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Methodological Fit for Empirical Research in International Business: A Contingency Framework

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ABSTRACT

We seek to complement and extend the article by Welch, Piekkari, Plakoyiannaki, and Paavilainen-Mäntymäki (2011), winner of the 2021 JIBS Decade Award, which advanced knowledge on case-based theory development in international business (IB). Similarly, we examine dimensions of scholarly inquiry across qualitative and quantitative research, using inductive and deductive approaches. Recent years have featured unprecedented growth in the volume and availability of data from diverse national contexts, offering novel opportunities for innovative research. Accordingly, we build on the logic of Welch et al (2011) not only to elaborate on but also to call for a more pluralistic view of data and methodology. We advocate using a wider range of data and advanced methods in IB research, framed at the appropriate stage of theory development. We examine the interplay among theory, research design, data, and analytical technique, highlighting the role of data in methodological pluralism. While IB scholars have favored confirmatory approaches in deductive theory building, we argue for more exploratory research using both qualitative and quantitative data. We develop a contingency framework that highlights the stages of theory development, across the nexus of exploratory/confirmatory and qualitative/quantitative approaches, to guide empirical scholarship. We conclude by calling for triangulation and adopting the most appropriate combination of theory, research design, data, and analytical technique, to develop theory in IB research.

Keywords: methodological fit, methodological pluralism, theory, quantitative data, qualitative data

INTRODUCTION

A fundamental challenge facing international business (IB) scholars is the need to conduct research that produces credible, reliable and valid findings using empirical insights from diverse national contexts, leading to the development and confirmation of rigorous and reliable theory aimed at guiding managerial practice in international organizations. One example of such research is the winner of the 2021 Decade Award in the *Journal of International Business Studies* (JIBS) – an article by Welch, Piekkari, Plakoyiannaki & Paavilainen-Mäntymäki (2011) on theorizing from case studies. This work can be regarded as one of the most important scholarly contributions in recent decades in the methodological realm of IB research.

In their work, Welch *et al*. (2011) sought to explain how scholars, using qualitative data, can employ case study research more effectively by choosing competing methods of theorizing in exploratory and confirmatory research designs. Through their content analysis on a large sample of case studies in top academic journals, Welch *et al.* (2011) devised a typology on the role of case studies to provide causal explanations and richer context in IB research.

Welch et al.'s (2011) contribution established much needed balance in the use of qualitative methods for both exploratory and confirmatory research, partly by highlighting the contingent effect of emphasizing contextualization versus causal explanation. In this article, we seek to expand their logic to a fuller range of methods and data in IB by highlighting the use of quantitative data, and offer a more pluralistic research perspective that emphasizes the adoption of appropriate theory, data, and method. Specifically, to the novel perspective offered by Welch *et al.* (2011), we add an important contingency – the stage of theory development in a given context. We extend views on how quantitative data can be used for both exploratory and

confirmatory research, and propose a contingency framework that highlights the important interplay among theory, research design, data, and analytical technique. This interplay is vital because invalid combinations of theory, data and methods produce erroneous results, leading to findings that hold little or no value in scientific inquiry. Previously, scholars have highlighted substantial gaps in the quality of, and focus on, the methodological domain in IB research. They pointed to challenges related to research design (e.g., Bouter, Tijdink, Axelsen, Martinson, & ter Riert, 2016), data appropriateness (e.g., Nielsen, Eden, & Verbeke, 2020a), exploratory versus confirmatory goals (e.g., Hurmerinta-Peltomäki & Nummela, 2006), data collection (e.g., Chidlow, Plakoyiannaki, & Welch, 2014; Chidlow, Ghauri, Yeniyurt, & Cavusgil, 2015; Miller, Welch, Chidlow, Nielsen, Pegoraro, & Karafyllia, 2021), data quality (e.g., Welch & Piekkari, 2006), measurement (e.g., Davidov *et al*., 2014), reporting on findings (e.g., Aguinis & Vandenberg, 2014), and ensuring the validity of data analysis and ultimate research findings (e.g., Nielsen, *et al.,* 2020a). Recent studies highlight deficiencies in the choice and implementation of methods and the quality of data (e.g., Beugelsdijk, van Witteloostuijn, & Meyer, 2020; Cuervo-Cazurra, Andersson, Brannen, Nielsen, & Reuber, 2016; Nielsen *et al.,* 2020b). IB scholars struggle with gaining access to suitable data, representativeness of target populations, conceptual and translation equivalence, construct validity, and reliability, among others (Bouter *et al*., 2016; Chidlow *et al*., 2014; Chidlow *et al*., 2015; Miller *et al.,* 2021; Eden, Nielsen, & Verbeke, 2020). As a result, scholars often do not benefit from the richness of global context and fail to use context heterogeneity as a source for theorising (Whetten, 2009; Minbaeva, 2016).

In this commentary we intend to make several contributions. First, we identify and

explain key dimensions employed in qualitative and quantitative inquiry to clarify the roles of inductive and deductive theory-building and their relationship to exploratory and confirmatory research. Following a review on methodological trends by Nielsen *et al*. (2020b), we highlight how IB research has relied on deductive and confirmatory theory-testing. We then introduce a model of scientific inquiry in empirical research that emphasizes the importance of combining relevant theory, method, and data, and we propose a contingency framework on empirical research. In an era of unprecedented growth in data from diverse national contexts and resultant opportunities for pioneering IB research, we call for, and elaborate on, a more pluralistic view of data and methodology, with emphasis on the use of advanced methods. We also emphasize the importance of quantitative data in empirical research, both to pinpoint the vital role that such data play in theorizing and to stress that such data form the 'back-bone' of methods of data production and analysis in scientific examination of empirical research. Lastly, we call for greater methodological triangulation, including skilfully combining qualitative and quantitative methods, to optimize outcomes in scholarly research, in both exploratory and confirmatory research, to produce rigorous and reliable theory in IB.

QUALITATIVE AND QUANTITATIVE RESEARCH IN IB

Scholarly research involves the development of new theory, the falsification of existing theory and/or the expansion of theory to include new phenomena. A sound theory provides a well-substantiated explanation of a specific phenomenon that incorporates laws and facts, and should incorporate a systematically related set of statements, including some lawlike generalizations, that are empirically testable (Bryant & Charmaz, 2007; Nagel, 1979; Reynolds, 1971).

Frequently, an explanation is not sufficiently developed or substantiated, in which case it is not technically a "theory"; rather, it may be termed a "theoretical perspective", a "perspective", a "view", or simply an "explanation". For brevity in this article, while not strictly correct, we use the term "theory" as an umbrella concept, to refer to theories, perspectives, views, and explanations.

