BRAND PROTECTION ACTIONS AND THEIR IMPACTS ON STOCK MARKET REACTIONS

By

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ABSTRACT

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Counterfeiting and brand protection issues are important, but under-investigated in the marketing literature. Much of prior literature on counterfeiting and brand protection so far examine these topics from the consumers' perspective. However, companies and their managers need guidance to understand how to strategically allocate resources to better protect their brands, and how these brand protection activities are associated with firms' financial performance. My dissertation comprises of two essays that provide an in-depth and comprehensive investigation of this topic from a financial perspective. Specifically, building on a systematic and extensive literature review of the literature on anti-counterfeits and brand protection actions, I study the effects of various types of firm actions to counterfeits from a marketing perspective focusing on brand protection actions (i.e., marketing-mix responses to the brand infringement). Specifically, in essay one, building on signaling theory I focus on how firms' brand protection actions affect stock market returns, as well as the boundary conditions for these effects. Specifically, I explore the links between different types of marketing action that managers implement to protect their brands on short-term and long-term stock market returns. In addition, I identify several key contingencies that affect the strength of the relationship between brand protection actions and firm value. The results shows that brand protection actions are associated with both a positive short-term stock market reaction and positive long-term carryover effects on firm value. Importantly, the study demonstrates that investors seem to favor marketing actions over legal actions in the long run. This essay also finds that promotion-related actions have stronger effects

compared to non-promotion-related actions. Finally, the findings indicate that, compared with other types of brand protection actions, promotion-related actions are associated with higher stock market prices when host countries' intellectual property rights protection is stronger; however, brand protection commitment weakens the effect of promotion-related marketing actions on firm value. Moreover, brand threat context (online versus offline) also impacts the firms' marketing brand protection actions on firm value.

In essay two, I aim to further explore the impact of firms' brand protection actions on stock market reactions with a specific focus on the signaling environment. Specifically, this essay provides a detailed examination of the relationship between brand protection actions and firm risk, as well as the moderators of this relationship. I incorporate the idea of the country institutional profile to theorize and test a series of hypotheses that predict the contingency effects of regulatory, cognitive, and normative components of the country institutional profile, on explaining the variability of the main effect strength. In particular, my study demonstrates that brand protection actions do have a significant impact on firm-idiosyncratic risk, such that promotion-related brand protection actions are considered less risky compared to other types of marketing actions. In terms of the moderating effects, three interrelated but distinct aspects of a country institutional profiles exert different influences in this scenario. The results suggest that when the host country's IPR protection is stronger, the risk mitigation effect of promotion-related actions would be stronger compared to other types of actions. For the other two components, the effect is opposite and also significant. The higher the host country's long-term orientation and regulatory quality, the fewer advantages promotion-related actions would possess compared to other types of actions in terms of risk reduction. Overall, this dissertation offers both theoretical and managerial insights to researchers and practitioners.

This dissertation is dedicated to my mom, dad, my husband, and my daughter.
Thank you for always being supportive.

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A BRIEF BACKGROUND ON RESEARCH IN BRAND PROTECTION, RESEARCH QUESTIONS AND OVERALL DISSERTATION STRUCTURE

In recent years, counterfeiting[1] has become a critical issue for firms around the world largely due to the advancement of technology and the globalization of trade (see Figure 1). Counterfeited products can be seen in a wide range of industries from foods, medicines, textiles, and clothing to household appliances, automotive parts, and even to aircraft parts. Global Brand Counterfeiting Report 2018 revealed that the total amount of counterfeiting globally has reached 1.2 trillion USD and this number is expected to hit 1.82 trillion USD by the year 2020. In addition to its immediate financial impact on firms, counterfeiting weakens brand associations leading to brand erosion in the long run (Commuri, 2009; Satomura, Wedel, and Pieters 2014). Given the overall negative impacts of product counterfeiting, practitioners have strong incentives to protect their brands (Ertekin, Sorescu, and Houston 2018).

Despite the practical significance of product counterfeiting, research on this topic has largely been "sporadic and unsystematic" (Yang and Sonmez 2017, p. 423). Therefore, scholars and practitioners have called for more rigorous analysis and a better understanding of the antecedents and consequences of counterfeiting (Sullivan, Wilson, and Kinghorn 2017; Wilson 2017; Wilson, Sullivan, and Hollis 2016). Of note, marketing scholars have been investigating the counterfeiting issues since the 1970s (e.g., Miaoulis and D'Amato 1978). Nevertheless, the

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See footnotes in Appendix C.

extant research in marketing focuses extensively on the demand side, which investigates the implications of counterfeiting for consumers and the consumer responses to counterfeited products (see Eisend 2019 for a meta-analysis). This approach largely ignores the supply side of the counterfeit trade, which comprises the entire chain of illicit trade of counterfeit goods including counterfeiters, law enforcement, manufacturers, distributors, and retailers, among others (cf. Staake, Thiesse, and Fleisch, 2009).

In order to have a deeper understanding of this phenomenon, I conducted a systematic review of the literature that focus brand protection topics. In efforts to identify studies to be included in my review, I searched the ProQuest ABI/INFORM Complete and EBSCO Business Source Complete databases for articles published in English, peer-reviewed, academic journals containing the following keywords in the title, abstract, or keywords: “anticounterfeit(s)”, “brand piracy”, “brand protection”, “counterfeit(s)”, “fake product”, “illicit product”, “knockoff” and “product theft”. I used quotation marks to exclude irrelevant mentions based on grammatical coincidence.

This led to the following breakdown: for EBSCO Business Source Complete database: “anticounterfeit(s)” (19 hits), “brand piracy” (8 hits), “brand protection” (78 hits), “counterfeit(s)” (829 hits), “fake product” (36 hits), “illicit product” (16 hits), “knockoff” (6 hits) and “product theft” (6 hits); for ABI/INFORM Complete database, “anticounterfeit(s)” (8 hits), “brand piracy” (11 hits), “brand protection” (209 hits), “counterfeit(s)” (550 hits), “fake product” (60 hits), “illicit product” (86 hits), “knockoff” (9 hits) and “product theft” (80 hits). A summary

of sources contributing to the systematic review, as well as the procedures followed for the literature review is summarized in Figure 2.

Of note, in my review, I only included studies that provided information about firm-level actions as part of their brand protection, anti-counterfeiting and/or piracy prevention actions. Several other inclusion criteria were applied. Editorials, book reviews, replies, datasets, industry reports and newspapers/magazine comments were removed. Furthermore, publications had to be directly related to the business discipline. Journals from other disciplines such as criminology, criminal justice, forensic science, and psychology were removed. Articles published in public policies, laws, and economics that directly discuss the brand protection issues were included.

Next, I assessed the relevance and appropriateness of the articles by reading the abstracts of published articles. Specifically, in this first stage, I identified 68 studies that examine issues related to one or more brand protection, anti-counterfeiting and/or piracy prevention actions using the keywords mentioned above. In addition, I identified major review papers (Staake, Thiesse, and Tleisch, 2009; Eisend and Schuchert-Guler, 2006; Hoecht and Trott, 2014; Eisend et al., 2017; Yang and Sonmez, 2017; Li and Yi, 2017; Sullivan et al. 2017) related to this topic. I examined the references sections of these studies in efforts to identify additional studies that I might have missed in the keyword searches. This process yielded 10 additional studies.

Therefore, my literature review included a total of 78 published studies that focus on firms' brand protection, anti-counterfeiting and/or piracy prevention actions. In the second stage, I read each article to extract various study characteristics, such as journal names, publication year,

author names, use of empirical data, and type of analysis, as well as the various types of brand protection actions.

Building on prior literature reviews in this domain (cf. Staake, Thiesse and Fleisch 2009; Yang and Sonmez 2017), I adopted a historical perspective to summarize the findings based on the evolution of brand protection studies from the early 1980s until now in three phases: *Exploration Phase (1980-1999); Development Phase (2000-2009); Integration Phase (2010-2018).* This classification reflects the brand owners' growing awareness as well as the increasing involving position against brand infringement issues. As presented in Table 1-1, my study is making some unique contributions to the literature by the following reasons. First, using transparent and replicable procedures I provide a more comprehensive and systematic review of the brand protection issues from a marketing perspective. In contrast to prior reviews that adopted a broader perspective (e.g., Hoecht and Trott, 2014; Yang and Sonmez, 2017), my review provides a more focused approach based on marketing literature. Second, different from prior review papers that primarily focus on other level of analysis of the brand protection issues (e.g., Eisend and Schuchert-Güler, 2006; Eisend et al., 2017; Staake, Thiesse, and Fleisch, 2009; Li and Yi, 2017), I focus on firm-level brand protection actions, which is a domain that has been under-investigated in the marketing literature. Next, I will briefly discuss my findings.

In *Exploration Phase (1980-1999),* early work on counterfeiting and product piracy is rather descriptive and qualitative in nature (Li and Yi 2017). Alerted by the rampant counterfeit trade, scholars in various business disciplines became increasingly more interested in counterfeiting

issues in the late 1980s. However, research in this stage can be characterized as broad in scope with a few commonalities across studies. Articles in this phase typically involve overviews of the impact of counterfeiting on firms and the market in general (Chaudhry and Walsh 1996) and general discussion about different ways to combat counterfeiting (Harvey 1987,1988; Shultz and Saporito 1996). The second phase of research, which is *Development Phase (2000-2009)*, witnessed a trend of proliferation of research with a focus on selected topics and expansion of the research horizon. Rather than simply answering the descriptive question of "what to do" (what actions are available to brand owners), research in the development phase started to adopt a more theoretical approach that attempts to discover "how to do" (how brand owners can strategically leverage the different set of actions) (Berman 2008; Jacobs, Samli and Jedlik 2001; Kopp et al. 2007). Finally, in *Integration Phase (2010-2018)*, scholars not only focus more on the integration and collaboration of multi-disciplinary brand protection strategies but also explore the brand protection literature in a more fine-grained level using mixed methods. For example, Li (2013) suggested that advanced technology can be applied in the supply chain to combat counterfeiting. Wilcock and Boys (2014) pointed out that integrating the brand protection strategies into different elements of business departments such as human resources, law, IT, sales, and marketing exhibits more alternative possibilities for the brand owners.

Based on the review findings, I uncovered the nature and scale of brand protection actions. Theoretically speaking, from a sporadic and exploratory groundwork to a more diversified but integrated status, each phase is characterized by different types of studies to help us understand

brand protection actions and achieved progress in understating their impacts on various outcomes. Firms have been focusing on creating, maintaining, and enhancing the strength of their brand equity by levering different marketing tools; however, with rampant counterfeiting activities globally, brand managers now are required to change their mindset to think more strategically about how to protect their brand on top of their regular brand management routine.

Counterfeiters not only imitate the brand owners' products but also use trademarks without authorization. Trademarks are the legalization of brands (Cohen 1986); they can "help create equity by establishing brand differentiation and helping consumers avoid confusion in the marketplace" (Srinivasan, Hsu, and Fournier 2012, p.181). Therefore, brand owners have every reason to prevent any form of trademark infringements. In this dissertation, I will focus on brand protection actions associated with *any unauthorized manufacturing of goods whose special characteristics are protected as intellectual property rights (trademarks)* (Cordell, Wongtada, and Kieschnick 1996).

In marketing-finance interface literature, prior work has studied the stock market reaction of taking lawsuits as a brand protection approach. According to Ertekin, Sorescu, and Houston (2018), investors hold a negative attitude toward firms' filing or winning trademark infringement lawsuits, but the long-term financial performance suggests that defending a brand in court is appreciated. Although legal actions may be powerful, practitioners often considered it the last resort, largely due to their associated high costs in time and money (Yang and Sonmez 2018). Discussion from both industry and academia shows that a more proactive way to protect the

brand is to leverage firms' business activities (Berman 2008; Harvey and Ronkainen 1985; Yang and Sonmez 2018).

Specifically, firms' marketing-mix response to brand infringement is highly relevant to this brand protection context. Marketing-mix tactics (product, place, promotion, and price) are undoubtedly one of the most acknowledged brand-building tools (Fischer and Himme 2017; Simon and Sullivan 1993). From the brand owners' perspective, effectively integrating brand protection actions with marketing departments' daily routine can optimize internal resource allocation and further take advantage of the existing human capital.

Following the logic above, I argue that marketing brand protection actions at a firm's level will contain four distinct sets of responses: product-related, price-related, place-related, and promotion-related. Adapted from Cesareo and Stöttinger (2015), the definitions of the four categories are introduced as follows. ***Product-related*** brand protection actions refer to the anti-counterfeiting actions that emphasize the current or improved product features and functions to differentiate an original from a fake. Any efforts made by improving the product design, labeling, and packaging, as well as service, will be counted into this category. ***Place-related*** brand protection actions focus on efforts made to protect the distribution system from being penetrated by counterfeit products. Collaborating with distribution channel partners is one of the most critical actions in this category. ***Promotion-related*** brand protection actions involve advertising and promotions that both increase awareness of authentic products and educate consumers on identifying the counterfeits. Lastly, ***price-related*** brand protection actions include using pricing

tactics and discounts to attract customers while discouraging counterfeiters (Cesareo and Stöttinger 2015).

As such, I provide a classification of marketing brand protection actions based on the elements of the marketing mix (product, price, place, and promotion). According to my review of the anti-counterfeiting and brand protection literature as well as prior marketing literature, I believe that it is suitable in this context for two reasons. First, branding literature has suggested that the brand is a mechanism for achieving competitive advantage for firms by using the marketing mix to tailor to the needs and wants of a specified target group (Wood 2000). Therefore, the marketing mix is considered a well-established source of generating and cultivating brand equity, which is a measure of the strength of consumers' attachment to a brand and the total value of a brand (Keller 1993; Simon and Sullivan 1993). Following this logic, in order to protect brand equity, efforts could be made through different combinations of the marketing mix as well. Second, from the marketing managers' perspective, the marketing mix covers all aspects of the daily marketing decisions including product design, packaging, pricing strategy, supply chain management, and marketing communications (van Waterschoot and van den Bulte 1992). The widely applicable scope and established framework made it easy to understand and implement by marketing practitioners.

Next, I will provide an integrative overview of my dissertation. In this dissertation, I dive into brand protection literature with an emphasis on the marketing perspective. Anti-counterfeiting actions are vital to avoid short-term financial losses, to maintain a strong brand

image and brand reputation, to avoid the erosion of brand equity, and to further keep customer trust and customer satisfaction (Ertekin, Sorescu, and Houston 2018; Fitzpatrick and DiLullo 2012). However, they are costly without a doubt and need stable funding to ensure a successful implementation. Cash flows from the stock market is one of the most important funding sources for firms' strategic operations, including brand protection activities. Hence, understanding investors' reactions to these brand protection actions are critical. Based on the literature review, I have demonstrated that studies that focus on the supply-side of the counterfeiting trade are very limited (see Table 1-2); furthermore, current work has primarily investigated brand infringement from a legal perspective (e.g., Bhagat and Umesh 1997; Ertekin, Sorescu, and Houston 2018). Given the advantages of marketing brand protection, I believe that it merits a more thorough investigation of how investors would perceive and react to this type of brand protection actions. To summarize, my dissertation seeks to answer these research questions: what can marketing do to protect the brand? How would stock market response to firms' marketing brand protection actions?

