UK firms. This sample consists of 485 publicly traded French firms listed on Euronext N.V. Because the French stock market may not be completely integrated with world markets, we included the 3-factor model with the domestic 1-factor model and global 1-factor model (and the 2-factor model). In Panel B of Table 4, the results show that the CARs are negative, similar in magnitude, and statistically significant for each model. These results show that the investor reaction to the Brexit referendum vote was negative for British firms, but less negative for French firms.

**CONCLUSION**

The event study method has been underutilized by IB researchers. A possible explanation is that IB scholars view the method too narrowly, as having been designed primarily for analyzing stock market reactions to self-announcements such as M&As. Our analysis of the 29 JIBS articles using ESM over 1970–2019 supports this explanation. We believe this view is too limited; there are many important and interesting IB research questions that can be addressed using an event study. We recommend that IB researchers expand their use of this analytical tool – which can help deal with causality in many complex IB settings – to study exogenous events (e.g., government policy changes) and look for new opportunities using Big Data to perform novel and non-traditional event studies.

There are also clearly methodological challenges in terms of data and analytics in undertaking an event study. These hurdles may also have deterred IB scholars from using ESM. We have examined several important methodological challenges and offered practical solutions designed to (1) encourage adoption of ESM, and (2) promote flexibility in estimating CARs in IB settings. We conclude that opportunities are plentiful for IB scholars willing to look at their research questions through an event study lens.

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**NOTES**

1 Researchers have generated expected returns through several models, some of which do not require estimation or pre-event windows, e.g., in the market-adjusted return model (Brown & Warner, 1980), the expected firm return is equal to the market return for the day.

2 It is useful to note that stock market reactions to the COVID-19 pandemic could be due both to the pandemic crisis and to government actions, such as closing national borders or bailing out firms in particular sectors, which are confounding events. We thank a reviewer for pointing this out.

3 Averaged across countries with stock markets, about 17% of listed firms are partially state-owned using a threshold of at least 20% state ownership (Aminadav & Papaioannou, 2020; 2012 data).

4 There are several definitions of informational efficiency. For ESM to work, a market must be “semi-strong-form efficient,” meaning that prices reflect all publicly available information.

5 In response to concerns about the market model, the finance literature has developed a variety of alternative asset-pricing models in domestic settings that do not include market returns, e.g., a 3-factor model (Fama & French, 1993).

6 A disadvantage of the available ESM software programs is that, for now, the programs are unable to use a multi-factor model with world-market returns and foreign exchange returns. As such, some event studies may require a program to
compute expected returns and abnormal returns. We provide and discuss such a program in the online appendix.

Some news reports indicate the date of the announcement (e.g., “yesterday, ABC Corporation announced...”), so IB researchers need to recheck the announcement date using multiple data sources.

Examples include Andropov of the USSR, Aliyev of Azerbaijan (Radio Free Europe, 2016).

Home country here refers to the country where the firm’s stock is listed, which is usually its headquarters country.

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See Table 5.

APPENDIX A

Table 5 Empirical articles with an event study in the Journal of International Business Studies, 1970–2019

| Authors | Article title | Year | Setting |
|---------|--------------|------|---------|
| Cosset, J.C., & Doutriaux De La Randerie, B. | Political risk and foreign exchange rates: an efficient-market approach | 1985 | Impact of 52 political risk events on FX market 1973–1983 |
| Kwok, C.C.Y., & Brooks, L.D. | Examining event study methodologies in foreign exchange markets | 1990 | Simulating FX market shocks |
| Tsitsikos, G.P., & Gombola, M.J. | Foreign and domestic divestments: evidence on valuation effects of plant closings | 1992 | Stock market reaction to 982 domestic and foreign plant closures 1980–1986 |
| Foerster, S.R., & Karolyi, G.A. | International listings of stocks: the case of Canada and the US | 1993 | 1981–1990 study of 53 Canadian stocks that were dual listed on US exchanges |
| Kryzanowski, L., & Ursel, N.D. | Market reaction to the formation of export trading companies by American banks | 1993 | ETC announcements by 15 US banks 1982–1991 |
| Markides, C.C., & Ittner, C.D. | Shareholder benefits from corporate international diversification: evidence from US international acquisitions | 1994 | 276 international acquisitions by US firms 1975–1988 |
| Sundaram, A.K., & Logue, D.E. | Valuation effects of foreign company listings on US exchanges | 1996 | Pre- vs. post cross-border listings at home over 6-month window. Not an event study but complementary. |
| Reuer, J.J. | Parent firm performance across international joint venture life-cycle stages | 2000 | 215 terminated IJVs 1985–1995 based on formation and termination dates |
### Table 5 (Continued)