Welch *et al.* (2011) highlighted that most qualitative IB research follows an *inductive theory-building* approach using case studies. Through this approach, the researcher collects data from cases and other sources, relevant to the phenomenon under study. The researcher then examines such data looking for patterns and attempts to devise a theory that can explain the observed patterns. Theory-building may result in a set of propositions based on patterns found in the data, which then can be transformed into hypotheses, to be tested in confirmatory empirical research. The focus is on leveraging observed data to devise an explanation, a theory that explains the phenomenon. By contrast, with *deductive theory-building* the researcher begins with an existing theory, devises hypotheses that can be inferred from the theory, and then proceeds to assess the hypotheses by collecting and applying appropriate data. A researcher using a deductive approach starts with a generally accepted explanation, a theory, and attempts to "prove" the theory by collecting and assessing data (Nagel, 1979). Whether an inductive or a deductive approach is applied, the researcher collects data to formulate or test theory, or do both.

According to mainstream logic in IB, qualitative data is associated with exploratory research that emphasizes inductive theory building, and quantitative data is linked with theory-testing in confirmatory research that emphasizes deductive theory building. Additional nuances arise from the state of theory maturity – nascent, intermediate, and mature. *Nascent theory* is

characterized by tentative answers to emergent questions on the 'how and why' of the focal phenomenon. It reflects early research efforts to investigate new phenomena, or phenomena about which there is little prior theory or formal theorizing (Edmondson & McManus, 2007). *Mature theory* is characterized by well-developed, precisely-specified constructs and models that have been supported through extensive research on related questions in varied settings. It comprises a body of work based on broad agreement of major elements and relationships, and substantial cumulative knowledge on the focal phenomenon (Edmondson & McManus, 2007). *Intermediate theory*, positioned between mature and nascent, reflects provisional explanations of phenomena, and partially-developed constructs and relationships in a relatively open-ended stage of development. Research on intermediate theory draws on prior work, often across diverse literature, to propose new constructs and relationships. It tends to leverage qualitative and quantitative data to advance research and help establish the validity of relatively novel constructs and relationships (Edmondson & McManus, 2007; Jick, 1979).

Edmondson & McManus (2007: 1158) argued that qualitative data should be used when studying phenomena that are not well understood and extant theory is still at a nascent stage (i.e., theory only "proposes tentative answers to novel questions of *how* and *why*, often merely suggesting new connections among phenomena"). As theory matures, key causal relations become established, and quantitative data are used to confirm and refine a body of interrelated theoretical models. Edmondson & McManus (2007) juxtaposed the research approaches (inductive and deductive) with the stages of theory development (nascent, intermediate and mature), and visualized the archetypal categories of research in Figure 1 in their article (Edmondson & McManus, 2007: 1168). The authors concluded that while "mature theory spawns

precise, quantitative research designs, maturing or intermediate theory benefits from a mix of quantitative and qualitative data to accomplish its dual aims, and nascent theory involves exploring phenomena through qualitative data" (Edmondson & McManus, 2007: 1167). Notably, the shaded outline in Figure 1 in their article represents a mean tendency in the choice of data and is presented as an oval to suggest potential leeway in research design. Edmondson & McManus' (2007) visualization of methodological fit as a mean tendency credibly reflects the methodological landscape of IB research.

Nielsen *et al.* (2020b) examined methodological trends in IB in the period 1970 – 2019 and revealed that research in JIBS has been dominated by the use quantitative data, as shown in Figure 1 below. This implies an emphasis on deductive application of theory and confirmatory theory-testing. In addition, as portrayed in Figure 2, Nielsen *et al*. (2020b: 1486) revealed that recently such research has been based largely on archival data, followed by a survey-based data, and display growing "technical sophistication and analytical complexity in both modelling and reporting" in order to capture "the contextual embeddedness and dynamism of IB phenomena".

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INSERT FIGURES 1 AND 2 HERE

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To accommodate such emergent sophistication, since the 1990s scholars increasingly used more "complex" quantitative data accessed from surveys or archival sources. While data analysis and reporting in JIBS have grown in sophistication and technical precision in quantitative research over time, scholarly focus on data origins and collection methods has lagged behind "causing concerns about whether rigorous data collection practices were employed to

establish accuracy and validity as well as equivalence and comparability across countries" (Nielsen *et al*., 2020b: 1488).

In terms of qualitative data usage in IB, Welch *et al.* (2011) argued that the case study, as the most representative form of qualitative research, has been used mainly for exploration, while its explanatory role has been largely overlooked, constituting a significant limitation. They state "the widespread assumption that the role of the case study lies only in the exploratory, theory-building phase of research downplays its potential to propose causal mechanisms and linkages, and test existing theories…. the case study has an important role to play in refining, verifying, testing and challenging existing theory" (Welch *et al.,* 2011:755). Further analysis in their Decade Award Retrospective (Welch, Piekkari, Plakoyiannaki, & Paavilainen-Mäntymäki, 2022) reveals similar trends, as we illustrate in our Figure 1. Qualitative studies continue to play a minor role in JIBS, and are used mainly for inductive theory-building. However, as the Retrospective indicates, awareness is growing on the utility of qualitative research to develop maturing theory in IB research (Welch *et al.*, 2022).

Returning to Figure 1 from Edmondson & McManus (2007), we also note the two "outliers" included in the exhibit for illustrative purposes. Point A marks the intersection of nascent theory and quantitative data (with the example of Rosenthal & Rosnow, 1975) and point B marks the intersection of initially mature theory and qualitative data (with illustrations from Barker, 1993, and from Perlow, 1999). Including these alternatives results in the modified visualization of methodological fit, which we capture in our Table 1.

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INSERT TABLE 1 HERE

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In their work Welch *et al.* (2011) argued for and illustrated how alternatives A and C (in Table 1) are applied for both exploratory and confirmatory research designs with differing states of theory maturity. Further, as illustrated in Figure 1, alternative D dominates existing studies in IB research. Conversely, IB scholars have only very rarely used quantitative data for exploratory research (alternative B in Table 1). This may have arisen because of an historical emphasis on logical positivism and related philosophical traditions.