In the finance literature, stock market returns, and risk associated with those returns are both critical metrics that capture different aspects of firms' financial performance (Srinivasan and Hanssens 2009). Stock return is "the percentage change in a firm's stock price"; risk, "as reflected in higher stock-price volatility, suggests the vulnerability of and uncertainty in future cash flows" (Hsu, Fournier, and Srinivasan 2016, p.263). For any investment, managers not only care about capital gains but also need to consider the risks involved with such gains. Therefore, it

is important to study the effects of brand protection actions on both stock market returns and risk. Figure 3 illustrates the conceptual framework of this dissertation.

Specifically, in Essay one, I aim to answer following critical questions: how should firms allocate resources to achieve better brand protection outcomes? Are various brand protection actions equally effective under varying circumstances? I hope to extend the current studies and provide a more comprehensive examination of the effects of brand protection actions on firm value under various contingency factors (see Figure 4). In doing so, this essay shows that factors such as the host country's Intellectual Property Rights protection, brand protection commitment, and online vs. offline brand threat context play a key role in the investors' interpretation of the brand protection actions.

In Essay two, I aim to contribute to this stream of literature by providing further evidence in terms of how brand protection actions are related to firm risk (see Figure 5). I also propose that from the social contextual perspective, three components of the host country institutional profile (IPR protection, long-term orientation, and regulatory quality) all may account for the variability in brand protection actions' effects on firm risk reduction. Indeed, the dynamic evolvement of global trade environments is reshaping how brand owners manage and defend their valuable brands worldwide, especially for global brands. With the rise of digital global sales channels, counterfeiting products are flourishing in both developed and developing markets; yet, laws, regulations that protect trademarks vary substantially across countries (Eisend, Hartmann and Apaolaza 2017; Steenkamp 2020). In addition, the morality effects and consumer responses to

counterfeit products differ depending on institutional and social factors (Eisend 2019). Therefore, to unveil this contextual contingency effect, and also answer the call of identifying "effective solution dependent on local institutional (regulative, cultural, economic) characteristics" for anti-counterfeiting endeavors (Steenkamp 2020, p.16), I leverage existing institutional work to explore the role of a country institutional profile in global brand protection phenomenon. I hope that my study could shed light on the financial impact of firms' brand protection actions and seek to provide useful insights to managers and help them protect their brands.

The rest of my dissertation is followed by Essay one and Essay two separately and sequentially. Collectively, these two essays provide an in-depth and comprehensive investigation of the effects of brand protection actions from a marketing perspective on stock market reactions. In this dissertation, each essay is structured as its own research paper with its own abstract, introduction, literature review, hypothesis development, methods explanation, results section, and discussion that includes managerial implications, limitations, and future research directions. Following the second essay, a conclusion is offered to tie the entire dissertation together.

ESSAY ONE

Abstract

Building on signaling theory, this essay focus on how firms' brand protection actions affect firm value. Distinguishing legal brand protection actions from marketing actions (i.e., marketing-mix responses to brand infringement), I examine the relative effects of different types of protection actions on short-term and long-term firm value. The results show that brand protection actions are associated with both a positive short-term stock market reaction and positive long-term carryover effect on firm value. Importantly, the study demonstrates that investors seem to favor marketing actions over legal actions in the long run. I also find that promotion-related actions have stronger effects compared to non-promotion-related actions. Finally, the findings indicate that, compared with other types of brand protection actions, promotion-related actions are associated with higher stock market prices when host countries' intellectual property rights protection is stronger; however, brand protection commitment weakens the effect of promotion-related marketing actions on firm value. Moreover, brand threat context (online versus offline) also impacts the firms' marketing brand protection actions on firm value.

Introduction

Counterfeiting is a critical issue for firms around the world, largely due to the advancement of technology and the globalization of trade. According to OECD's the EU Intellectual Property Office (EUIPO), the estimated global counterfeiting and piracy in 2016 could reach $509 billion in volume (OECD/EUIPO 2019). Chaudhry and Zimmerman (2013) estimate the financial costs of counterfeits around $250 billion per year in the United States alone. In addition to its immediate financial impact on firms, counterfeiting has detrimental effects on brands as counterfeits weaken brand associations leading to brand erosion in the long run (Collins and Zaichkowsky 1999; Commuri 2009; Satomura, Wedel, and Pieters 2014). Given the overall negative impacts of counterfeiting, practitioners have strong incentives to protect their brands. Firms such as Louis Vuitton have already established legal departments with substantial budgets to battle counterfeiting (Shams 2015). Similarly, Procter & Gamble has formed a partnership with U.S. Customs and Border Protection to tackle counterfeiting issues (Henderson 2018).

From a marketing perspective, counterfeiting is a trademark infringement issue leading to consumer confusion through brand dilution (Cohen 1986, 1991; Miaoulis and D'Amato 1978). Specifically, trademarks represent the legalization of brand names and the recognition of the uniqueness, as well as exclusiveness, of brand ownership. The branding literature emphasizes the similarity in the definition of "trademarks" and "brands"[2] implying a close relationship between these two concepts (Krasnikov, Mishra, and Orozco 2009). A clear and unique trademark helps

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See footnotes in Appendix C.

customers recognize and have confidence in product/service quality, which also helps brand owners establish their reputation and brand image (Cohen 1991). Strong brand names and trademarks are associated with more positive responses to marketing activities, which constitute the brand equity (Keller 1993).

Therefore, protecting trademarks is akin to protecting brand equity. Counterfeiting destroys the "language of brands" (Wilke and Zaichkowsky 1999, p. 15), as it confuses consumers by increasing the variance of product quality and blurring both the brand knowledge and brand distinctiveness (Cohen 1991). Therefore, an effective brand management strategy should not only include marketing actions to promote brand awareness and brand image, but also actions that protect the brand equity from this dilution (Pullig, Simmons, and Netemeyer 2006). Nevertheless, while research in marketing has focused heavily on creating, building, and strengthening brand equity (Keller 2016), prior literature provides little guidance on how marketing managers can protect their brands from dilution.

Previous studies in marketing have primarily investigated brand infringement from a legal perspective (e.g., Bhagat and Umesh 1997; Ertekin, Sorescu, and Houston 2018). Every year, more than 3,000 trademark infringement lawsuits are filed in U.S. district courts (Maltby 2010); however, these actions are expensive as trademark infringement litigation that ends up in court can cost anywhere from $375,000 to $2 million per case (American Intellectual Property Law Association 2013). Furthermore, some brand owners even hope to keep brand infringement under the radar out of concerns that any knowledge of counterfeiting might elicit unnecessary

concerns among consumers and prompt negative reactions from the stock market. Thus, legal enforcement, especially infringement lawsuits, is a "costly, lengthy and unpredictable process" (Yang and Sonmez 2017, p. 407). As such, lawsuits are not often the first choice of firms to address the anti-counterfeiting problem (Yang and Sonmez 2017).

I focus on firms' marketing-mix responses as part of their brand protection actions in this study. Brand protection actions using marketing-mix responses provide effective tools for brand owners as these actions do not involve costly legal actions and they have the highest success rates among alternatives (Schuh, Kreysa, and Haag 2009; Sohl and Saueressig 2009; Yang, Sonmez, and Bosworth 2004). Thus, I answer the following questions: How can marketers use marketing mix elements (product, price, place, and promotion) to protect their brands? How different firm characteristics, industry, and country environments affect the financial outcomes associated with various brand protection actions? In efforts to provide guidance for firms to allocate their marketing resources to protect their brands, I first examine how different marketing mix responses to counterfeit activity (i.e., brand protection actions) affect firm value. In addition, I identify and test how a firm's brand protection commitment, intellectual property rights [IPR] protection, and brand threat context moderate the relationship between brand protection actions and stock market reactions. In the following sections, I discuss the theoretical foundations of my study and a brief review of the brand protection literature. I then present my hypotheses, methods, and results. I conclude with implications for research and practice.

Hypothesis Development

Brand Protection Actions

The legal system is a powerful tool that many firms employ to handle brand infringement issues (Ertekin, Sorescu, and Houston 2018). However, these defensive actions have limited use because they are not very effective in deterring counterfeiters and they attempt to protect the company largely by remedying the damage (Yang and Sonmez 2017). As such, legal enforcement is often considered the last resort (Yang and Sonmez 2017). Investment in legal activities such as hiring legal teams and collecting information does not guarantee the desired outcome (Hoecht and Trott 2014); brand owners' reluctance to disclose sensitive information further increases the complexity of investigations (Somaya 2003). Therefore, the drawbacks of lawsuits force companies to explore other options to combat counterfeit activities that target their brands and products (Schuh, Kreysa and Haag 2009; Yang, Sonmez, and Bosworth 2004).

Prior research indicates that brand protection actions can be grouped into defensive or proactive actions (e.g., Harvey and Ronkainen 1985; Staake, Thiesse, and Fleisch 2009; Yang, Sonmez, and Bosworth 2004). Defensive actions involve a reactive response to counterfeit activities, such as requesting compensation, seizing the counterfeits, and imposing legal penalties. Proactive actions emphasize preventing counterfeits from creating damage before actual damage is done; using special packaging/labeling, offering a lower price, and monitoring distribution channels are examples of proactive actions in brand protection (Berman 2008; Harvey and Ronkainen 1985; Yang and Sonmez 2017).

In this study, I maintain that the four marketing-mix responses to brand infringement (product, price, place, and promotion) (Jindal et al. 2020; Srinivasan and Ramani 2019) represent proactive actions that managers can use to combat counterfeit activity from a marketing perspective. This refinement is particularly useful because a brand is a mechanism for achieving competitive advantage for firms that employ the marketing mix to cater to the needs and wants of a specified target group (Wood 2000). Therefore, the marketing mix is critical in generating and cultivating brand equity, which measures the strength of consumers' attachment to a brand and its total value (Keller 1993; Simon and Sullivan 1993).

Grounded in this logic, I identify product, price, place, and promotion-related actions as critical elements of brand protection efforts to prevent the dilution of brand equity (cf. Cesareo and Stöttinger 2015; Sonmez, Yang, and Fryxell 2013; Yang and Fryxell 2009). In my context, *product-related* brand protection actions refer to the anticounterfeiting actions that emphasize the current or improved product features and functions in efforts to differentiate an original product from a fake. Any efforts made to improve the product design, labeling, and packaging, as well as service, define this category. Second, *price-related* actions include using pricing tactics and discounts to attract customers while discouraging counterfeiters (Cesareo and Stöttinger 2015). Third, *place-related* actions are efforts made to protect the distribution system from being penetrated by counterfeit products. Collaborating with distribution channel partners is one of the most critical actions in this category. Fourth, *promotion-related* actions involve advertising and promotions that both increase awareness of authentic products and educate consumers on

identifying the counterfeits.

Marketing Brand Protection Actions and Firm Value

My conceptual framework builds on signaling theory, which indicates that brands serve as credible signals in markets characterized by imperfect and asymmetric information structures (Akerlof 1970; Rao, Qu, and Ruekert 1999). In such a market, consumers encounter uncertainty and costs related to information gathering and processing (Shugan 1980). Through the firm's investments in marketing-mix elements, consumers receive physical, functional, and symbolic information about the brand and product attributes. Firms' efforts to reduce consumers' perceived risk and information costs constitute brand equity, which facilitates firms' ability to gain a competitive advantage (Aaker 1992; Keller 1993). Competitive advantages further lead to positive accounting and financial outcomes, such as accelerated and enhanced cash flows and decreased volatility (Srivastava, Shervani, and Fahey 1998).

In addition to creating, building, and strengthening brand equity, marketing actions can also protect brands from dilution. In fact, the challenges of brand protection activities are well documented in the early marketing literature (Cohen 1986, 1991; Harvey and Ronkainen 1985; Miaoulis and D'Amato 1978). Empirical studies have revealed that one signal can send multiple messages (e.g., Jain, Jayaraman, and Kini 2008; Park and Mezias 2005). Compared with legal brand protection actions, marketing actions contain richer information because marketing activities send signals that convey information more than the activities themselves do and carry implicit messages (Akdeniz, Calantone, and Voorhees 2014). Firms' marketing brand protection

actions convey two pieces of information to the stock market. Firstly, these actions demonstrate that firms plan to execute their marketing strategies to signal unobservable product quality to the consumer, which fulfills the main purpose of these activities (Rao, Qu, and Ruekert 1999). In addition, brand protection actions signal that brand owners are motivated to leverage existing marketing resources and expertise to protect the brand more effectively since the marketing department is the leading unit responsible for brand management routines. Therefore, investors' reactions to brand protection actions in the short run should be positive.

Marketing literature indicates that stock market reactions to firm-level signals also have long-term implications as investors may not be able to evaluate the outcomes of these activities immediately (Fornel et al. 2006; Swaminathan, Murshed, and Hulland 2008). For firm-level actions, investors need to collect sufficient information over time to improve the forecast accuracy of future cash flows (Sorescu, Chandy, and Prabhu 2007). Similarly, the value-generating process for brand assets takes time to unfold: strong brand equity not only affects a firm's current financial performance but also contributes to its future financial performance (Mizik 2010). Over time, investors adjust their downward expectations back to the normal range. Thus, the benefits of protecting brand equity begin to pay off for the firm with increased cash flows. Therefore, investors should have a positive attitude toward brand protection actions in the long run. Therefore, I propose the following hypothesis:

H_1: Marketing brand protection actions are associated with (a) positive short-term and (b) positive long-term stock market reactions.

The nature of marketing brand protection actions is also a critical issue because the characteristics of various marketing actions can affect investors' interpretation of information differently (Connelly et al. 2011). One important signal characteristic is signal visibility. Ramaswami et al. (2010) define signal visibility as the extent to which a signal will be noteworthy, or salient, in a given context. When a brand protection signal is more visible, more stakeholders will be able to notice this signal, and brand owners' effort to protect their brands will be interpreted more comprehensively. Such facilitated communication will increase the signaling effectiveness because stakeholders can easily extract needed information from the signal, and counterfeiters could potentially be deterred by firms' conspicuous brand protection endeavors.

Among four types of marketing brand protection actions, promotion-related actions are utilizing mass media to disseminate anti-counterfeiting efforts and news as well as educating customers about the knowledge of identifying fake over authentic products. This means that promotion-related signals are widely visible to a broader audience (existing and potential customers). On the other hand, other three types of brand protection actions including product-related, price-related, and place-related actions are more pertaining to the products themselves or may be noticeable only when purchases are made. For example, increased supervision of supply chain distribution system is not directly visible to consumers at all; RFID tags that are installed on updated anti-counterfeiting packages are more closely impacting end users' experience only; price discount may be noticed by frequent buyers only. Therefore, nonpromotion-related brand

protection actions may be less observable compared to promotion-related actions.

Customers are the demand side of counterfeit trades, and if the demand for counterfeits decreases, the market for counterfeits will shrink. Thus, a more visible signal suggests the more people reached, and the better the brand protection results can be achieved. As such, I propose that investors should react more positively to promotion-related actions because they contribute more directly to the strengthening of brand awareness and brand association in the customer mindset.