| Authors                          | Article title                                                                 | Year  | Setting                                                                 |
|----------------------------------|-------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------|
| Seth, A., Song, K.P., & Pettit, R.| Synergy, managerialism, or hubris? An empirical examination of motives for foreign acquisitions of US firms | 2000  | 100 cross-border acquisitions 1981–1990                                 |
| Oxley, J. E., & Schnietz, K.E.    | Globalization derailed? Multinational investors’ response to the 1997 denial of fast-track trade negotiating authority | 2001  | Denial of NAFTA Fast Track in 1997 on US stock prices                  |
| Doukas, J. A., & Lang, L.H.P.     | Foreign direct investment, diversification and firm performance                | 2003  | 435 new foreign plant announcements 1980–1992                           |
| Ojah, K., & Monplaisir, L.       | Investors’ valuation of global product design and development                 | 2003  | 170 announcements of US global product design/dev 1990–2000             |
| Beaulieu, M-C., & Cosset, J-C.    | The impact of political risk on the volatility of stock returns: the case of Canada | 2005  | Impact of political risk (in news) on stock return volatility in Canada 1990–1996       |
| Eden, L., Juarez Valdez, L.F., & Li, D. | Talk softly but carry a big stick: transfer pricing penalties and the market valuation of Japanese multinationals in the United States | 2005  | US transfer pricing penalty impact on Japanese ADRs 1990–1997            |
| Meschi, P-X.                     | Stock market valuation of joint venture sell-offs                             | 2005  | Reaction to 148 joint venture sell-offs 1994–2002                       |
| Wooster, R.B.                    | US companies in transition economies: wealth effects from expansion between 1987 and 1999 | 2006  | 300 announcements of inward FDI in CEE and FSU countries 1987–1999      |
| Miller, S.R, Li, D., Eden, L. & Hitt, M.A. | Insider trading and the valuation of international strategic alliances in emerging stock markets | 2008  | Reaction to foreign-Chinese alliances on Chinese stock markets with insider trading and state ownership |
| Aybar, B., & Ficici, A.          | Cross-border acquisitions and firm value: An analysis of emerging-market multinationals | 2009  | 433 M&A announcements of cross-border acquisitions of emerging market MNEs, 1991–2004 |
| Chakrabarti, R., Gupta-Mukherjee, S., & Jayaraman, N. | Mars–Venus marriages: Culture and cross-border M&A | 2009  | Long-run performance of 800 cross-border acquisitions 1991–2004           |
| Reus, T. H., & Lamont, B.T.      | The double-edged sword of cultural distance in international acquisitions     | 2009  | 118 int’l acquisitions by US MNEs and performance based on cultural distance |
| Vaaler, P. M., & Schrage, B.N.   | Residual state ownership, policy stability and financial performance following strategic decisions by privatizing telecoms | 2009  | 196 privatization events 1986–2001                                       |
| Gubbi, S.R., Aulakh, P.S., Ray, R., Sarkar, M.B., & Chittoor, R. | Do international acquisitions by emerging-economy firms create shareholder value? The case of Indian firms | 2010  | 425 cross-border acquisitions by Indian firms 2000–2007                  |
| Kang, J-K., & Kim, J-M.          | Do foreign investors exhibit a corporate governance disadvantage? An information asymmetry perspective | 2010  | Announcement effects of US partial acquisitions by foreign firms 1981–1999 |
| Jory, S. R., & Ngo, T.N.         | Cross-border acquisitions of state-owned enterprises                         | 2014  | US investors buying state-owned enterprises 1987–2009                    |
| Ellis, J. A., Moeller, S.B., Schlingemann, F.P., & Stulz, R.M. | Portable country governance and cross-border acquisitions | 2017  | 8,090 cross-border acquisitions between 1990 and 2007, uses 5-day window |
| Renneboog, L., Szilagyi, P.G., & Vansteenkiste, C. Sojil, E., & Tham, W.W. Barbopoulos, L.G., Danbolt, J., & Alexakis, D. | Creditor rights, claims enforcement, and bond performance in mergers and acquisitions Foreign political connections The role of earnout financing on the valuation effects of global diversification | 2017  | 1100 crossborder M&As and abnormal returns to Eurobonds Foreign government investments 31,848 foreign M&A announcements 1992–2012 |
| Dinner, I. M., Kushwaha, T., & Steenkamp, J-B. E.M. | Psychic distance and performance of MNCs during marketing crises | 2019  | Impact on shareholder value of 1,451 international marketing crises |
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