Recently, increased digitalization and other advanced technologies have given rise to vast quantities of information produced by and about international firms in diverse national contexts (e.g., Chen, Chiang, & Storey, 2012; Frizzo-Barker *et al.*, 2016). The salience of quantitative data has intensified in the age of digital platforms and the internet. "Big data" reflect "a world measured in terabytes and petabytes or even yottabytes (a trillion terabytes) – as well as the ubiquity of data in every aspect of modern existence" (Aronova, von Oertzen, & Sepkoski, 2017:1). Simultaneously, with the arrival of machine-learning and artificial intelligence, sophisticated algorithms can now extract and represent large-scale patterns in the activities of organizations and individuals in diverse national contexts. Thus, increasingly we will witness the rise of an algorithmic modelling culture (Breiman, 2001), in research in general (George, Osinga, Lavie, & Scott, 2016) and in IB in particular. This can occur especially in situations where data and problem guide the solution and represent theory as an "a priori straight jacket that restricts the ability of statisticians to deal with a wide range of statistical problems" (p. 204). However, problems undoubtedly will arise from such a theory-free approach reflecting, for example, spurious correlations and careless analysis. At the same time, seen as "the new oil" or "a new

asset class" (Aronova *et al*. 2017:2), big data likely constitute an enduring development that will necessitate novel and increasingly sophisticated analytics that reflect a process of "black-box" data mining, potentially involving relatively low levels of prior theorisation and primarily exploratory research (Babones, 2016: 457). In this way, big data and emergent analytical techniques can offer novel opportunities for exploratory research, particularly in the early stages of theory development (Chen *et al*., 2012; George *et al*., 2016).

To accommodate such trends, since the late 2000s, JIBS periodically has published exploratory studies in the form of research notes. Figure 3 illustrates the number of research notes (as both quantitative and qualitative contributions) published in the journal. Although research notes using quantitative data are especially prominent, Figure 4 indicates that JIBS also has published numerous notes that emphasize exploratory research. This suggests that research notes began to play a distinctive and useful role in the evolutionary process of accumulating evidence and knowledge in IB.

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INSERT FIGURES 3 AND 4 HERE

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In sum, there is a clear difference in the numbers of studies published in JIBS in terms of the four alternatives presented in Table 1. Regardless of the choice of alternative and resulting implications for methodological fit, all studies must meet high standards of scientific inquiry through skilful leveraging of theory, data, and analytical techniques. Building on insights generated by Welch *et al.* (2011, 2020), in the following section we highlight the interplay among

the alternatives given in Table 1.

FOUR COMPONENTS OF SCIENTIFIC INQUIRY IN EMPIRICAL RESEARCH: THE DIAMOND MODEL

In their research, scholars follow scientific thinking aimed at understanding "the abstract structure of theories and the relationships between theories and evidence" (Godfrey-Smith, 2003: 6). The goal of such knowledge is not only to better understand examined phenomena but also to predict, produce or control future events inherent in the phenomena (e.g., Hempel, 1970; Kuhn, 1962; Nagel, 1979). Phenomena are understood to be "stable, repeatable effects or processes that are potential objects of prediction and systematic explanation by general theories, which can serve as evidence" for knowledge creation (Woodward, 2000: S163). Scientific thinking is an integral part of a paradigm that, in Kuhn's (1962) view, reflects the development of theory as well as methods of collecting and analysing data to understand theory, which collectively comprise traditions of scientific research in a particular field (Godfrey-Smith, 2003).

Figure 5 presents a model of scientific inquiry in empirical research, visualized as a diamond. It highlights four components that are both fundamental and necessary to the development of fully articulated scientific research.

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INSERT FIGURE 5 HERE

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As reflected in the diagram, *theory* incorporates a systematic explanation, a collection of statements or principles aimed at explaining the phenomenon of interest. Theory is generally

developed in conjunction with a 'literature review', a depository of prior knowledge that incorporates past theoretical and empirical research on the focal phenomenon. A thorough literature review helps elucidate and provide rationale to research, and points to unexplored questions and areas of agreement in the topic area (Edmondson & McManus, 2007; Godfrey-Smith, 2003; Nagel, 1979; Reynolds, 1971). A literature review also pinpoints relevant variables, constructs, and associated relationships that can assist the scholar to develop new theory or extend existing theory, or to integrate prior streams of research that improve or introduce new ideas or enhance understanding (Edmondson & McManus, 2007; Godfrey-Smith, 2003; Nagel, 1979; Reynolds, 1971).

Research design (also called the "research method") sets out the research plan for empirically addressing a research question(s) that aims to develop theory in a feasible way. In doing so, the research design pinpoints the study as inductive or deductive, describes the methodology to be applied, establishes the study context or setting, and specifies the type of data and the analytical technique(s) intended to examine the data (Edmondson & McManus, 2007). Broadly, the research design guides the choice of data and analytical techniques to be used in theory development. Because knowledge creation is organized around theoretical claims in scientific thinking, theory development centers on a methodology, the theoretical or philosophical positioning of a scholarly work that represents a set of rules or procedures that scholars follow to substantiate the theoretical positioning of their work (Kuhn, 2012). By acting as "the bridge between the paradigm and the empirical world" (Nielsen *et al.,* 2020b: 1481), methodology plays an integral part in linking the paradigm and the empirical world upon which scholarly work is based. Methodology also sets the standards for acceptable procedures,

instruments, and proof for producing justifiable knowledge through such work (Masterman, 1970; Hassan & Mingers, 2018; Saunders, Lewis, & Thornhill, 2019).

From an etymological point of view, *data* is plural for the Latin word "*datum",* meaning a "(thing) given". Datum constitute an essential component of scientific inquiry and methodological rigor arising from their role in measurement, assessment, and other key areas (Hult *at al*., 2008., Chidlow *et al*., 2015; Beugelsdijk *et al*., 2020; Nielsen *et al*., 2020b). Contemporary philosophers (Leonelli, 2015: 810) argue that data constitute a "relational category" applied to scientific examination that is acquired at a precise moment of inquiry to provide evidence for the presence of the phenomenon or for its possession of specific characteristics that interest scholars for knowledge claims. Therefore, data constitute "a specific way of expressing and presenting information, which is produced and/or incorporated in research practices…as a source of evidence, and whose behaviour and scientific significance depend on the context in which it is used" (Leonelli, 2015: 811). Accordingly, data on their own neither have true value nor exemplify the examined phenomenon. Rather, data are simply interchangeable objects that are defined by their "portability and prospective usefulness as evidence" for knowledge development (Leonelli, 2015: 811). Data portability is "a crucial precondition for using data as evidence because the establishment of scientific claims is widely recognized as a social activity that needs to involve more than one individual" (Leonelli 2015:817). To be portable, data need a "physical medium", which is simply a way to transport the data, representing the means through which the "examined world" (i.e. phenomenon) is connected to the "world of data" Vakerelov (2012:49). If data change a medium, the scientific significance in which data are disseminated and used as evidence also shifts.