H_2: Compared to other types of brand protection actions, promotion-related actions are associated with a more positive stock market reaction.

Moderating Effect of Threat Context

According to signaling theory, a better understanding of the signaling process requires a careful assessment of the signaling environment (Connelly et al. 2011). A critical element of the signaling environment in brand protection is online versus offline context. Most firms have now established their e-commerce network to expand their business but the downside of this strategy is the increasing threats posed by the cyber world. Chikada and Gupta's (2017) review shows that fraudsters are savvy enough to challenge brand owners by attacking domain security, distributing counterfeits, engaging in content piracy, fishing, sharing malware, and taking advantage of Business Email Spoofing (BES)/Business Email Compromise (BEC).

Online brand protection is significantly different from offline brand protection in that online marketplaces are more complex and rapidly changing. The Internet gives counterfeiters the

chance to operate businesses in countries with weak IPR protection, where counterfeiters can break the laws with low-cost stakes (Raman and Pramod 2017). Anonymity further enables counterfeiters to conceal their identity and to disguise themselves as official websites. When their online businesses are banned, counterfeiters can easily resume their operations with new fake names and domains (Ertekin, Sorescu, and Houston 2018). Thus, online threats distort the signaling environment, making it more difficult for receivers to interpret signals and to establish an accurate understanding of the situation. Thus, the online environment should generate more ambiguous predictions about the attributes of the firms (McGee and Sawyer 2003). For these reasons, I expect investors to consider the online threat a negative factor and to adjust their expectations downward accordingly.

I expect this negative moderation effect to exert a greater impact on promotion-related brand protection actions than the other types of marketing actions for several reasons. As a distribution channel, the Internet brings more choices and convenient purchase experiences to consumers. At the same time, it increases consumer vulnerability because of the difficulty in verifying the authenticity of goods sold online without in-person inspection (Mavlanova and Benbunan-Fich 2010). In the offline context, consumers can apply their product knowledge in stores and use caution when making transactions. However, the online context deprives consumers of the opportunity to rely on information to distinguish between fake and authentic products. Therefore, the effectiveness of promotion-related brand protection actions may be compromised in the presence of online threats. In terms of the product, price, and distribution channel-related

protection actions, consumers can still rely on other signals, such as packages/labels and the legitimacy of websites/stores to verify the authenticity of products. In sum, investors should be less confident that the outcome will be positive when firms deploy promotion-related actions to combat counterfeiting. Thus, I propose the following hypothesis:

H_3: The brand threat context moderates the relationship between marketing brand protection actions and firm value, such that the relationship is weaker for promotion-related actions when the threat involves online context.

Moderating Effect of IPR Protection

In brand protection, another critical element of the signaling environment is the strength of IPR protection in the country in which the firm operates. Some countries deliberately allow IPR violations or fail to enforce regulations, which poses significant challenges to brand owners (Schultz II and Saporito 1996). In countries where laws and regulations are poorly enforced, a firm's deployment of resources and implementation of appropriate actions become critical to its brand protection (Zhao 2006). In countries with greater IPR protection, governments more actively monitor and update their own intellectual property regulations and laws. In addition, these international organizations provide stronger support in these countries. Therefore, I expect the relationship between marketing brand protection actions and firm value to be stronger in countries with stronger IPR protections, as investors should be more confident that the brand protection actions will be more effective when firms deploy these actions.

Moreover, I expect this positive moderation effect to be stronger for promotion-related brand

protection actions. This is because compared with other actions promotion-related actions rely on mass media to advertise and educate consumers. In countries with stronger IPR protections, communication channels should provide more opportunities for faster and broader information dissemination. Furthermore, consumers from these countries already possess awareness, so it is easier for them to accept and take in new knowledge. In summary, investors should have a more positive attitude toward promotion-related brand protection actions implemented in countries with strong IPR protections.

H_4: IPR protection moderates the relationship between marketing brand protection actions and firm value, such that the relationship is stronger for promotion-related actions when protection strength is greater.

Moderating Effect of Brand Protection Commitment

Brand owners' investments in brand protection actions reflect their commitment to protecting their brand equity. In the signaling context, investors generally use signal costs to make inferences. Signals with high costs elicit a sense of credibility and indicate firms' confidence that they can fulfill their promises and earn considerable benefits that outweigh the costs of producing the signal (Connelly et al. 2011). Nevertheless, high levels of brand protection commitment may backfire and lead to unexpected consequences. As Kirmani and Wright (1989, p. 345) suggest, "with other causal attributions, this default attribution is undermined if there is a salient reason to discount it." *Desperation* is one type of casual attribution that occurs when the amount of expenditure seems excessive or more than reasonably warranted (Aiken and Boush

2006; Kirmani and Wright 1989). Brand protection is not a one-time deal; rather, it requires firms' long-term view as well as careful planning and management to address the rapidly changing uncertainty (Hoecht and Trott 2014). Investing a massive number of resources in any brand protection action might be interpreted as a too-costly signal that implies desperation rather than confidence, resulting in a loss of investor confidence. Therefore, brand protection commitment can weaken the effects of brand protection actions on firm value.

This moderation effect should be more negative for promotion-related brand protection actions than for the other types of action because promotion-related actions are fixed costs (i.e., sale-independent signals) (Kirmani and Rao 2000). In addition to the alternative attribution mechanism, when firms overly employ promotion-related actions, this commitment largely reduces their flexibility in contingency planning and risk management. As a result, firms may not possess the necessary resources to take countermeasures in an emergency.

H_5: Brand protection commitment moderates the relationship between marketing brand protection action announcements and firm value, such that the relationship is weaker for promotion-related actions when commitment is higher.

Methodology

Sample: Brand Protection Action Announcements

I compile a significant amount of data collected from a wide range of sources to construct my sample of legal and marketing brand protection action announcements. Specifically, to obtain data for news announcements about a broad range of brand protection actions, I used Factiva and

Lexis-Nexis, two databases that include a large selection of business news and publications. Consistent with prior research (Sorescu, Warren, and Ertekin 2017), I use these databases to search for indexes of all major publications worldwide.

I selected consumer goods and pharmaceutical products to test my hypotheses for two reasons. First, according to information from U.S. Customs and Border Protection, consumer goods (including handbags/wallets, apparel/accessories, footwear, and personal care products) and pharmaceutical products were the top two categories of products seized in the United States in 2018 because of IPR infringement. Therefore, brand owners from these two categories are more likely to take action considering their heavy losses. Second, these two categories offer a large number of publicly traded firms that have adequate variation in resources and marketing activities but relatively similar industry backgrounds (Sorescu, Chandy, and Prabhu 2007).

For the consumer goods sample, I used the filter function in Factiva to select news before downloading. In the first step, I focused on the companies listed in the S&P 500 Index. According to Cesareo and Stöttinger (2015), brand protection actions require a great deal of investment in both time and effort from the brand owners. Therefore, companies in the S&P 500 are more likely to have the financial resources necessary to make investments to protect their brands, which makes them a representative sample for my investigation. In the second step, I further restricted the firms' Global Industry Classification Standard sector category to be either "consumer discretionary" or "consumer staples."

For the pharmaceutical sample, I selected 20 global companies according to their total prescription sales in 2017 (Osinga et al. 2011)[3]. These companies are representative of this industry for my purposes because 10 firms in my sample already control 41.58% of the U.S. pharmaceutical market (Pharmaceutical Technology 2019). Pharmaceutical companies are the principal targets of counterfeits as their products are in high demand and the large profits from the counterfeits are one of the incentives for counterfeiters to engage in this illicit trade.

For both industries, my sampling frame comprises all brand protection actions announced by publicly traded firms without time restrictions. I include all articles published in all news sources that have the following keywords: “brand protection," “anticounterfeit(s)," “brand piracy," “counterfeit(s)," “fake product," “illicit product," “knockoff,” and “product theft.” To be included in my sample, the news needed to include at least the brand name, brand protection action (i.e., content, target, or other information), and source (Bayus, Jain, and Rao 2000). For multiple announcements of the same brand, I selected the announcement that appeared the earliest to ensure that no other mentions of the same brand protection actions were made before this date, to eliminate any confounding effect. My final sample consisted of 293 brand protection announcements across 34 companies listed in the S&P 500 during the 1989-2018 period. This sample size is sufficient as in the previous event studies, sample sizes have varied from 170 (Tipton, Bharadwaj, and Robertson 2009), to 206 (Swaminathan, Murshed, and Hulland 2008), and 3,552 (Borah and Tellis 2014).

See footnotes in Appendix C.

For short-term event studies, I examine abnormal stock returns to the announcing firms during several days centered on the event (i.e., brand protection action announcement) to minimize potential confounding effects (Brown and Warner 1985; Tipton, Bharadwaj, and Robertson 2009). For long-term event studies, I use the cumulative abnormal returns (CARs) over at least six months after the event date (Jacobson and Mizik 2009; Wiles et al. 2010).

Short-term event studies. In line with previous research (e.g., Tellis and Johnson 2007; Talay, Akdeniz, and Kirca 2017), I employ both the market-adjusted model (MAR) and the Fama-French-Carhart four-factor model (FF4) as benchmark asset pricing models for robustness check purpose. The market-adjusted model uses the average return of the entire stock market, R_{mt}, as the proxy for expected returns and can be expressed as follows:

$$E(R_{it}) = R_{mt}, \quad (1)$$

where R_{it} denotes the rate of return on the stock price of firm i on day t, and R_{mt} represents the daily returns on the equally-weighted stock market index on day t.

For the Fama-French-Carhart four-factor model, I estimate the expected abnormal returns using four risk factors, which can be expressed as follows:

$$E(R_{it}) = R_{ft} + \beta_1(R_{mt}-R_{ft}) + \beta_2(SMB_t) + \beta_3(HML_t) + \beta_4(UMD_t) \quad (2)$$

where R_{mt} is described as previously, R_{ft} is the risk-free rate of return at time t, SMB_t is the difference between the rates of return of small- and large-market capitalization stock portfolios on day t, HML_t is the difference between the returns of high and low book-to-market stock portfolios on day t, and UMD_t is the momentum factor.

Using the stock returns data from Center for Research in Security Prices, I calculated the abnormal return by choosing 255 trading days (from 300 days to 46 days before an event) as the estimation window. I used ordinary least squares to obtain the parameter estimates, which I then used to calculate the expected return (Zhao, Calantone, and Voorhees 2018). I computed CARs for each event by summing the daily abnormal returns across the event window.

Long-term event studies. The effectiveness of brand protection actions involves several factors that require a long-term period to assess. In other words, it may take a longer time for the effect of brand protection actions to be visible and for investors to update their expectations. Consistent with previous literature, I compute buy-and-hold abnormal returns (BHARs) by subtracting the cumulative performance of a benchmark from the cumulative returns of a firm's stock over a long-term window. The benchmark comprises stocks whose risk profile is analogous to the firm over the same period.

(3) $$BHAR_{it} = \prod_{t=1}^{t=T}(1 + R_{it}) - \prod_{t=1}^{t=T}(1 + R_{pt})$$

where i represents the firm, t is the month following the announcement, R_{it} is the return of firm i in month t following the announcement, and R_{pt} is the return of a matched portfolio that includes all stocks with the same size, book-to-market, and momentum quintiles as firm i.

Dependent Variable: CAR

Event studies widely adopt CAR measured as cumulative percentage changes in stock prices across the event window, to capture the changes caused by the events (Skiera, Bayer, and Schöler 2017).

(4) $$CAR_{it} = \sum_{t-k}^{t+l} AR_{it}$$

where AR_{it} is the abnormal return of firm i on day t (event day) and k and l are the number of days before and after the event day, respectively, used to compose the event window. For the cross-sectional analysis, I use the short-term abnormal stock returns as the dependent variable.

Independent Variable

I categorized news that mentions "filing a lawsuit," "won a lawsuit," and "settled a lawsuit" as legal actions. Marketing brand protection actions included product-, price-, place-, and promotion-related actions. Specifically, news such as "labeling products with the two-dimensional code" and "introducing new packaging security measures" belongs to product-related actions. News, such as "requesting partners to make a direct purchase from brand owners," "planning to apply RFID tags," and "launching digital flagship stores" belongs to place-related actions. If the news mentions "reducing price" or "aggressively cutting price gaps", it is coded as price-related actions. Finally, news mentioning "developing programs to invite consumers to identify counterfeits," "forming an anticounterfeiting consortium," and "announcing general counsel" constitutes promotion-related actions. The independent variable is a dummy variable that takes the value of 1 if the marketing brand protection actions are promotion-related and 0 otherwise.

Moderators

Online versus offline context. Consistent with Ertekin, Sorescu, and Houston (2018), I operationalize threat context as a dummy variable that takes the value of 1 if the threat occurs in the online context and 0 if the threat occurs offline.

IPR protection. Because of access restrictions and data staleness issues in the other indices, I selected the Law and Order and the Park index to reflect the protection strength of IPR in host countries[4]. I assigned each country a score, which is the average of the standardized scores of the two indices; this is consistent with the calculation method in Zhao (2006).

Brand protection commitment. I measure brand protection commitment as the degree of a firm's investment in tackling the counterfeiting, rated on a seven-point Likert scale, with 1 being the lowest commitment, 4 being a moderate commitment, and 7 being the highest commitment. One of the authors and a research assistant rated the brand protection commitment for the pharmaceutical industry subsample. I evaluate the reliability and consistency of the coding using the intra-class correlation coefficient (ICC). Both ICC scores are considered high (pharmaceutical subsample: .91; consumer goods subsample: .91) indicating a high level of intercoder reliability and consistency (Bliese 2000).

Control Variables

Action multiplicity. It is not uncommon for firms to send multiple signals to the market, either intentionally or unintentionally. According to signaling theory, the aim of such behavior is

See footnotes in Appendix C.

to increase signal observability, or the extent to which outsiders are able to notice the signal (Connelly et al. 2011). A higher signal frequency (Janney and Folta 2003) also indicates firms' efforts to make the signals clearer. I operationalized action multiplicity by counting the actions mentioned in the news. For example, a news story mentioned that Procter & Gamble was filing lawsuits for three defendants; thus, this news includes three signals.

Firm size. Firm size indicates the scale and scope of operations (Aldrich 1972). Previous research suggests that firm size is an important factor that can influence investors' expectations of a firm's future financial performance in this context (e.g., Ertekin, Sorescu, and Houston 2018). Consistent with the prior measurement, I operationalize firm size as the natural logarithm of the total assets of the corresponding firm.

Leverage. Financial leverage reflects the firm's adoption of the investment strategy, which uses debt to acquire additional assets. Previous research suggests that varying degrees of financial leverage affect stock market returns (e.g., Wiles, Morgan, and Rego 2012). I measure leverage as the ratio of long-term debt to total assets.

Cash flow. Cash flow, as a measure of the firm's financial performance, is one of the most common determinants of changes in stock prices associated with marketing events (Mazodier and Rezaee 2013). I measure cash flow as the net operating income before depreciation adjusted for working capital accruals (Luo 2009).