Analytical technique (also called "analytical method") denotes a time and task-bound procedure used for the examination of a phenomenon based on gathered data. It combines the elements of a scientific method to produce reliable new knowledge that determines the probable truth of any hypothesis by (a) observing a phenomenon; (b) formulating a hypothesis that explains the phenomenon; (c) designing a study to test the hypothesis; (d) performing the study; and (e) accepting, rejecting, or modifying the hypothesis. The function of a scientific method is significant here as it allows researchers to test hypotheses rigorously and systematically in the knowledge creation process. However, the epistemic role of the method can vary due to its features and the user's interests (Morgan & Morrison, 1999).

In scientific inquiry, focusing solely on the theory and research design, or only on the research design and the data, or, worse yet, on the analytical technique and the data alone, are insufficient. Taking shortcuts, as implied by the dotted lines in Figure 5, will lead to methodological misfit and invalid results. Instead, the scholar must embrace, develop, and execute all four components of the diamond model. Furthermore, scholars should note that the choice of research design likely will depend on the stage of theory development; the choice of data will hinge on the type of research design; and the choice of analytical technique will depend on the type of data. As reflected by the arrows in Figure 5, systematically adopting the order of contingent choices — theory => research design => data => analytical technique — is crucial for success in IB research, particularly given the variety of designs, data, and techniques, as well as the diversity of contexts, that characterize our field.

While a theory may be considered mature in terms of the goals and context in which it was developed, for other purposes and contexts, the theory's assumptions and explanations may

unfold differently. The theory's validity may weaken in novel contexts, and can necessitate relegating a previously assumed "mature" theory to a more intermediate stage of development. For example, a theory wholly developed in an advanced economy might need to be revised to explain phenomena in an emerging market. However, such revisions are rarely needed for mature theories developed and validated across a wide range of contexts. These arguments apply to the use of both qualitative and quantitative data for theory development.

Next, we focus on the role of theory, research design and analytical technique. In the following section, to extend the contribution of Welch et al (2011) and highlight methodological diversity in IB, we will offer a more pluralistic view of data, and present a framework for conducting valid IB research, with emphasis on context heterogeneity.

CONTINGENCY FRAMEWORK FOR EMPIRICAL RESEARCH IN IB

In various ways, Welch *et al*. (2011) highlighted the four components identified in Figure 5 through their focus on the role of theory, method, and analysis in qualitative research. To extend their contribution and emphasize methodological diversity in IB, in this section we offer a more pluralistic view of data, with particular focus on quantitative data. In Table 2, we summarize the arguments presented by Welch *et al.* (2011), supplemented and further explained using the components of the diamond model (Figure 5): theory, research design, data, and analytical technique.

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INSERT TABLE 2 HERE

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Welch *et al*. (2011) examined four methods of theorizing from qualitative research — inductive theory building, interpretive sensemaking, natural experiment, and contextualized explanation. While most case-based research has been limited to inductive theory building (alternative A in Table 2), Welch *et al*. (2011) explained how the case approach can be more fully exploited to enhance explanation on both theory and context in IB research, as implied by alternative C in Table 2. They advocate using case studies more effectively by scholars who, historically, have favored inductive, interpretive, or experimental approaches to theory development. Welch *et al*. (2011) also called for a more deliberate approach to case research as a means to develop, refine, assess, and challenge theory, and simultaneously, to better understand the role of context in explanations of IB phenomena. Welch *et al*. (2011) concluded by arguing that IB researchers need "to consider the implications of their choice of theorizing method carefully, because these methods differ in their emphasis on contextualization" (p. 755).

For quantitative data, understanding the context in which the data are collected is crucial. Data reflect the "product of research activity, ranging from artifacts….to symbols such as letters or numbers, which are collected, stored and disseminated in order to be used as evidence for knowledge claims" (Leonelli 2015:816). As a result, data are "tools for communication, whose main function is to enable intellectual and material exchange" across scholars within a learned community "whose mobility is a hard-won scientific achievement" (Leonelli, 2015:810). In that sense, "anything can be considered as a datum as long as (a) it is treated as potential evidence for one or more claims about phenomena and (b) it is possible to circulate it among individuals" (Leonelli, 2015:816). Accordingly, any conception of data depends to some extent on *who* uses the data, *how* they use it, and for *what* purpose. This is especially crucial for IB researchers who

employ data from various countries, in multiple languages, or from other diverse contexts (Sekaran, 1983; Hult *et al*., 2008; Chidlow *et al.,* 2014). Moreover, quantitative data are increasingly available in machine-readable form from various sources including, for example, international scholars who convert gathered information to numerical form for their research, government bodies that accumulate vital statistics, or firms that amass data for commercial purposes (e.g. Thomson Reuters Datastream). The quality of such data varies, often depending on the goals, methods, and expertise of those who collect it.

In terms of philosophical orientation, quantitative data formed the basis of Auguste Comte's (1859) theory of positivism, a seminal work in the history of the philosophy of science. Comte (1844/1957) argued that social truths are reached from reasoning derived from quantitative data based on mathematical principles and theorisation. Consistent with Comte's (1844/1957) view, mathematics is "…the true basis of the whole of natural philosophy" and "the most powerful instrument that the human mind can employ in the investigation of the laws of natural phenomena…." Therefore, mathematics must "hold the first place in the hierarchy of the sciences…" (Hartung, 1945:123). In addition, the empirical positivism of Popper (1957) highlights the idea that theories must be falsifiable and subjected to empirical testing. By providing evidence on the existence or attributes of specific phenomena, quantitative data assist in operationalising multifaceted explanations, as well as enhancing understanding and the legitimacy of concepts and relationships in the development of theory (Bogen & Woodward 1988, Woodward, 2000, 2011).

Nielsen *et al.*(2020b) clarified the evolution of quantitative data production and analysis in JIBS. Other scholars have examined the importance of enhancing rigor, credibility and

transparency in empirical research (Brock, 2003; Ellis, 2010; Eden *et al*., 2020; Beugelsdijk *et al*., 2020; Miller *et al*., 2021). In addition to the commonly shared understanding that quantitative data are critical to assessing causality in construct relationships derived from established theory, scholars increasingly analyze such data using cutting-edge econometrical techniques (Alternative D in Table 1). Finally, quantitative data help facilitate replication of prior studies by applying the same medium in other contexts (Popper, 1957; Miyake 2015; Ströing, 2018).

Despite various advances in the use of quantitative data and enhanced analytical techniques, the use of such data for exploratory research and/or inductive theory-building (Alternative B in Table 1) remains relatively rare. The use of quantitative data for such purposes has been criticised, and not without good reason. However, the emergence of cloud computing, the Internet of Things, smartphones, social media, and other such technology has resulted in vast quantities of data, often labelled "big data" (Aronova *et al*., 2017; Cai & Zhu, 2015; Chen *et al*., 2012). Scholars and practitioners are using such data in a wide range of studies. However, the reliability, validity, and utility of such research hinges on *data quality*, which scholars characterize in terms of data availability, usability, accuracy, credibility, completeness, and cohesiveness (e.g., Alexander & Tate, 1999; Cai & Zou, 2015). Indeed, the structure, diversity, complexity, and quality of much contemporary data present various challenges for integrating and utilizing resultant information for analysis. However, advancements in machine-learning techniques, in artificial intelligence, and other such areas suggest that scholars' ability to manage challenges related to data quality continues to improve. Such developments will open new doors for exploratory research in the use of high-volume, high-velocity and high-variety information collected from various sources.

In terms of exploratory research, the use of quantitative data is similar in some ways to that of qualitative data. First, both are applicable chiefly in the nascent stage of theory development, when the nature of constructs and relationships is unclear. Moreover, when using quantitative and qualitative data alike, the role of the researcher is similar. For example, when doing exploratory research using qualitative data, Mees-Buss, Welch, and Piekkari (2020) described the researcher's role as that of a "detective" who seeks to understand what is occurring or being said from clues gained from the field (p. 13). Similarly, on introducing exploratory data analysis for quantitative data, Tukey (1977) wrote that "Exploratory data analysis is detective work – numerical detective work - … [which is] about looking at data to see what it seems to say" (p. 1). Data scientists and statisticians concur similarly. For example, Ratner (2017) wrote that machine learning and data mining in general are a "process that finds unexpected structures in data and that uses the EDA [exploratory data analysis] framework to ensure the process explores the data, not exploits it" (Ratner, 2017: 9). Finally, Welch *et al*.'s (2011) definition of the main aim of inductive theory-building research – "to propose associations between constructs and variables that can be tested … [and] … to establish regularities rather than the reasons behind them" (p. 746) – is equally applicable for exploratory research using quantitative data.

In sum, in this commentary we call for a more pluralistic view of data and methodology. The current era is characterized by unprecedented growth in the volume and availability of data from diverse national contexts, largely facilitated by digitalization and other technological developments. When combined with advanced analytical techniques, the trend offers novel opportunities for innovative and groundbreaking research in IB. We believe the IB field is ready for the use of a wider range of data and advanced methods, framed at the appropriate stage of

theory development.

DISCUSSION

IB scholars face the dilemma of creating valuable, theory-based knowledge that accounts for diverse national settings. Context plays a central role in IB (e.g., Meyer, Mudambi, & Narula, 2011; Poulis, Poulis, & Plakoyiannaki, 2013). Following Sayer (1992), Welch *et al*. (2011) explained how scholars should view methodology as a way to choose competing methods of theorizing rather than simply different methods of data production and analysis. They emphasized the causal explanatory value of case research to develop better theory by combining explanatory depth and contextual richness.

In this commentary, we sought to complement and extend Welch *et al.*'s (2011) ground-breaking contribution by highlighting the role of empirical research in IB, and the contrast between qualitative and quantitative research. We proposed a contingency framework that highlights the all-important interplay among theory, research design, data, and analytical technique. We identified rules for inductive and deductive theory-building and their relationship to exploratory and confirmatory research. Given the enormous growth in data from diverse national contexts and ensuing opportunities for IB research, we called for, and elaborated on, a more pluralistic view of data and methodology, with emphasis on the use of advanced methods. We examined the role and nature of data and sought to extend views on how quantitative data can be used for both exploratory and confirmatory research. In the context of three levels of research – nascent, intermediate, mature (Edmondson & McManus, 2007) – we proposed using diverse types of data as well as pluralistic research designs and data analytic techniques to optimize

outcomes in IB knowledge development. We sought to clarify the critical role of developing and leveraging an appropriate combination of research design, data, and analytical technique to generate rigorous and reliable theory in IB.

Confirmatory methods using quantitative data have long dominated scholarly work in JIBS (Nielsen *et al.*, 2020b). Such a seemingly institutionalized paradigm likely has narrowed the research horizons of our field (e.g., Buckley, Doh, & Benischke, 2017). Heterogeneity, innovation, and ongoing renewal of methods are needed to advance knowledge development in IB (Nielsen et al., 2020b). However, recently the volume of quantitative data from third-party data suppliers as well as cloud computing, the Internet of Things, social media, and other digital sources has greatly increased. These trends suggest that a methodological penchant for collecting and analysing large-scale quantitative data will continue.

Quantitative data provide various advantages. Such data are relatively objective, and less subject to researcher or selections bias. Large, random samples are more representative of target populations, supporting external validity. Data can be measured and analyzed more precisely, and facilitate verification and replication of findings. However, quantitative data also present disadvantages, including reduced capacity to assess attitudes, human behavior, and other hard-to-measure phenomena. The use of close-ended questions limits opportunities to adapt or deepen research on examined subjects and emergent findings.

For their part, qualitative data emphasize research on leading exemplars of focal phenomena, which facilitates greater breadth and depth of findings. The flexibility of qualitative research means that studies can be adapted based on incoming data or ongoing analyses. Open-ended inquiry facilitates deep probing of phenomena as findings emerge. However, qualitative

data also entail important disadvantages. Samples are usually small, and cases may fail to represent the subject population, which hinders external validity and the ability to replicate results. Interpretation of findings is relatively subjective, due to researcher characteristics or selection bias.

Alongside the dominance of quantitative studies in JIBS, research designs that extensively integrate both qualitative and quantitative data are relatively rare (Nielsen *et al*., 2020b). JIBS and similar journals may be seen to favor submissions that feature quantitative research and a logical positivist approach. While such a paradigm is appropriate for assessing mature theory using deductive reasoning, the tendency is ill-suited for developing nascent theory or enriching intermediary theory. Quantitative data are better suited to confirmation and theory testing than to exploration and theory generation. Furthermore, despite growth in the sophistication and technical precision of data analysis and reporting, scholarly attention to data sources, collection methods, and other data quality issues has lagged behind. Such tendencies bode ill for knowledge creation in IB.