Market value. Market value is a firm-level variable that captures the firm's market capitalization (Wiles, Morgan, and Rego 2012). A firm's shareholder value represents investors'

expectations of the firm's financial performance. I operationalize market value by multiplying the price of a stock by its total number of outstanding shares (Kumar and Shah 2009).

News specificity. Consistent with Talay, Akdeniz, and Kirca (2017), I operationalize the specificity of brand protection actions by a count variable for the number of words in each story. A list of constructs, measures, and data sources is provided in Table 2-1.

Model Development

Next, to examine how brand protection actions and the moderation effects of different factors influence stock market reactions, I used the CARs from short-term event studies as the dependent variable and conducted a cross-sectional analysis. I adopted a two-stage Heckman (1979) model to address the potential self-selection bias caused by systematic differences between firms that planned to take brand protection actions and those that did not. In the first stage, I ran a probit selection model to estimate the probability that a firm would take a brand protection action. The value of the dependent variable was 1 if the firm took action and 0 if otherwise. I supplemented my original sample with a matched sample of firms that did not engage in brand protection actions during the sample time frame. Consistent with previous research (e.g., Wiles, Morgan and Rego 2012), I applied inclusion criteria to ensure that the matched firms are similar to the firms in the original sample in terms of being targeted by counterfeiters: these matched firms needed to be publicly traded firms that belong to the same industry and have similar firm value (within ±25% of Tobin's q of the firms in the original

sample). The resulting sample has 7,903 observations, which include 398 focal firm-year observations and 7,505 matched firm-year observations.

In terms of the exclusion variable, I selected "industry intensity," which captures the total number of brand protection actions undertaken in the same industry in the previous year. This instrumental variable meets the requirement of relevance assumption such that the action intensity of the peer firms should affect the focal firms' decision to take action. Industry intensity also meets the exclusion restriction, as this industry-level variable would be the same for all focal firms from the same industry; therefore, investors' reactions to a specific firm should not be affected. In addition, I added several firm-level variables to the first-stage model. The first-stage model is as follows:

$$I_{i,t} = \beta_0 + \beta_1 \text{Industry intensity}_{i,t} + \beta_2 \text{Cash flow}_{i,t} + \beta_3 \text{Market value}_{i,t} + \beta_4 \text{Leverage}_{i,t} + \beta_5 \text{Firm size}_{i,t} + \varepsilon_{i,t}$$

where i denotes the firm, t denotes the time, and $I_{i,t}$ denotes whether the firm has taken the brand protection actions or not.

The second stage of the Heckman procedure involved a least squares regression on the CARs. I included the inverse Mills ratio obtained from the first-stage selection model, the hypothesized independent variables, and a set of control variables in the regression model of CARs.

$$\text{CAR}_{(0,0)i,k} = \alpha_0 + \alpha_1 \text{Promotion dummy}_{i,k} + \alpha_2 \text{Commitment}_{i,k} + \alpha_3 \text{IPR}_{i,k} + \alpha_4 \text{Context}_{i,k} + \alpha_5 \text{Promotion dummy} \times \text{Commitment}_{i,k} + \alpha_6 \text{Promotion dummy} \times \text{IPR}_{i,k} + \alpha_7 \text{Promotion}$$

$$\text{dummy} \times \text{Context}_{i,k} + \alpha_8\text{News specificity}_{i,k} + \alpha_9\text{Acion multiplicity}_{i,k} + \alpha_{10}\text{Cash flow}_{i,k} + \alpha_{11}\text{Market value}_{i,k} + \alpha_{12}\text{Firm size}_{i,k} + \alpha_{13}\text{Leverage}_{i,k} + \alpha_{14}\text{Inverse Mill Ratio}_{i,k} + \varepsilon_{i,k}$$

where i denotes the firm and k denotes the event.

Results and Discussion

Table 2-2 presents means, standard deviation, and correlations for all continuous variables and control variables. In general, the correlation between variables was lower than the upper threshold (r = .50) for low correlation conditions (Voorhees et al. 2016). To assess the potential threats from multicollinearity, I checked the average and maximum variance inflation factor (VIF) values and found the VIFs well below the acceptable cutoff of 10 (average VIF =1.70, maximum VIF = 4.04). Therefore, I conclude that multicollinearity is not a threat to the validity of my findings.

Short-Term Stock Market Reaction

I tested several event windows surrounding the brand protection action announcement date and report the results of CARs for window (0,0), (-1,2), and (-1,0) in Table 2-3. I chose CARs for the (0,0) window as they have the most significant t-statistic (Swaminathan and Moorman 2009). Although my hypotheses focus on the impact of marketing brand protection actions, my empirical analysis examines the stock market reactions to both marketing and legal actions to obtain additional insights. The results indicate that the average CAR for all brand protection actions is positive and significant (MAR: CAR = .20%, $p < .05$; FF4: CAR = .21%, $p < .01$). Consistent with my expectation, marketing brand protection actions' short-term stock market

reaction is positive and significant (MAR: CAR = .17%, $p < .10$; FF4: CAR = .21%, $p < .05$), in support of $H_{1(a)}$. Regarding the legal brand protection actions, the CAR results are positive and marginally significant, opposite to my expectation and findings from previous research (Ertekin, Sorescu, and Houston 2018)(MAR: CAR = .27%, $p < .10$; FF4: CAR = .21%, n.s.).

There are several reasons why my findings differ from the results documented in Ertekin, Sorescu, and Houston (2018). First, their results are based on a more heterogeneous sample containing 1,918 legal brand protection cases filed by 540 firms from 214 different industries, whereas my sample focuses on cases in consumer goods and pharmaceuticals, the two most vulnerable and targeted industries. While investors in other industries may need to downgrade their expectations of firms' future cash flows due to unexpected negative information regarding brand infringement and related consequences, investors of consumer goods and pharmaceutical industries may be already fully aware of existing counterfeiting issues. As such, their way of weighing competing positive and negative signals associated with legal brand protection actions should be different from average investors, such that they tend to view these legal actions much more positively.

Raghu et al.'s (2008) findings echo my arguments. They investigated stock market reactions to patent infringement litigations in the IT industry. Their results suggest that the news of patent infringement litigation is associated with significantly positive abnormal returns for plaintiff firms. These findings indicate that although legal departments realize the high costs of patent infringement litigation, "the expected economic benefits far outweigh the costs, especially for the

patent owner" (Raghu et al. 2008, p.64). In the IT industry, patents are undoubtedly one of the most important intellectual properties and competitive advantages; the significance of patent protection in the IT industry is akin to the critical role of trademark protection plays in consumer goods and pharmaceutical industries.

Second, Ertekin, Sorescu and Houston (2018) focus on trademark infringement lawsuits that include seven types of brand threats (i.e., counterfeiting, gray market, brand misappropriation, copycats, false advertising, cross-industry brand misappropriation, and cross-industry imitation). Counterfeiting is the most severe infringement (accounting for 31.13% of the total sample) and cross-industry imitation the least severe. Different levels of trademark infringement indicate the different potential damage levels to brand equity, which are critical cues in helping brand owners and investors assess the potential damage to brand equity and determine whether actions are necessary. The more severe the trademark infringement, the more investors are concerned about firms' future cash flows. In my study, I focus on counterfeiting only; therefore, investors should evaluate firms' actions positively, as here brand owners are aggressively defending their important market-based assets from the worst infringement crisis. These signals ensure investors that the brand owner is taking the counterfeiting issue seriously. Thus, legal actions in this context may well be associated with a positive short-term stock market reaction.

Long-Term Stock Market Reaction

To test the hypotheses regarding the long-term effects of brand protection actions on stock market reactions, I conducted separate long-term event studies for all brand protection actions,

legal actions, and marketing actions (see Table 2-4). My results show that twelve months after the brand protection actions, firms experience positive average monthly BHARs of 1.25% ($p < .10$). While I expected that legal actions are associated with a positive stock market abnormal return, the results show that the average monthly BHARs for legal actions are -.3.46% ($p < .05$) in the first 12 months. For marketing brand protection actions, the results confirm my expectation that they lead to a positive stock market reaction in the first 12 months with an average monthly BHAR of 2.93% ($p < .01$). Thus, $H_{1(b)}$ is supported.

Heckman Model Results

In Table 2-5, I reported the results of Heckman Model. Model 1 is the base model that only includes the independent variable of interest (promotion dummy) in the second stage. Model 2 is a full model that includes the independent variable of its interaction with three moderators. The choice of taking brand protection action is the dependent variable in the selection model and Short-term CAR for window (0,0) is the dependent variable in the regression model.

I focus my interpretation on the full model (Model 2) since it has a better fit (Wald $\chi^2 = 25.34$, $p < .05$) than the main effect model (Model 1). In the first stage, the exclusion variable industry intensity has a significant impact on firms' decisions to take brand protection actions ($\beta = .034$, $p < .01$). This suggests that the more peer firms take brand protection actions, the higher is the chance that the focal firm will follow and take similar actions. The results also indicate that brand owners' cash flow, market value, and firm size all are positively associated with their

decisions to take action. The leverage level of the firms does not show a significant relationship with the decision of taking brand protection actions.

In the second stage, the coefficient of the main effect is positive and significant ($\beta = .028$, $p < .01$), suggesting that among the four types of marketing-mix responses to brand infringement, promotion-related actions are significantly associated with more positive stock market reactions than the other three types of actions, in support of H_2.

Regarding the moderating effects, H_3 predicts that the brand threat context would moderate the relationship between marketing brand protection actions and firm value, such that the relationship is weaker for promotion-related actions when the threat involves the online context. I found marginally significant evidence from the result ($\beta = -.009$, $p < .10$), therefore, H_3 is partially supported. For the second moderator, I predict that the IPR protection strength would moderate the relationship between marketing actions and firm value, such that the relationship is stronger for promotion-related actions when the protection strength is higher. I found a positive coefficient for the interaction term ($\beta = .005$, $p < .05$), in support of H_4. Finally, for H_5, I propose that brand protection commitment moderates the relationship between marketing actions and firm value, such that the relationship is weaker for promotion-related actions when commitment is higher. The interaction effect is significant ($\beta = -.006$, $p < .05$), in support of H_5.

As an additional analysis, I conducted Heckman model analysis using long term CAR with various windows, including 6 months, 12 months, and 24 months after the event. The results are consistent across windows. I report the results of BHARs of 24 months in Model 3 of Table 5.

The findings show that the main effect of the promotion dummy is not significant (β = -.078, $p > .10$), which suggests that promotion-related actions exert a similar effect as other types of marketing actions in the long-term. However, two out of three moderators have a significant moderating effect on the brand protection-stock market response relationship. Specifically, host countries' IPR protection strength negatively moderates the relationship between promotion dummy and stock market reaction (β = -.212, $p < .01$), which means that when protection strength is greater, the relationship is weaker for promotion-related actions compared to other types of marketing actions. For the effect of threat context, the relationship is weaker for promotion-related actions when the threat involves the online context (β = -.307, $p < .05$), consistent with short-term results.

Robustness Tests

In my sample, I have cases in which one news article involved several brand protection actions/events. To ensure that my results are robust, I conducted the analysis excluding the cases with multiple protections and then estimate similar models using this reduced sample. The results are consistent with Model 2 in terms of the direction and significance of the coefficients.

In addition to the current control variables, prior literature suggests that R&D expenditure (e.g., Borah and Tellis 2014), advertising expenditure (e.g. Chen et al. 2012), and industry type (dummy variable) may affect the magnitude of abnormal returns. My robustness test results suggest that with these additional control variables, the previous findings still hold.

Discussion

In 2010s, the total cost of counterfeits for firms was already $250 billion per year in the United States alone (Chaudhry and Zimmerman 2013). Despite the theoretical and practical significance of brand protection issues, research on this topic is "sporadic and unsystematic" (Yang and Sonmez, 2017, p. 423). Thus, both scholars and practitioners have called for more rigorous analysis and a better understanding of the impact of brand protection efforts (e.g., Ertekin, Sorescu and Houston 2018; Wilson, Grammich and Chan 2016; Yang and Sonmez 2017).

Brand protection efforts require significant firm-level investments, and both managers and investors hope to ensure that these investments will strengthen brand equity and create value for the firm. This study extends prior literature by focusing on the relationship between brand protection actions and their short- and long-term stock market reactions from a marketing perspective. Previous research has shown that legal brand protection actions are an effective tool to tackle counterfeiting issues. My event study shows that firms' marketing responses to counterfeit activity can indeed be an effective tool to avoid the erosion of brand equity from investors' perspective. These brand protection efforts provide market signals that investors attend to because these signals convey rich information about firms' intentions and help investors predict firms' future net cash flows. When investors notice the announcement of brand protection actions, they evaluate not only the contents but also the intent of the signals (Stuart and Muzellec 2004). Indeed, I find that the short- and long-term impacts of brand protection actions differ for

legal versus marketing brand protection actions. Although legal actions have a positive impact on short-term stock market prices, in the long run, they hurt firm value as their impacts become negative. Marketing actions, on the other hand, are favored by investors both in the short-term and long-term. As such, my findings provide a novel insight into the favorable stock market response to marketing brand protection actions. These findings echo industry leaders' opinions that brand protection actions should take "a multifaceted, or layered, approach to combating product counterfeits." (Wilson, Grammich and Chan 2016, p.354)

This study also provides evidence on how factors from internal and external organizations affect the financial outcomes associated with various brand protection actions. My findings indicate that compared to other types of brand protection actions, promotion-related actions are associated with higher stock market prices when host countries' intellectual property rights protection is stronger; however, brand owners' brand protection commitment weakens the effects of promotion-related marketing actions on firm value. Finally, brand threat context plays an important role in brand protection strategies as I find that when online threats are involved, the impact of firms' marketing brand protection actions on firm value will be attenuated. Next, I discuss the theoretical and managerial implications of these findings.

Implications for Research

Brand protection is an important issue that is under-investigated in the marketing literature. Specifically, extant research focuses extensively on the demand side, which examines the implications of counterfeiting for consumers (for a meta-analysis on the consumer responses to

counterfeited products, see Eisend 2016). Nevertheless, demand-side studies neglect the role of the supply side – i.e., the efforts of brand owners to protect their brands and the impact of these efforts on firm performance. In this regard, Ertekin, Sorescu, and Houston (2018) are one of the few studies that contribute to this research stream by investigating the consequences of trademark infringement and brand owners' attempts to fight against these illegal actions.

My study extends this research stream by exploring an alternative solution --- using marketing mix variables to combat counterfeiting. I compare the effects of both legal and marketing brand protection actions on brand owners' firm value and dig deeper into the domain of marketing actions by examining their typologies and contingency effects on stock market reaction. In general, my findings indicate that the effects of protecting brand equity using marketing actions have both a positive contemporaneous impact and a positive carryover effect over time, in line with related brand equity research (Mizik 2010).