Thus, we encourage scholars to broaden their approach by combining methodologies in IB research, an approach known as 'methodological triangulation' (Bouchard, 1976; Denzin, 1978; Jick, 1979; Nielsen *et al*., 2020b). 'Within-method' triangulation implies the use of multiple techniques within a given method to collect and interpret data (Denzin, 1978). For example, in quantitative research, the investigator might employ a survey that includes multiple scales or indices to measure the same construct. Between-method triangulation involves using data obtained from different sources, for example, from informants in both qualitative and quantitative research (Denzin, 1978). Examining a phenomenon from various perspectives using

multiple measures results in overlapping variance, which helps uncover unique variance that the researcher using a single method might miss. Methodological triangulation can improve the quality of data and findings by validating substantive results across a more diverse set of methods. It expands the scope of inquiry by facilitating examination of a broader range of research questions and providing a more holistic understanding of the focal phenomenon (Nielsen *et al*, 2020b). It facilitates more confident interpretations, for both developing and testing hypotheses, and for elucidating otherwise unpredicted or context-dependent findings (Jick, 1979).

Methodological triangulation typically involves combining both qualitative and quantitative methodologies to investigate the same phenomenon, an approach that exploits the advantages of one method to mitigate disadvantages of the other. Just as scholars who use quantitative data can supplement their findings from qualitative data, scholars who prefer qualitative methods can use quantitative data to supplement their findings. Scholars need to recognize that both qualitative and quantitative approaches have a place in IB research. When combined, the two approaches can maximize validity and reliability (e.g., Brannen, 2017), helping ensure findings are legitimate and not the result of a methodological artifact (Bouchard, 1976; Denzin, 1978). Further, by facilitating a more holistic description of phenomena (Denzin, 1978) and a better account of the context in which it takes place (Jick, 1979), methodological triangulation functions as "a strategy in designing a study for the purpose of controlling for errors, biases, and omissions of particular methods and techniques" (Nielsen et al., 2020: 1492). This is particularly valuable for examining and understanding complex IB phenomena. Resultant methodological innovation and diversity serve to increase rigor and the scope of scientific inquiry.

It makes sense to leverage both qualitative and quantitative methods in IB research. Qualitative data help inform quantitative research in various ways. A qualitative study can reveal insights, as well as constructs and construct measures, for subsequent quantitative research. In addition, a qualitative study can clarify findings produced by quantitative research by helping to validate novel or unclear findings obtained in the latter. For example, results from a survey can be validated through recourse to findings from prior or subsequent qualitative research. Qualitative observations also can clarify the direction of causality between two constructs investigated in quantitative research.

Our call for research using both qualitative and quantitative data, alongside a greater use of interpretive and critical approaches that emphasize more inductive research designs, is consistent with Welch *et al*. (2011). Quantitative data constitute a necessary 'backbone' to valid and reliable theory development. We recommend that scholars use quantitative data in more novel ways – for example, by applying an interpretivist approach in inductive reasoning to conduct exploratory research. New and growing opportunities have emerged to conduct such research by using "big data" and other abundant digital data, alongside archival and survey data.

In an era of increasing variety of data and techniques, achieving methodological fit is critical. Scholars need to identify and apply the most appropriate combination of theory, research design, data, and analytical technique, to optimize outcomes in IB research. Tailoring the research project to the appropriate paradigm can be challenging. For the researcher, it should proceed from deep knowledge of extant theory and literature on the topic of interest. Such understanding clarifies the state of theory development – nascent, intermediate, or mature – and helps shape the research question(s) and subsequent steps. Identifying optimal methodological fit

progresses like a funnel, a process of narrowing the options until the most appropriate combination of elements in the diamond model (Figure 5) is identified. As they develop their research skills, students should gain exposure to both qualitative and quantitative techniques, and the circumstances under which each technique is most appropriate. In this way, researchers will acquire a larger toolbox, which should enhance not only research capabilities but also ultimate knowledge development in IB.

Conclusion

Developing sound theory is critical to advancing knowledge in IB. The 2021 JIBS Decade Award article represents a key contribution to the methodological domain of IB research. Welch *et al*. (2011) performed a great service by showing how scholars can use case research to develop theory in IB. They have inspired us to go beyond a singular emphasis on the research question and to focus additionally on the depth and quality of the theory that we aim to develop, supplemented with a more pluralistic approach to data. Accordingly, we have called for using both qualitative and quantitative data for exploratory and confirmatory theory development. Regardless of the type of data used, achieving methodological fit is key in scientific inquiry. Optimizing outcomes in IB research requires identifying and using the most appropriate combination of theory, research design, data, and analytical technique, leading to reliable and valid findings, and the development of IB theory that is relevant, responsible, rigorous, and valid.