Categorizing different marketing signals based on marketing-mix, this study reveals that not all marketing brand protection actions are equally influential under all circumstances from investors' perspective. In fact, investors prefer promotion-related brand protection actions to the other types of actions. Furthermore, this study reveals that under specific boundary conditions, the strength of the relationship between marketing brand protection actions and stock market reaction is altered. In particular, investors may adjust their interpretations of firms' brand protection efforts depending on firm-level (e.g., brand owners' brand protection commitment),

country-level (e.g., host country's IPR protection strength) and environment-level (e.g., brand infringement context) factors.

Implication for Practice

My research findings are important for managers who are facing rampant counterfeit activity in recent years. Brand owners are often worried about disclosing their brand protection actions out of concerns about informing investors that the brand is under attack. However, this study shows that publicity of brand protection actions is a good way to demonstrate brand owners' commitment and ability to protect brand equity—one of their most important firm assets. Specifically, I empirically confirm that marketing brand protection actions can elicit more positive stock market reactions than legal brand protection actions in the long run. As I discussed, marketing brand protection actions have their own advantages; therefore, brand managers should use marketing tools to combat counterfeit activity before legal actions.

This study also finds that managers should consider firms' slack resources, the infringement level, and the legislative and cultural environment when employing brand protection actions. Stumpf, Chaudhry, and Perretta (2011) argue that brand managers must experiment with different anti-counterfeiting actions by country and brand; what works will be determined empirically. This suggestion complements my findings. As my data indicate, firms most widely adopt promotion-related actions, which account for almost 71.33% of all marketing brand protection actions used. Analytic results also show that investors favor promotion-related actions

more than the other types of marketing brand protection actions. This finding might not be a coincidence.

A possible explanation is that brand protection managers are most familiar with promotion-related actions; therefore, they tend to employ these actions repeatedly. In turn, investors are more likely to be more confident about these actions because they possess more knowledge about them than about the other types of actions. The consequence is that managers will be biased toward promotion-related actions as they are associated with more positive stock market reactions and perhaps neglect the other brand protection actions. Managers should use promotion-related brand protection action more judiciously as my results show that firms' commitment level, the IPR environment, and the threat context all significantly affect the impact of marketing actions on brand owners' financial performance. For example, when brand infringement involves an online threat, the impact of promotion-related actions on firm value will be undermined more significantly than the impacts of other types of marketing actions. This implies that under this condition, implementing product- or place-related actions at the very beginning might lead to a less downward adjustment in firms' financial-market performance than promotion-related actions. This downward adjustment may reduce firms' future cash flows, thereby restricting their slack resources and decision flexibility to support subsequent brand protection actions. Thus, I recommend that brand owners select appropriate brand protection actions depending on the circumstance under which the firm will implement these actions, rather than use one specific action only.

Finally, the findings highlight the importance of taking the most suitable communication strategy. This study indicates that key information may alter investors' judgments. When brand owners articulate their brand protection actions, details such as the brand threat severity, the level of monetary/nonmonetary investment commitment, and their implementation plans all carry critical information about their willingness and ability to protect the brand. The clearer the message, the better investors can learn about brand owners' unobservable intentions. This could largely eliminate information distortion and avoid unnecessary negative consequences.

Limitations and Future Research

Despite its contributions, my study has several limitations that additional research could address. First, with the limited sample size, my analyses had limited statistical power that prevented me from examining some potentially interesting moderators such as the number of partners in the brand protection actions and brand owners' innovativeness. Literature has suggested that marketing alliances have a significant impact on firm value since an alliance enables firms to access new knowledge and new markets (Swaminathan and Moorman 2009). Future research could examine how different characteristics of partnerships among brand owners would influence the relationship between marketing brand protection actions and firm value. Similarly, innovation is a double-edged sword from investors' perspectives: on the one hand, innovation helps firms gain competitive advantages against counterfeiters by offering customers more products/services that better satisfy their needs; on the other hand, innovation is risky and costly. It would be interesting to see if investors' attitudes toward brand owners' innovativeness

would alter the link between marketing brand protection actions and firm value. Further research could expand the sample size to all publicly traded firms available in a database. Doing so might provide additional important observations.

Second, given the little attention that research on the brand protection topic has attracted, marketing scholars can build on my study by exploring additional characteristics of brand protection action signals. For example, signal fit (the extent to which the signal is correlated with unobservable quality), signal timing (the time span between multiple signals or repeating signals), and signal consistency (agreement between signals from one source) all potentially affect the effectiveness of the signaling process and investors' reactions (Connelly et al. 2011). Besides, researchers could explore how marketing brand protection actions may affect other product- or firm-level performances, such as existing product sales, new product success, corporate social performance, or debt-holder risk.

Like other marketing investments, brand protection investments require evidence to prove their productivity. The impact of strategic marketing investment on related financial benefits has been well documented; strong brand equity will undoubtedly enhance firms' sales and profitability (e.g., Rust et al. 2004; Katsikeas et al. 2016). However, due to the sensitivity and limited access to data regarding financial losses caused by counterfeiting, I could not further examine how brand protection actions could contribute to firm performance financially (using other financial metrics such as sales revenue, profit, EVA, and ROI). If such data are available, future research could better address the effectiveness of brand protection actions.

Third, the classification of brand protection actions to marketing provides an incomplete picture. Future research can adopt a more holistic approach that focuses on other types of brand protection actions from disciplines such as international business, criminal justice, and law. Also, future research could explore other categorization schemes to optimize understanding of the distinctions among the different brand protection actions.

ESSAY TWO

Abstract

In this essay, I aim to further explore the impact of firms' brand protection actions on stock market reactions with a specific focus on the signaling environment. Specifically, this essay provides a detailed examination of on the relationship between brand protection actions and firm risk, as well as the moderators of this relationship. I incorporate the idea of the country institutional profile to theorize and test a series of hypotheses that predict the contingency effects of institutional factors, namely regulatory, cognitive, and normative components of the country institutional profile, on explaining the variability of the main effect strength. In particular, my study demonstrates that brand protection actions do have a significant impact on firm-idiosyncratic risk. Interestingly, promotion-related brand protection actions are considered less risky compared to other types of actions. In terms of the moderating effects, three interrelated but distinct aspects of a country institutional profiles exert different influences in this scenario. The results suggest that when the host country IPR protection is stronger, the risk mitigation effect of promotion-related actions would be stronger compared to other types of actions. For the other two components, the effect is opposite and also significant. The higher the host country long-term orientation and regulatory quality, the fewer advantages promotion-related actions would possess compared to other types of actions in terms of risk reduction. Overall, this essay offers both theoretical and managerial insights to researchers and practitioners.

Introduction

The counterfeiting issue is becoming a more significant problem in international trade every year. A report from Organization for Economic Cooperation and Development (OECD) indicates that an estimated volume of USD 509 billion business, which equivalents to 3.3% of worldwide trade in 2016, is counterfeit and pirated goods (OECD/EUIPO 2019). Large companies such as Nike and Amazon have announced that they will take further actions to curb these illicit trades (Sularia 2020).

For brand owners, counterfeiting is a great source of risk that endangers firms' interests. Counterfeiting products pose a severe threat by stealing the market shares and profits from those legitimate producers; the worst part is the damage of company reputation as well as brand image. Therefore, it is essential for practitioners to seek answers regarding how they can effectively mitigate the risk associated with counterfeiting (Wilson 2016). From the theoretical perspective, a strong brand is cultivated through significant marketing investments (e.g., Keller 1993); marketing function require cash flows from the stock market to support such expenditure. That's why understanding how marketing actions (brand protection in my dissertation) would impact the risk profile of the firm become important (Thomaz and Swaminathan 2015).

In branding literature, numerous studies have been explored the links between brand management and their impact on firms' performance: for instance, brand quality (Bharadwaj, Tuli, and Bonfrer 2011), brand architecture strategy (Hsu, Fournier, and Srinivasan 2016), and brand portfolio strategies (Kirca et al. 2020). However, there is no empirical study on how brand protection activities affect the shareholder's wealth. Literature that empirically examines the topic of brand protection is still in its infancy. Ertekin, Sorescu, and Houston (2018) are among the first to investigate the stock price returns associated with legal brand protection actions.

Given the fact that both stock price returns and firm risk are important components of shareholder wealth (Mishra and Modi 2016; Srinivasan and Hanssens 2009), this study contributes to this stream of literature by providing further evidence in terms of how brand protection actions are related to firm risk. Building on signaling theory, my work suggests that not all brand protection actions exert an equal impact on firm idiosyncratic risk; compared to other types of actions, promotion-related actions are associated with less volatility in stock market returns, which reflects investors' confidence in the effectiveness of these actions.

Additionally, prior research has found that firms' actions and the corresponding outcomes are influenced by the social norms, knowledge systems, beliefs, and cultures that shape the context of the organization (DiMaggio and Powell 1983). Given that the range of counterfeiting activities is wide across the geographic borders, careful examinations are needed to extend our knowledge about how the country-level characteristics would interplay with the brand protection efforts in different markets. Incorporating institutional theory, I consequently propose that three components of a country institutional profile, namely the host country's IPR protection, long-term orientation, and regulatory quality, all may account for the variability in brand protection actions' effects on firm risk reduction globally.

In what follows, I start with a brief literature review on firm risk and brand protection activities. I then develop a series of hypotheses that examine the links among brand protection actions, three moderators, and firm idiosyncratic risk. Next, I will discuss the data, measurements, and model development and estimation results. I conclude with the implications for theory and practice.

Theoretical Background

Firm-Level Risk

Rooted in Finance literature, firm-level risk is undoubtedly one of the most important components of shareholder wealth (Bharadwaj, Tuli, and Bonfrer 2011). According to the prior finance literature, firm-level risk can be divided into debt-holder risk and equity-holder risk, depending on the stakeholders involved (Rego, Billett and Morgan 2009). The debt market mainly refers to bonds and mortgage transactions, while the equity market is about stock trading. It's been a consensus that debt investors and equity investors differ in terms of their risk tolerance level and strategic objectives. The debt market features less risk and volatility; therefore, the return is relatively low, and debt investors tend to be risk-averse. On the other hand, the equity market is more rapid-changing by nature, so investors accept higher risk in exchange for potential higher payback. Strategically, Debt investors will pay more attention to firms' survival issues, as their consistent earnings are coming from the interests paid by the firms throughout their existence; on the contrary, equity investors care more about the growth of stock price, which is largely impacted by systematic or idiosyncratic factors.

The risk associated with both types of markets has been investigated in marketing. Regarding debt-holder risk-related studies, only a few are identified in marketing literature. For example, Anderson and Mansi (2009) found out that there is a positive relationship between customer satisfaction and firms' credit ratings (a typical indicator of the debt-holder risk); Himme and Fischer (2014) suggested that customer satisfaction, brand value, and corporate reputation all significantly impact firms' cost of debt (another indicator of the debt-holder risk); Singh, Faircloth, and Nejadmalayeri (2005) indicated that higher advertising expenditure hurts firms' cost of debt; besides, Rego, Billett, and Morgan (2009) demonstrated that customer-based

brand equity is negatively associated with firms' debt-holder risk.

Equity risk is generated by the volatility of firms' stock market prices. It has two main sources: systematic risk and idiosyncratic (or unsystematic) risk. Systematic risk is the "part of risk explained by the changes in average market portfolio returns" (Luo and Bhattacharya 2009, p.200), and idiosyncratic risk is the "residual risk that cannot be explained by the changes in average market portfolio returns" (Luo and Bhattacharya 2009, p.200). Systematic risk reveals the extent to which macro-level economic and political factors can pose an impact on the entire stock market, such as the outbreak of epidemic diseases, federal funds rate adjustment, or announcements of public policy changes (e.g., Hsu, Fournier, and Srinivasan 2016; Osinga et al. 2011; Rego, Billett, and Morgan 2009). Idiosyncratic risk is the component of equity risk that captures the uncertainty related to the individual companies' decisions instead of the overall stock market (e.g., Han, Mittal, and Zhang 2017; Luo and Bhattacharya 2009).

In this essay, I focus on the equity-holder risk, especially idiosyncratic risk for the following reasons. First of all, brand protection actions are implemented at the firm level, and they are diversified based on brand owners' resource and strategic emphasis, therefore, compared to systematic risk, idiosyncratic risk can better reflect the effect of brand protection actions on firms' financial performance. Second, since finance literature suggests that idiosyncratic risk accounts for about 80% of the total risk (Srinivasan and Hanssens 2009), and "average stock risk is mostly driven by idiosyncratic risk" (Goyal and Santa-Clara 2003, p.976), it is rational for investors to pay more attention to the links between various firm-level events and the corresponding idiosyncratic risk. Last but not the least, from brand managers' perspective, even though both systematic risk and idiosyncratic risk contribute to the volatility of a firm's stock returns, systematic risk is determined by factors that are out of their control, whereas

idiosyncratic risk is more closely related to their decision making and implementation, hence, it is more important for brand managers to monitor their firm's idiosyncratic risk level.

Marketing Actions, Brand Equity, and Firm Risk

Brand equity, a core concept in marketing literature, can be traced back to the early 1990s. Keller (1993) defined brand equity as "the marketing efforts uniquely attributable to the brand when certain outcomes result from the marketing of a product or service because of its brand name that would not occur if the same product or service did not have that name" (Keller 1993, p. 1). A great body of literature has discussed the connection between marketing actions and brand management. Similar to consumer loyalty, brand equity requires adequate marketing support to maintain; firms leverage their marketing resource to "fortify and further contribute to brand equity" or "leverage or capitalize on existing brand equity to reap some financial benefit" (Keller 1999, p.106). For example, Yoo, Donthu, and Lee (2000) empirically show that marketing mix elements such as high advertising spending, good store image, and high distribution intensity are associated with high brand equity.

At the firm level, brand equity, which is one of the most important market-based assets, also serves as a critical component transmitting the effect of firms' marketing strategies to related financial outcomes. According to Srivastava, Shervani, and Fahey (1998), market-based assets not only possess the same value for a firm just as what other tangible balance-sheet assets can do (e.g., lowering operational costs, creating competitive advantage, and obtaining price premiums), but also contribute to the firm's long-term value-generating process by strengthening the value-added capability of fixed assets and leveraging the organizational network.

As I mentioned above, marketing actions help firms attract and retain a valuable customer base and develop strong brand equity. These customers play an important role in driving a better

market performance because they are loyal and willing to try new products, share positive word-of-mouth, and make referrals. The increased sales and market share turn into a more stable and predictable source of funding, lowering the vulnerability and volatility of future cash flows (Srivastava, Shervani, and Fahey 1998, 1999). This is how the firm risk is reduced. The mechanism of reducing the vulnerability of cash flow is achieved by cultivating strong customer loyalty and satisfaction to make customers more adherent to the brand, which further helps firms to be more resistant to the market competition. This same factor would also benefit the volatility issue because the cash flow stability is ensured. From the firms' perspective, the cost of maintaining an existing customer relationship should be lower than recruiting new customers. This argument is recognized by other scholars such as Rust et al. (2004), Srinivasan and Hanssens (2009), and Katsikeas et al. (2016); they suggest that there is clearly a chain-of-effects model which demonstrates that firms' marketing actions can impact customers' mindset, and further generate a significant market impact (such as increased market share or sales), eventually leading to the decrease of risk.