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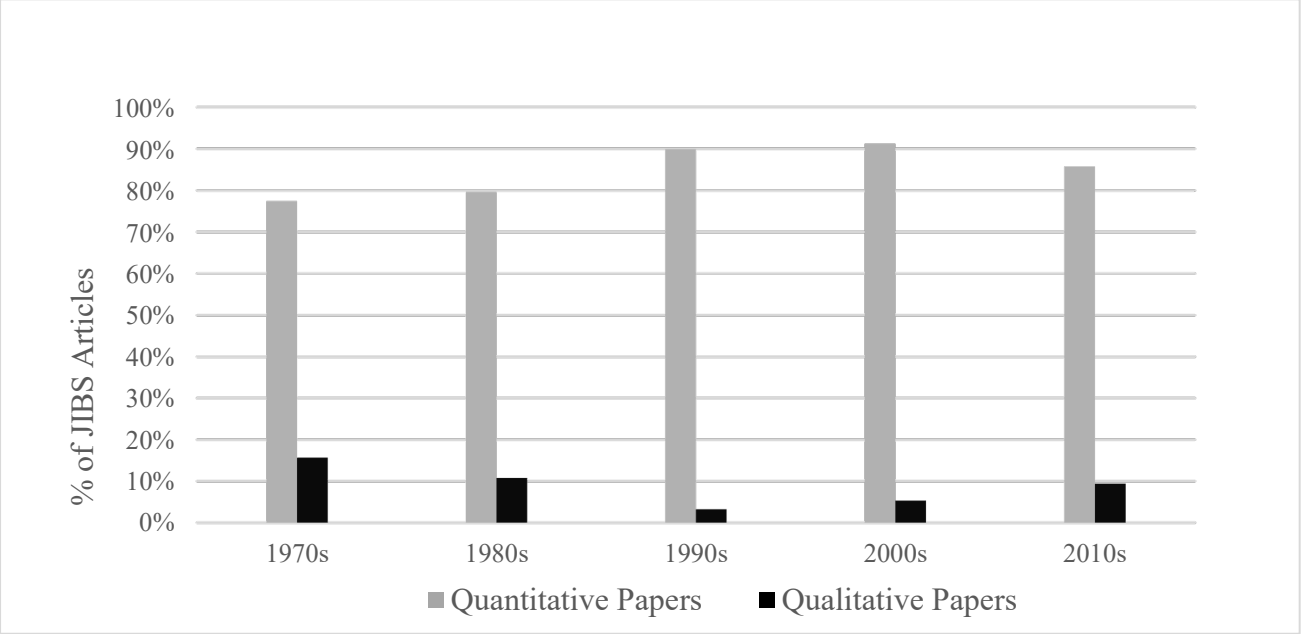
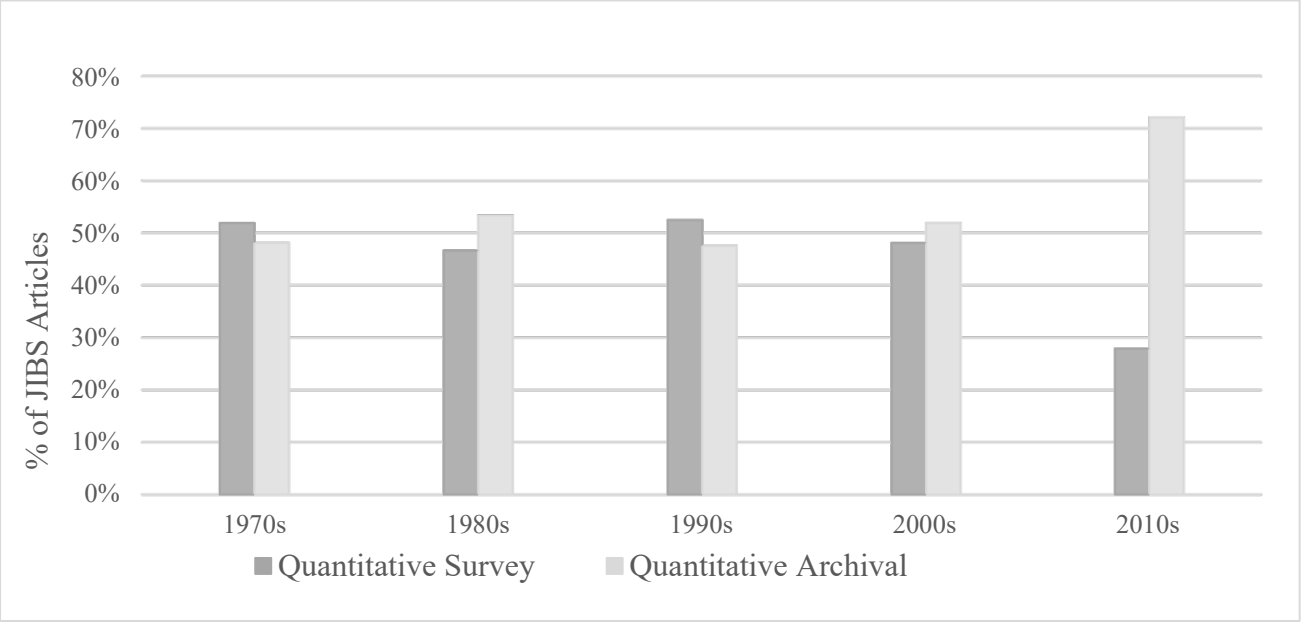
Figure 1 Percentage of papers published in JIBS by methods and decade



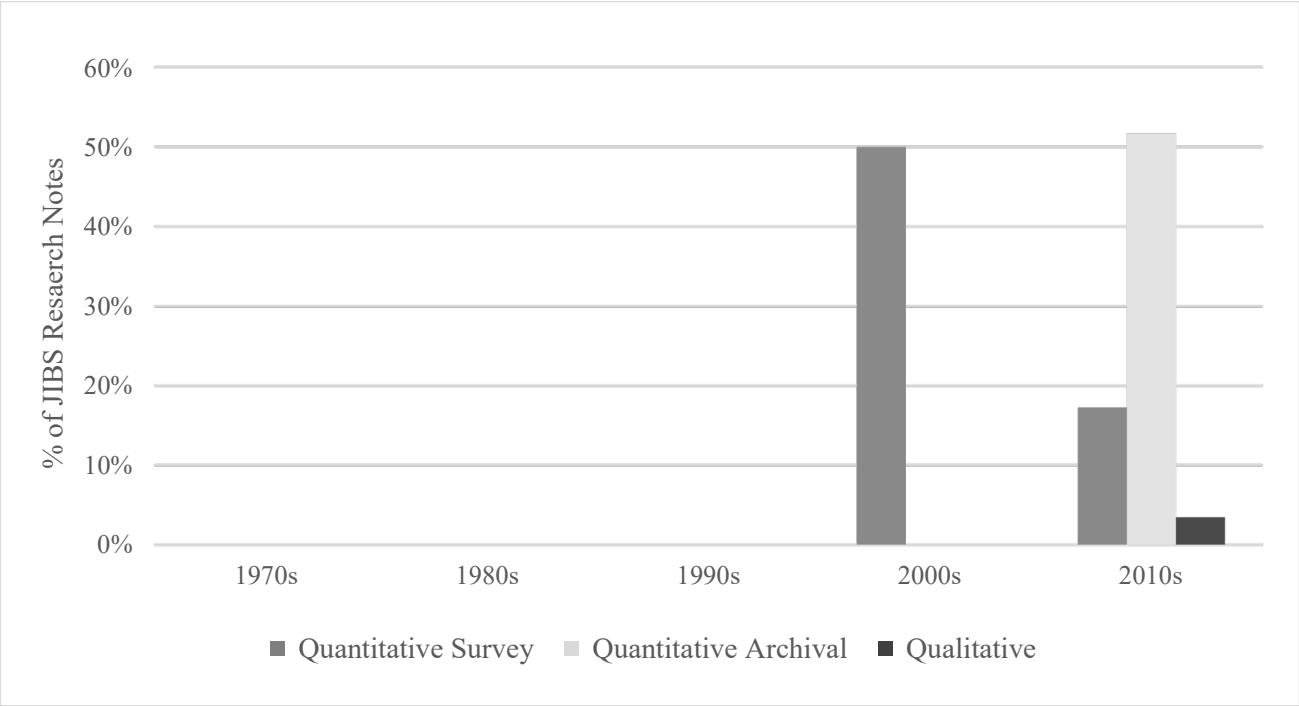
Source: Based on Nielsen *et al*. (2020b)