A considerable number of studies has looked at the links between various marketing phenomena and equity-holder risk. For systematic risk, topics that have been investigated in the past include service innovation (Dotzel and Shankar 2019), marketing alliance (Thomaz and Swaminathan 2015), strategic orientation (Bhattacharya, Misra, and Sardashti 2019), and corporate social performance (McAlister, Srinivasan, and Kim 2007); in terms of idiosyncratic risk, examples include customer satisfaction (Tuli and Bharadwaj 2009), firms' relative strategic emphasis (Han, Mittal, and Zhang 2017) and consumer negative voice (Luo 2007). Research that relates to brand management also gained increasing recognition. Impact of consumer-based brand equity (Rego, Billett, and Morgan 2009), brand quality (Bharadwaj, Tuli, and Bonfrer

2011), brand architecture strategy (Hsu, Fournier, and Srinivasan 2016), and brand rating dispersion (Luo, Raithel, and Wiles 2013) on firm risk have all been examined.

Institutional Impact on Signaling Process

As noted by prior literature, the effectiveness of signal transmission is contingent on the signaling environment (Spence 1973; Drover et al. 2017). Studies have found that investors would evaluate signals as well as the institutional context associated with the signals (e.g., Bell, Moore, & Al-Shammari, 2008; Jean et al. 2021). For example, Colombo (2021) summarized that in the context of IPOs, institutional setting in the country of origin and the corporate governance practices among the stock market will exert an influence on signaling effectiveness. A signaling environment could be either complex or simple; however, it is mostly comprised of signals, feedback, and noise (Connelly et al. 2011). Feedback, also called counter-signals, are sent from receivers as a response to the signaler. Customers' reviews, subsidiary presidents' feedback-seeking behavior, or competitors' strategic reactions all are examples of counter-signals (e.g., Gupta, Govindarajan, and Malhotra 1999; Heil and Robertson 1991). Another key concept related to the signaling environment is distortion. Distortion usually happens as a result of the noise embedded within the environment; noise could come from the signal itself, the signaler, or other distracting signals (Gomulya and Mishina 2017). For example, during entrepreneurs-venture capital negotiations, signals are transmitted in a relatively low-noise environment because it is straightforward and ono-on-one. Instead, in the crowdfunding context, a heavy load of signals poses challenges for entrepreneurs to attract investors' attention, so it is considered a very noisy environment (Colombo 2021).

In signaling literature, the institutional characteristics have been theorized to be a critical factor from the signaling environment that could impact the links between marketing actions and

firm performance (e.g., Jean et al. 2021). This is due to the fact that formal and informal rules, norms, beliefs as well as value systems vary significantly among different countries; thus, such contexts may impact the signaling transmission and interpretation process and cause discrepancy across the country-border (cf. Busenitz, Gomez and Spencer 2000; Kostova 1999). Consistent with work by other institutional theorists (Kostova 1997; Scott 1995, 2001), I apply the idea of country institutional profiles to discuss the external organizational environments at the country-level and seek to explore the contingency effects of their corresponding components on brand owners who are embedded in the organizational field.

A country institutional profile manifests three interrelated but distinct "pillars" of institutions: regulatory, cognitive, and normative components (Kostova 1997). The regulatory component represents the rules, laws, and regulations that establish the social order, which ensures the compliance and conformity of society members. The cognitive component reflects the widely acknowledged social meaning system, such as schemas, frames, or stereotypes that affect members' perceptions and behaviors. Finally, the normative component involves the social norms, values, and expectations about the social life and members' behavior routines. Initially, this construct is usually measured by developing a survey to capture three dimensions pertaining to targeted issues, such as quality management (Kostova 1997), and entrepreneurship (Busenitz, Gomez and Spencer 2000). However, in recent work, a new approach is widely adopted now, which utilize a series of more generic country-level measures to reflect corresponding dimensions in the theoretical models (Kostova et al. 2020). Consistent with prior literature, in brand protection context, I propose that the host country's IPR protection represents the regulatory component; long-term orientation represents the cognitive component; regulatory quality represents the normative component. I will explain the logic for each selection and

discuss their moderation effects in the following section.

Hypothesis Development

Branding literature has suggested that the brand is a mechanism for achieving competitive advantage for firms by using the marketing mix to tailor to the needs and wants of a specified target group (Wood 2000). Given the roles that counterfeiters are playing in the market, they are actually illegal competitors that violate the regular trade practice and steal market share from brand owners (Qian, Gong, and Chen 2015). Therefore, brand managers should leverage different marketing recourses, including product design, packaging, pricing strategy, supply chain management, and marketing communications to proactively protect their brands. However, among all the marketing brand protection actions that are available, I argue that their impact on firm risk varies. Specifically, the effect of promotion-related brand protection actions may be different from other marketing brand protection actions.

Signaling theory posits that investors rely on the nature of the information that the signals provide to make decisions on the stock market. One important signal characteristic is signal visibility. Signal visibility is also called signal observability as it captures the noticeability of a signal. If a signal is not readily observable to receivers, it will hinder the communication between signalers and receivers (Miller and del Carmen Triana, 2009). Ramaswami et al. (2010) define signal visibility as the extent to which a signal will be noteworthy, or salient, in a given context. Similarly, Drover, Wood, and Corbett (2018) define signal visibility as the extent to which outsiders are able to notice the signal. When a brand protection signal is more visible, more stakeholders will be able to notice this signal, and brand owners' effort to protect their brands will be interpreted more comprehensively. Such facilitated communication will increase the signaling effectiveness because stakeholders can easily extract needed information from the

signal, and counterfeiters could potentially be deterred by firms' conspicuous brand protection endeavors. Therefore, everything else being equal, a more visible brand protection signal should be favored by investors and is associated with a more stable cash flow over a less visible signal.

Among four types of marketing brand protection actions, promotion-related actions are utilizing mass media to disseminate anti-counterfeiting efforts and news as well as educating customers about the knowledge of identifying fake over authentic products. This means that promotion-related signals are widely visible to a broader audience (existing and potential customers). On the other hand, other three types of brand protection actions including product-related, price-related, and place-related actions are more pertaining to the products themselves or may be noticeable only when purchases are made. For example, increased supervision of supply chain distribution system is not directly visible to consumers at all; RFID tags that are installed on updated anti-counterfeiting packages are more closely impacting end users' experience only; price discount may be noticed by frequent buyers only. Therefore, nonpromotion-related brand protection actions may be less observable compared to promotion-related actions.

Customers are the demand side of counterfeit trades, and if the demand for counterfeits decreases, the market for counterfeits will shrink. A more visible signal suggests the more people reached, and the better the brand protection results can be achieved. As such, equity holders may see promotion-related actions to be more directly contribute to the strengthening of brand awareness and brand association in the customer mindset. Such an effort will insulate the brand from legal or illegal competition and reduce the vulnerability and volatility of the stock market, which further limits the firm risk. I propose that:

H1: Promotion-related brand protection actions are associated with less idiosyncratic risk than nonpromotion-related brand protection actions.

Moderating Effect of IPR protection

IPR protection in the country refers to the strength of national intellectual property laws and nations' enforcement practices of those laws (Ostergard 2000). In the brand protection context, I believe that this construct is conceptually close to capturing the regulatory aspect of the country institutional profile because they both focus on the regulative system and legal sanction of different countries. In countries with greater IPR protection, governments more actively monitor and update their own intellectual property regulations and laws. In addition, some international organizations, such as the International Anti-Counterfeiting Coalition (IACC), NAFTA, and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), tend to provide better support in these countries due to less restriction and more available resources. On the contrary, in countries where laws and regulations are poorly designed and enforced, a firm's deployment of resources and implementation of appropriate actions become critical to its brand protection (Zhao 2006).

When transmitting promotion-related brand protection signals in countries with stronger IPR protection, communication channels should provide more opportunities for faster and broader information dissemination because of its well-established anti-counterfeiting practice. Furthermore, different stakeholders from these countries already possess awareness and knowledge about anti-counterfeiting issues, so they are more sensitive once a signal is noticeable. In these countries, the ability of organizational stakeholders to properly interpret the signal and take in new information should also be stronger (Stumpf and Chaudhry 2010). As such, the mitigation effect of promotion-related brand protection actions on firm idiosyncratic risk should be bolstered by this receptive environment.

On the other hand, in markets that have strong IPR protection, brand owners need to comply

with evolving regulations of packaging/labeling and safety protocols in any case, so sending a nonpromotion-related brand protection signal might provide marginal gains for the brand owners in such a signaling environment. Moreover, investors could misconceive this signal as a waste of valuable resources or even worse as a result of desperation rather than confidence, leading to uncertainty about future profitability, which threatens the cash flow consistency (Tuli and Bharadwaj 2008). The consequence of this would be a harder justification for decision-makers to invest in these costly brand protection actions, as they may consider them to be riskier. Therefore, I expect the effect of promotion-related brand protection signals on firm risk reduction to be stronger in countries with stronger IPR protections, as investors consider the advantages of adopting promotion-related actions would outweigh the benefits of nonpromotion-related actions. In sum, I propose that:

H2: IPR protection negatively moderates the relationship between marketing brand protection action announcements and idiosyncratic risk, such that the relationship is stronger for promotion-related actions IPR protection in the host countries is stronger.

Moderating Effect of Long-term Orientation

The second component of a country institutional profile is the cognitive institution, which refers to the common knowledge and cognitive categories shared by major constituents within a specific environment (Kostova 1999). For example, Kirca, Bearden, and Roth (2011) used headquarters' market orientation to capture the cognitive institution that could impact the market orientation of the subsidiaries of multinational companies. In Steenkamp and Geyskens (2006), they identified national-cultural individualism as a representation of the cognitive constitution, which significantly moderates the effects of individual-level drivers of the perceived value that consumers derive from visiting a brand manufacturer's Web site. In the context of brand

protection, I propose that long-term orientation embodies the culturally supported habits and schemas that exert influence on constituents' behaviors, therefore it could reflect the cognitive aspect of the country institutional profile for the sake of my study.

Long-term orientation is one salient dimension of national culture value (Hofstede 2001; 2006). This construct can trace back to the Confucian values regarding tradition, perseverance, and time. In Hofseted (2001), long-term orientation is defined as "the fostering of virtues oriented towards future rewards, in particular, perseverance and thrift" (p. 359). Individuals who prize long-term orientation have been found to engage less in compulsive buying behavior because they tend to focus more on future achievement and have a better sense of self-discipline (Bearden, Money, and Nevins 2006). Furthermore, a higher level of long-term orientation would lead to stronger ethical values (Arli and Tjiptono 2014; Tsui and Windsor 2001). This is because those people may consider unethical behaviors to conflict with their traditional values; they also have to face the risk and negative consequences of unethical behaviors being discovered by others in the long run. Therefore, individuals with long-term orientation tend to avoid unethical behaviors (e.g., purchasing counterfeiting products) due to the above reasons (Nevins, Bearden, and Money 2007).

Among four types of brand protection actions, a large part of promotion-related actions emphasizes the stakeholder education campaigns, which aim to establish the correct understanding of the value of purchasing authentic products (Cesareo and Stöttinger 2015). Following the above logic, when brand managers adopt promotion-related brand protection actions in countries that possess stronger long-term orientation, investors may infer that the advantages of promotion-related actions are narrowed down compared to the nonpromotion counterparts; indeed, various stakeholders in such markets would already possess a better

understanding and appreciation of the brand value, since a brand's symbolic meaning of quality and reputation aligns with their societal norms of heritage and tradition (Eisend, Hartmann, and Apaolaza 2017). What's more, consumers would concern more about the negative consequences of purchasing counterfeit products, such as it is not warranted by brands should it goes malfunction in the future, or it would hurt their image, in the long run, should people find out they are using counterfeit products (Bearden, Money, and Nevins 2006).

As such, I propose that when promotion-related actions are adopted in host countries where long-term orientation is stronger, investors may feel less confident about the effectiveness of these activities, which could lead to more volatility of cash flows.

H3: Long-term orientation positively moderates the relationship between marketing brand protection action announcements and idiosyncratic risk, such that the relationship is weaker for promotion-related actions when host countries' long-term orientation is stronger.

Moderating Effect of Regulatory Quality

The last aspect of the country institutional profile is the normative component. This component is comprised of "social norms, values, beliefs, and assumptions that are socially shared and are carried by individuals" (Kostova 1997, p. 180). According to prior literature, normative institutions are closely related to societal culture and value, as they specify how things should be done and what means are legitimate to pursue valued ends (Scott 1995). For example, Steenkamp and Geyskens (2006) used national identity to capture the important role of the moral system in explaining consumer attitudes and behavior. In Xu, Pan, and Beamish (2004), managerial style is selected to represent the normative aspect of the institutional environment.

From the World Governance report, regulatory quality is an indicator that reflects the policies themselves and perceptions about the regulatory supervision and policies regarding

various issues (Kaufmann, Kraay, and Zoido-Lobaton 2002). Different from IPR protection, which highlights the strength of IPR related regulations and enforcement, regulatory quality is considered more as a proxy that captures the extent to which a market respects and values the rules and orders in general (Nistotskaya and Cingolani 2016). In a broader sense, when we describe a society to be regulated, the term "regulated" not only refers to the formal regulations but also a series of informal norms and standards that are either explicit or implicit. A society that is highly regulated means that it is guided by collective agreements and rules that make social life organized and stable (Viguier and Tarquis 2003). As such, this construct has a normative foundation, and it is appropriate to represent the normative aspect of the country institutional profile.

When brand managers conduct brand protection actions in countries that have high regulative quality, the social members' behaviors are clearly expected and predictable; therefore, for companies that do business in such an environment, they are confident that stakeholders are following the protocol, which could ensure the expected outcome. Using the terminology from signaling theory, this signaling environment is less noisy in this regard. Otherwise, it would be difficult for companies to predict their strategic performance in a dynamic institutional environment. Fighting with counterfeiters is challenging and perennial, so the stability and predictability of the outcomes are of brand managers' top considerations, given their investments and efforts. The signaling environment plays a key role in determining which signal to use (Ndofor & Levitas 2004). In countries with high regulatory quality, the advantages of promotion-related actions over nonpromotion-related actions are reduced. This is because the information dissemination channels, as well as procedures, are fairly standard, so the visibility of the signal would not make a big difference in this country. Hence, the level of regulative quality would

negatively moderate the main effect, such that investors would not infer that promotion-related actions be more effective, which could lead to more volatile future cash flows should brand managers adopt these actions.

H4: Regulatory quality positively moderates the relationship between marketing brand protection action announcements and idiosyncratic risk, such that the relationship is weaker for promotion-related actions when host countries' regulatory quality is higher.

Empirical Context and Methodology

Sample: Brand protection action announcement.

In order to test my hypotheses, I collected the news and announcements about brand owners' brand protection actions. I utilized both Factiva and Lexis-Nexis, two databases that include a broad selection of business and news publications, to search the indexes of all major publications worldwide, consistent with prior research (Sorescu, Warren, and Ertekin 2017).

For consumer goods samples, I utilized the filter function in Factiva to select news before downloading. My first step is to focus on the companies that are listed on the S&P 500 Index. As literature has indicated, brand protection actions require a large number of investments in both time and effort from the brand owners (Cesareo and Stottinger 2015). Therefore, I believe that companies that belong to the S&P 500 acquire the necessary resources to make investments to protect their brands, which makes them very representative samples in the initial investigation of my research questions. Within the S&P 500, I further restricted the firms' GICS sector category to be either "consumer discretionary" or "consumer staples".

For pharmaceutical products, I selected the top twenty global companies based on their total prescription sales in 2017, similar to what Osinga et al. (2011) had used for their selection criteria. They are Pfizer (US), Novartis (Switzerland), Roche (Switzerland), Merck & Co (US),

Johnson & Johnson (US), Sanofi (Franc), GlaxoSmithKline (UK), Abbvie (US), Gilead Sciences (US), Amgen (US), AstraZeneca (UK), Bristol-Myers Squibb (US), Eli Lilly (US), Teva Pharmaceutical Industries (Israel), Bayer (Germany), Novo Nordisk (Denmark), Allergan (US), Shire (Ireland), and Takeda (Japan). Boehringer Ingelheim (Germany) is not the US public traded company, therefore I excluded it. These companies are representative of this industry; just ten firms out of my samples already control the top 47.9 percent of the US market (Medical Marketing & Media 2017). These pharmaceutical companies are the biggest targets as their products are highly demanded in the market, and the huge profits from counterfeit medicines are one of the incentives for counterfeiters to conduct illicit trades.

For both industries, my sampling frame comprises any brand protection action statements announced by publicly traded firms without the restriction of timelines. The reason for targeting public trade firms is that my study focuses on the firm's idiosyncratic risk, which is measured as the standard deviation of a firm's unexpected return. I include all articles across all news sources with the words "brand protection," "anticounterfeit(s)," "brand piracy," "counterfeit(s)," "fake product," "illicit product," "knockoff" and "product theft." In order to be included in my sample, the news needs to at least include the brand owners' names, brand protection actions (content, target or other information) and sources to be considered as a credible signal (Bayus, Jain, and Rao 2000). When multiple announcements for the same brand protection actions are identified, I selected the announcement that appeared at the earliest date to ensure that no other mentions of the same brand protection actions were made prior to this date. My final sample consisted of 293 brand protection announcements across 34 companies listed in the S&P 500 during the 1989-2018 period.

Dependent Variable: Firm-Idiosyncratic Risk

I estimate idiosyncratic risk using the Fama-French-Carhart four-factor model, which is widely adopted by previous scholars (e.g., Srinivasan and Hanssens 2009). Idiosyncratic risk accounts for the part of the risk associated with firm-specific factors; it reflects the firm's stock daily return volatility that cannot be explained by changes in average market portfolio returns. The model can be expressed as below:

$$E(R_{it}) = R_{ft} + \beta_1(R_{mt}-R_{ft}) + \beta 2\ (SMB_t) + \beta_3\ (HML_t) + \beta_4\ (UMD_t)$$

Where R_{mt} represents the daily returns on the equal-weighted stock market index on day t, R_{ft} is the risk-free rate of return at time t, SMB_t is the difference between the rates of return of small- and large-market capitalization stock portfolio on day t, HML_t is the difference between the returns of high and low book-to-market stock portfolios on day t, and UMD_t is the momentum factor. Using data from CRSP, I calculated the idiosyncratic risk for each firm based on daily stock returns.

Independent Variable

In my study, news mentioning "filing a lawsuit," "won a lawsuit" and "settled a lawsuit" are considered legal actions. In terms of marketing brand protection actions, they are categorized into product-related, price-related, promotion-related, and place-related. News mentioning "developing programs to invite consumers to identify counterfeits", "forming an anti-counterfeiting consortium" and "announcing new general counsel" would be considered promotion-related actions; news such as "requesting partners to make a direct purchase from brand owners", "planning to apply RFID tags", and "launching digital flagship stores" belong to place-related actions; similarly, news such as "labeling products with the 2D code" and

"introducing new packaging security measures" are counted as product-related actions. Lastly, if the news mentions "reducing price" or "aggressively cutting price gaps", it is coded as price-related actions.

The independent variable is a dummy variable that captures whether the marketing brand protection actions are promotion-related. The value takes 1 if the news is product-related; otherwise, the value takes 0. All price-related, promotion-related, and place-related brand protection actions are categorized as the non-product-related actions.

Moderating Variable

IPR protection. Because of access restrictions and data staleness issues in the other indices, I selected the Law and Order and the Park index to reflect the protection strength of IPR in host countries. I assigned each country a score, which is the average of the standardized scores of the two indices; this is consistent with the calculation method in Zhao (2006).

Long-term orientation. Long-term orientation reflects "the fostering of virtues oriented toward future rewards—in particular, perseverance and thrift" (Hofstede, Hofstede, and Minkov 2010). I adopted the scores from Hofstede, Hofstede, and Minkov (2010), which is ranging from 1-100. The higher the score, the more long-term oriented a country is considered to be.

Regulatory quality. I adopted the scores from Kaufmann, Kraay, and Zoido-Lobatón (1999) to measure regulatory quality. This indicator measures the incidence of policies such as trade-related or foreign investment-related, as well as perceptions of those regulations. Higher ratings correspond to better outcomes.

Control variable

Action Multiplicity. It is not uncommon for firms to send multiple signals to the market, either intentionally or unintentionally. Using terms from signaling theory, such behavior from firms is aiming to increase the signal observability, which refers to the extent to which outsiders are able to notice the signal (Connelly et al. 2011). Higher signal frequency (Janney and Folta 2003) also shows the firms' efforts to make the signals clearer.

I operationalized action multiplicity by counting the actions mentioned in the news. For example, a news story mentioned that Procter & Gamble is filing the lawsuits for three defendants; this news is considered as including three signals. Two raters read each news carefully and counted the number of actions mentioned in the news.

News Specificity. Although there are no studies suggesting that more words in the news are significantly associated with the higher signal credibility, I assume that it is possible that news with longer lengths typically carries more information. In Talay, Akdeniz, and Kirca (2017), they operationalized specificity of a new product pre-announcement for automobile model i by using a count variable for the number of characteristics about the car mentioned in the preannouncement. I, therefore, adopted this operationalization and measured the news specificity as a count variable for the number of words of each news.

Online vs. offline context. Consistent with Ertekin, Sorescu, and Houston (2018), I operationalize threat context as a dummy variable that captures whether the infringement occurs online or offline. The value takes 1 if the threat involves an online context and takes 0 if it is a pure offline threat.

Advertising spending. This variable is measured as annual advertising expenditure of the corresponding firm.

Research and development (R&D) spending. This variable is measured as annual R&D expenditure of the corresponding firm.

Industry type. In my sample, I have data from two industries only. Hence, I operationalize industry type as a dummy variable that takes the value of 1 if the focal brand owner is from the pharmaceutical industry; otherwise, it takes the value of 0.

Other Variable

Cash flow. Cash flow as a measure of firms' financial performance, is one of the most common determinants of changes in stock prices associated with marketing events (Mazodier and Rezaee 2013; Pruitt et al. 2004). Cash flow is measured as the net operating income before depreciation adjusted for working capital accruals (Luo 2009).

Market value. Market value is a firm-level variable that captures the firm's shareholder wealth, or the firm's market capitalization (Wiles, Morgan and Rego 2012). A firm's shareholder value represents the investors' expectations about the firm's financial performance; therefore, it is important to control it. Market value is operationalized as the product of the price of a stock by its total number of outstanding shares (Kumar and Shah 2009).

Firm Size. Firm size indicates the scale and scope of operation (Aldrich 1972). Previous literature suggests that firm size is an important factor that could impact investors' expectation about a firm's future financial performance (e.g., Ertekin, Sorescu and Houston 2018; Rubera and Kirca 2012; Talay, Akdeniz and Kirca 2017). Consistent with prior measurement, I operationalized firm size as the natural logarithm of the total assets of the corresponding firms.

Leverage. Financial leverage reflects the firms' adoption of the investment strategy which uses debt to acquire additional assets. Previous literature suggests that varying degrees of financial leverage impact the stock market returns (e.g. Wiles et al. 2012). I measured leverage

as the ratio of long-term debt to total assets. A list of constructs, measures, and data sources is provided in Table 3-1.

Model Development

I adopted a two-stage Heckman (1979) model to address the potential self-selection bias caused by systematic differences between firms that planned to take the brand protection actions and those who did not. In the first stage, a probit selection model is used to estimate the probability that a firm would take a brand protection action. The value of the dependent variable was 1 if the firm took the actions and 0 if it did not. I supplemented my original sample with a matched sample of firms that have not engaged in brand protection actions. Consistent with previous literature (e.g. Ertekin, Sorescu and Houston 2018; Wiles, Morgan and Rego 2012), the following inclusion criteria are applied to make sure that matched firms are similar to the firms in my original sample when it comes to the possibility of being targeted by the counterfeiters: these matched firms are public-traded firms that belong to the same industry, and have similar firm value (within ±25% of Tobin's Q of the firms in my original sample). The resulting sample has 7903 observations, which include 398 focal firm-year observations and 7505 matched firm-year observations.

In terms of the exclusion variable, I selected the "industry intensity", which captures the total number of brand protection actions conducted in the same industry in the previous year. This instrumental variable meets the requirement of relevance assumption such that the action intensity of the peer firms should affect focal firm' decision to take actions. Industry intensity also meets the exclusion restriction as this industry-level variable would be the same for all focal firms from the same industry, therefore investors' reaction to a specific firm should not be

impacted by this kind of variable. In top this exclusion variable, I added some firm-level variables to the first stage model. The first stage model is as follows:

$$I_{i,t} = \beta_0 + \beta_1 \text{Industry intensity}_{i,t} + \beta_2 \text{Cash flow}_{i,t} + \beta_3 \text{Market value}_{i,t} + \beta_4 \text{Leverage}_{i,t} + \beta_5 \text{Firm size}_{i,t} + \varepsilon_{i,t},$$

where i denotes the firm, t denotes the time, $I_{i,t}$ denotes whether the firm has taken the brand protection actions.

The second stage of the Heckman procedure involved a least squares regression on the firm idiosyncratic risk, and I included the Mills lambda from the first-stage selection model, hypothesized independent variable as well as the control variables.

$$\text{Risk}_{i,k} = \alpha_0 + \alpha_1 \text{Promtion dummy}_{i,k} + \alpha_2 \text{IPR}_{i,k} + \alpha_3 \text{Long-term orientation}_{i,k} + \alpha_4 \text{Regulatory quality}_{i,k} + \alpha_5 \text{Promtion dummy} * \text{IPR}_{i,k} + \alpha_6 \text{Promtion dummy} * \text{Long-term orientation}_{i,k} + \alpha_7 \text{Promtion dummy} * \text{Regulatory quality}_{i,k} + \alpha_8 \text{Acion multiplicity}_{i,k} + \alpha_9 \text{News specificity}_{i,k} + \alpha_{10} \text{Brand threat context}_{i,k} + \alpha_{11} \text{Adverting}_{i,k} + \alpha_{12} \text{R\&D}_{i,k} + \alpha_{13} \text{Industry type}_{i,k} + \alpha_{14} \text{Inverse Mill Ratio}_{i,k} + \varepsilon_{i,k},$$

where i denotes the firm, and k denotes the event.

Results

Table 3-2 presents means, standard deviation, and correlations for all variables in my hypotheses as well as the control variables. In general, the correlation between variables was lower than the upper threshold (r = 0.50) for low correlation conditions (Voorhees et al. 2016). To assess the potential threats from multicollinearity, I checked the average and maximum variance inflation factor (VIF) values to find that VIFs are well below the acceptable cutoff of 10. Therefore, I concluded that multicollinearity is not a threat to the validity of my findings.

Heckman Model Results

Overall, my result shows that the model is significant (Wald $\chi^2 = 113.98$, $p < .01$). Table 3-3 presents the estimation outputs. I report the results of two models. Model 1 is the base model that only includes the independent variable of interest (product dummy) and the control variables in the second stage. Model 2 is a full model that includes the independent variable and its interaction with three moderators. The choice of taking brand protection action is the dependent variable in the selection model and firm-idiosyncratic risk is the dependent variable in the regression model. I will focus on the interpretation of Model 2 as it is the full model.

For Model 2, in the first stage, the exclusion variable industry intensity has a significant impact on firms' decision to take brand protection actions ($\beta = .020$, $p < .01$). This means brand owners' decision to take brand protection actions are influenced by other companies.

In the second stage, I find strong evidence that the main effect is negative and significant ($\beta = -.005$, $p < .01$), which supports H1 that promotion-related brand protection actions are associated with less firm-idiosyncratic risk compared to the other three types of actions. H2 proposed that the host country's IPR protection negatively moderates the relationship between marketing brand protection action announcements and idiosyncratic risk, such that the relationship is stronger for promotion-related actions when IPR protection is higher. I found that the test result is consistent with the hypothesis ($\beta = -.002$, $p < .05$), therefore, H2 is supported. Regarding H3, the estimation result reveals that the moderating effect of long-term orientation positively impacts the relationship between promotion-related actions and firm-idiosyncratic risk ($\beta = 6.28e^{-5}$, $p < .05$), so H3 is supported. In terms of the last moderator, as predicted in H4, a country's regulatory quality positively moderates the main effect ($\beta = .004$, $p < .01$).

Robustness Checks

I also conducted a few robustness checks to ensure that my results are robust. First of all, I tried a few different sets of control variables based on the prior literature, and the results still hold. Second, I utilized a different type of standard error in my model specification, and this does not change my main model results either. Finally, I used idiosyncratic risk that are based on the period of two months after the event date as the dependent variable, and the model results are still consistent with my current model.

Discussion

The results of the hackman model suggest a significant impact of marketing brand protection actions on firm risk and an interesting interplay between the contextual factors and brand owners' brand protection efforts. Prior research has delved much into how consumers perceive and react to counterfeit products as well as the consequences of the counterfeiting on genuine brands; my research switches the focus from the individual-level to a firm-level and country-level effect, and particularly examines different aspects of institutional contexts——regulatory, cognitive, and normative component of a country institutional profile. In the brand protection scenario, I argue that host countries' IPR protection, long-term orientation, and regulatory quality respectively capture the three components of this construct. The empirical tests lent support to my hypotheses.

First of all, from the view of investors, promotion-related actions among four types of brand protection actions seem to be a better choice to start with when conducting brand protection activities in foreign countries. However, this effect is contingent on institutional factors. When conducting brand protection actions in countries that feature strong IPR protection, firms stock

price returns will be higher for promotion-related actions than for other three types of actions, indicating that investors do believe that certain type of actions would be more effective or appropriate based on the regulatory environment of different markets. Furthermore, host countries' cultural characteristics also play a key role in the development and implementation of brand protection actions globally. My research is able to show that the level of long-term orientation in each country will modify the risk reduction effect of promotion-related actions, as the stock prices more fluctuate in countries that possess higher long-term orientation. Finally, regulatory quality as the reflection of the local market's normative rules and practices will exert a significant impact on firms' brand protection efforts as well. The more regulative a society, the less advantageous promotion-related actions would be considered by investors over the other three types of actions. The above new insights offer both theoretical and managerial implications, and I will discuss them in the following section.