Figure 2 Percentage of quantitative papers published in JIBS by decade



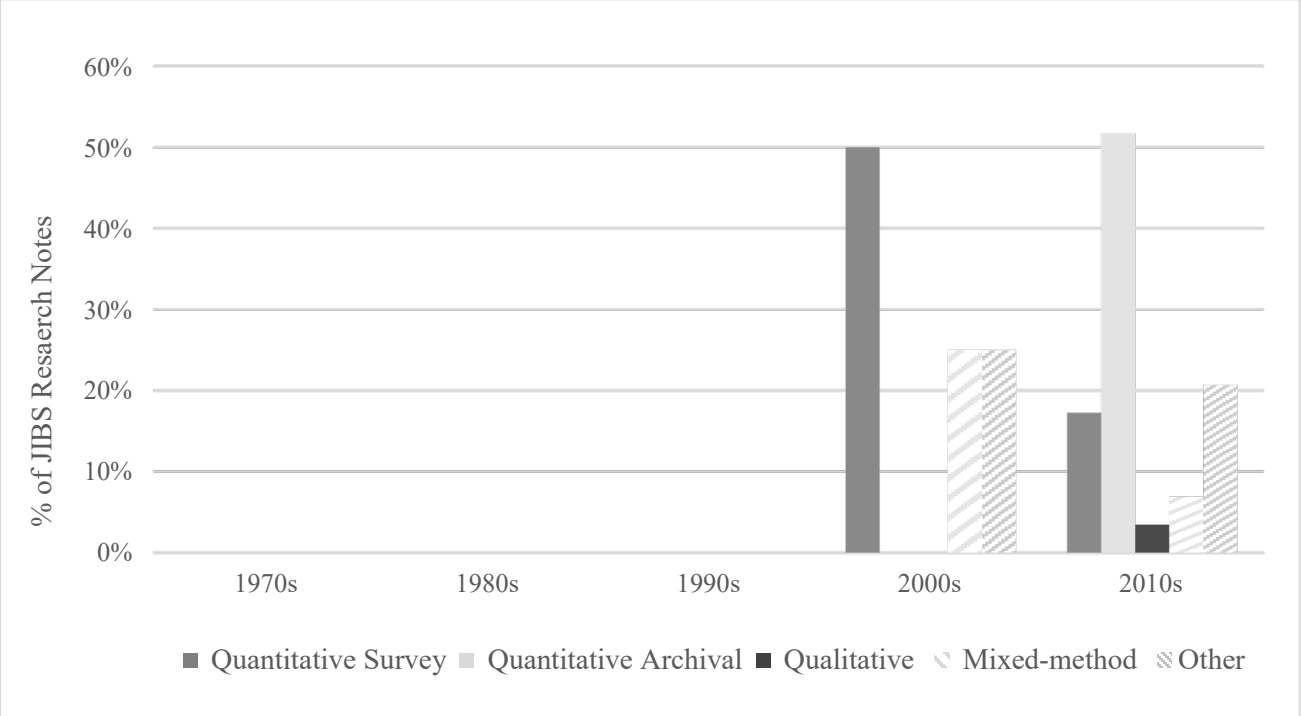
Source: Based on Nielsen *et al.* (2020b)

Figure 3. Percentage of quantitative and qualitative research notes published in JIBS by methods and decade



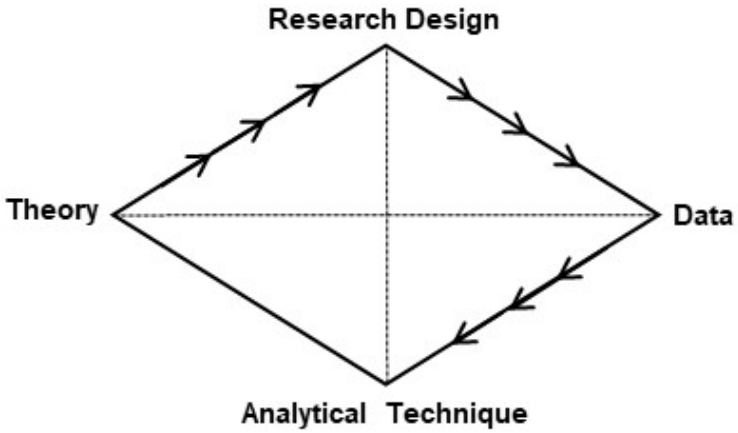
Source: The authors

Figure 4 Percentage of all research notes published in JIBS by methods and decade



Source: The authors

Figure 5 Diamond model of scientific inquiry



Source: The authors

Table 1 Alternatives of methodological fit in IB

Dimensions	Qualitative	Quantitative
Exploratory	A	B
Confirmatory	C	D

Source: The authors

Table 2 Contingency framework for empirical research in IB

Methodological Fit Alternative	**Theory** *Stage of theory development*	**Research Design** *Nature of the study and philosophical orientation*	**Data** *Typical data sources*	**Analytical Technique** *Typical analytical techniques*
A. Exploratory, qualitative	Nascent	Inductivism, Interpretivism *(constructionist)* *(Inductive theory-building and interpretive sense-making, as described in Welch et al., 2011)*	Interviews, observations, documents	Data-driven techniques (e.g. inductive content analysis, discourse analysis) Data guide the analysis
B. Exploratory, quantitative	Nascent	Inductivism, Interpretivism *(constructionist)*	Big data (high-volume, high-velocity and high-variety information assets)	Data mining, machine-learning, algorithms
C. Confirmatory, qualitative	Intermediary	Deductivism, Positivism, and Critical Realism *(falsificationist & realist)* *(Natural experiment and contextualized explanation, as described in Welch et al., 2011)*	Interviews, observations, documents, surveys	Theory-driven techniques (e.g., deductive content analysis, deductive thematic analysis) Research questions guide the analysis
D. Confirmatory, quantitative	Mature	Deductivism, Positivism *(empiricist)*	Archival, surveys	Standard statistical methods (e.g., t-test, regressions, structural equation modelling, factor analysis)