Implications for Research

Moorman et al. (2019, p. 2) called for more attention paid to the topics that are "being close to the real world of marketing". This study contributes to the branding literature by investigating brand protection activities and their impact on firm performance, a very managerially-relevant but under-investigated phenomenon that often keeps brand managers up at night. Specifically, I approached this topic from the marketing-finance interface perspective and explored the financial impact of brand protection actions on firm-idiosyncratic risk.

Prior literature has established the relationship between brand protection actions and abnormal stock returns (Ertekin, Sorescu, and Houston 2018), however, I propose that firm risk is another critical financial dependent variable that merits further investigation. As Luo and Bhattacharya (2009, p. 199) pointed out, "a firm's long-term shareholder value is influenced not

only by the expected size and growth of stock returns (i.e., the first moment) but also by stock price volatility (i.e., the second moment)". Higher volatility is associated with inconsistent future cash flow and higher risk (Srivastava, Shervani, and Fahey 1998). Since investments for brand protection actions are nontrivial, it would be a good supplement for current literature to understand how to better mitigate risk. My results suggest that compared to other brand protection actions, promotion-related actions seem to have a stronger mitigation effect.

Furthermore, my research provides meaningful extensions to the fields' knowledge of brand protection activities from an institutional perspective. Although we have rich literature regarding consumers' perception/reaction to counterfeit issues, and corresponding underlying mechanisms that explain prior findings, we still lack understandings about the potential impacts from a more holistic view. It is well recognized that differences in country-level institutional environments intensify the information asymmetry among parties nested in different countries (e.g., Roth & O'Donnell, 1996). My results resonate with this view and confirm that regulations and culture of different societies would alter the assessment of firms' marketing activities. Hence, I add a critical layer of granularity to comprehending the contingency impacts of brand protection efforts in the global market. Drawn on the theoretical augments about the country institutional profile, my work identified three variables that capture the domain-specific nature of this construct in the context of brand protection. Consequently, this research is the first of its kind to discuss the characteristics of institutional environments and their contingency effects in the brand protection context.

Implication for Managers

There is no doubt about the necessity to protect a brand. The critical question is how to effectively manage the risk associated with the uncertainty of outcome and rapid-changing

counterfeiter behaviors. This research provides guidance to managers for a deeper understanding of the investor's reaction toward brand probation actions, and a better decision-making process when taking actions. In general, the results suggest that the financial market's reaction toward brand protection varies by the types of actions. Promotion-related actions are considered to be less risky, compared to other types of brand protection actions. But this is contingent on country-level factors such as rules and laws, cultural tradition, and social norms. Thus, managers should weigh their stakes and make a less risky resource allocation decision accordingly.

My work discusses three aspects of a country institutional profile, and interestingly, their influences for the same type of brand protection actions vary a lot. For example, the risk reduction effect of promotion-related actions would be enhanced in a country that has strong IPR protection; however, such an effect would be mitigated if a country possesses a high level of long-term orientations. Therefore, in different countries, brand managers need to diligently design their brand protection strategy and make trade-offs based on various factors so as to make the optimal decisions. Furthermore, there may well be a diversification within the same country when it comes to social norms and cultural differences. Take Switzerland for instance, German- and French-speaking regions of this country demonstrate different sets of formal and informal rules, norms, and value systems; such regional culture heterogeneity is due to the history and language divergence, which is something that deserves more attention as well (Hofstede, Hofstede and Minkov 2010).

Given the complexity and diversity of brand protection tasks, it may be wise to empower subsidiaries to make strategic decisions in their operating environment. This is supported by my data, such that a significant amount of brand protection actions is carried out by local subsidiaries of multinational enterprises. Subsidiary autonomy and been found to be positively

related to the subsidiary performance (Geleilate, Andrews, and Fainshmidt 2020; Slangen and Hennart 2008). This is extremely beneficial for brand protection efforts for two reasons: on the one side, local teams are more familiar with the institutions that the organization is embedded, and they also have a better idea of the particular counterfeiting challenges within the region, therefore, they can react more promptly and accurately. On the other hand, higher autonomy tends to elicit stronger team morale and motivates them to work more devotedly and diligently (Lazarova, Peretz, and Fried 2017). Fighting with counterfeiters is tough. Empowering subsidiaries to take more controls/responsibilities will ensure that they have more resources needed and are willing to engage in such challenging work.

Limitations and Future Research

The limitations of this study provide opportunities for future research. First of all, because I only selected the pharmaceutical industry and consumer goods industry to conduct the data collection, this might limit the generalizability of my findings. Future research could expand the sampling frame to all public traded firms across the industries; by doing this, more observations will be available, which can introduce more variation in the dataset. According to marketing literature, besides country-level factors, industrial-level factors such as industry type (Srinivasan, Lilien, and Sridhar 2011), the demand Instability (Han, Mittal, and Zhang 2017), market/environmental turbulence, innovativeness, and competitive intensity, may possess a differential effect on firm performance (e.g., Jaworski and Kohli 1993; Kirca, Jayachandran, and Bearden 2005). It would be interesting to see what roles these factors could play in the brand protection context.

Second, the present study substantiates the effect of brand owners' anti-counterfeiting efforts and how they could impact firm-idiosyncratic risk. Future research could draw on prior

theoretical work in strategic alliance and identify various characteristics of the alliance that could further mitigate the firm risk. For example, Swaminathan and Moorman (2009) showed that marketing alliance capability, which refers to the ability of firms to generate higher returns from marketing alliances over time, may positively influence a firm's value creation. Mani and Luo (2015) empirically tested that more alliance activities will reduce both firm systematic risk and idiosyncratic risk. In addition, Thomaz and Swaminathan (2015) demonstrated that repeat partnering, and the density of the firm's network of alliance partners significantly impacts the firm risk following a marketing alliance announcement. In brand protection literature, alliances could be made among different stakeholders, such as other companies, non-profit organizations, governments, and law enforcement. I will leave the issue of incorporating richer information on alliance type (alliances formed across different partner categories) to future research.

Third, like other marketing investments, brand protection investments require evidence to prove their productivity. The impact of strategic marketing investment on related financial benefits has been well documented; strong brand equity will undoubtedly enhance firms' sales and profitability (e.g., Rust et al. 2004; Katsikeas et al. 2016). However, due to the sensitivity and limited access to data regarding financial losses caused by counterfeiting, I could not further examine how brand protection actions could contribute to firm performance financially (using other financial metrics such as sales revenue, profit, EVA, and ROI). If such data are available, future research could better address the effectiveness of brand protection actions.

Lastly, in my dissertation I am using long-term orientation from the Hofstede's framework regarding national cultural dimensions to represent the cognitive aspect of country institutional profile. This operationalization might face some pushback because of some concerns about the relevancy and even the theoretical foundations of Hofstede's related work (Minkov and Hofstede

2012; Venaik and Brewer 2013). Following the suggestions from prior literature (Beugelsdijk, Kostova and Roth 2017; Kirkman, Lowe, and Gibson 2006), future research may build on my findings and further explore other possible alternative concepts that could better capture cultural effects in international business.

CONCLUSION OF DISSERTATION

A strong brand is impossible without significant marketing investments in the brand-building process; the return is also rewarding as it will lead to various desirable outcomes (Fischer and Himme 2017; Keller and Lehmann 2003). Numerous empirical works have echoed this view. For example, Bharadwaj, Tuli, and Bonfrer (2011) contended that brand quality helps to mitigate firm idiosyncratic risk; Rego, Billett, and Morgan (2009) demonstrated that customer-based brand equity contributes to the idiosyncratic risk reduction. However, the scale of counterfeit activities is explosively growing over the years. Consumers are not the only victims of this crime; brand owners also suffer from severe damage to brand image and revenue loss. Therefore, brand owners are highly motivated to protect their brands from being tarnished.

Companies have taken several measures to combat counterfeiters, but they need guidance to understand how to strategically allocate resources to better protect their brands. Currently, brand owners reply heavily on legal actions to fight back counterfeiters. Although the legal system has its advantages (Ertekin, Sorescu and Houston 2018), the drawbacks of lawsuits (e.g., time-consuming, *ex-post* and costly) force companies to explore non-legal options (Schuh, Kreysa and Haag 2009; Yang, Sonmez and Bosworth 2004). I propose that brand owners can integrate brand protection tasks into their marketing operations in response to counterfeit activity.

Drawing upon signaling theory, institutional theory and using an event study methodology, this dissertation examines how marketing actions can protect brand equity erosion when facing

threats from counterfeiters. I compile a significant amount of data collected from a wide range of sources to construct our sample of legal and marketing brand protection action announcements. My final sample consisted of 293 brand protection announcements across 34 companies listed in the S&P 500 during the 1989-2018 period.

The main contribution of this dissertation to the branding literature is by exploring the nature of marketing brand protection actions and demonstrating that firms' marketing efforts to protect their brands are valued by investors, as reflected in the stock market returns and cash flow volatility. I compare the effects of both legal and marketing brand protection actions on brand owners' firm value and dig deeper into the domain of marketing actions by examining their typologies and contingency effects on stock market reaction and firm idiosyncratic risk.

Categorizing different marketing signals based on marketing-mix, this dissertation reveals that not all marketing brand protection actions are equally influential under all circumstances from investors' perspective. In addition, their interpretations of firms' brand protection efforts may be adjusted based on internal (e.g., brand owners' brand protection commitment), or external (e.g., host country's IPR protection, brand infringement context) organizational factors. As such, my dissertation advances this long-neglected but critical stream of literature.

To be specific, in Essay one, results show that firms' marketing responses to counterfeit activity can indeed be an effective tool to avoid the erosion of brand equity from investors' perspective. These brand protection efforts provide market signals that investors attend to because these signals convey rich information about firms' intentions and help investors predict firms' future net cash flows. When investors notice the announcement of brand protection actions, they evaluate not only the contents but also the intent of the signals (Stuart and Muzellec 2004). Indeed, I find that the short- and long-term impacts of brand protection actions differ for

legal versus marketing brand protection actions. Although legal actions have a positive impact on short-term stock market prices, in the long run, they hurt firm value as their impacts become negative. Marketing actions, on the other hand, are favored by investors both in the short-term and long-term. As such, my findings provide a novel insight into the favorable stock market response to marketing brand protection actions. These findings echo industry leaders' opinions that brand protection actions should take "a multifaceted, or layered, approach to combating product counterfeits." (Wilson, Grammich and Chan 2016, p.354)

Essay one also provides evidence on how different firm characteristics, country, and contextual environments affect the financial outcomes associated with various brand protection actions. My findings indicate that compared to other types of brand protection actions, promotion-related actions are associated with higher stock market prices when host countries' intellectual property rights protection is stronger; however, brand owners' brand protection commitment weakens the effects of promotion-related marketing actions on firm value. Finally, brand threat context plays an important role in brand protection strategies as I find that when online threats are involved, the impact of firms' marketing brand protection actions on firm value will be attenuated.

In Essay two, I explore the impact of marketing brand protection actions on firm idiosyncratic risk. Particularly, in this essay I parse out this relationship by incorporating a more holistic view——highlighting the impact from signaling environment. The results suggest that promotion-related actions among four types of brand protection actions seem to be a better choice to start with when conducting brand protection activities in foreign countries. However, this effect is contingent on institutional factors. When conducting brand protection actions in countries that feature strong IPR protection, firms stock price returns will be higher for

promotion-related actions than for other three types of actions, indicating that investors do believe that certain type of actions would be more effective or appropriate based on the regulatory environment of different markets. Furthermore, host countries' cultural characteristics also play a key role in the development and implementation of brand protection actions globally. My research is able to show that the level of long-term orientation in each country will modify the risk reduction effect of promotion-related actions, as the stock prices more fluctuate in countries that possess higher long-term orientation. Finally, regulatory quality as the reflection of the local market's normative rules and practices will exert a significant impact on firms' brand protection efforts as well. The more regulative a society, the less advantageous promotion-related actions would be considered by investors over the other three types of actions.

My research findings are important for managers who are facing rampant counterfeit activity in recent years. Brand owners are often worried about disclosing their brand protection actions out of concerns about informing investors that the brand is under attack. However, this dissertation shows that publicity of brand protection actions is a good way to demonstrate brand owners' commitment and ability to protect brand equity—one of their most important firm assets.

Also, my dissertation offers some useful and actionable implications for brand managers regarding taking the most suitable communication strategy. On the one side, the communication channel of brand protection messages should be able to reach out to as much audience as possible, as it may effectively reduce information asymmetry, cultivate trusting relationships with external stakeholders and raise funding from stock markets. On the other side, when brand managers articulate their brand protection actions, details such as the brand threat severity, the level of monetary/nonmonetary investment commitment, and their implementation plans all

carry critical information about their willingness and ability to protect the brand. The clearer the message, the better investors can learn about brand owners' unobservable intentions.

Finally, my dissertation finds that managers should take the contextual factors into consideration when employing brand protection actions, such as the legislative and cultural environment of the host country, and brand threat context. These contextual factors may interact with brand protection signal characteristics and exert influence on firm value. Stumpf, Chaudhry, and Perretta (2011) argue that brand managers must experiment with different anti-counterfeiting actions by country and brand; what works will be determined empirically. This suggestion complements my findings. Brand protection endeavors require dedicated investment and holistic examination globally. Differences in the national norm, value, culture, and ethnic beliefs between countries represent the challenges from institutional contexts. I recommend that brand owners proactively take actions depending on the circumstance, while use cautions when implanting their strategies.

APPENDICES

APPENDIX A: TABLES

Table 1-1: Comparison of Select Literature Reviews

Authors	Keywords	Data Sources	Review Focus	Level of Research Focus	Review Focus	Review Article #
Staake, Thiesse, Fleisch (2009)	"counterfeit", "counterfeiting", and "product piracy".	ProQuest ABI/INFORM, EBSCOhost Business Source Premier	Management Literature	Phenomenon	1. general descriptions of the phenomenon 2. impact analyses 3. investigation about illicit actors 4. investigation about customer behavior and attitudes	No
Eisend and Schuchert-Guler 2006）	No	No	Consumer Purchase Intention	Consumer-level	The determinants of consumers' intention to purchase counterfeit products	No
Hoecht and Trott (2014)	No	No	General Business	Firm-level	The success conditions of 11 anti-counterfeiting strategies	No
Eisend et al. (2017)	counterfeit*, pirate*, fake, and illicit*	Google Scholar, Business Source Complete, JSTOR, Psy-INFO, and ProQuest Dissertations & Theses)	Consumer Morality	Consumer-level	A meta-analysis about the influence of morality on attitudes, intentions, and behavior toward counterfeit and pirated products.	196

Table 1-1 (cont'd)

Li and Yi (2017)	No	No	Supply Chain Literature	Phenomenon	1. introduce the social acceptance of counterfeiting and piracy 2. the negative effect of counterfeiting and piracy on supply chain management and society	No
Yang and Sonmez (2017)	counterfeiting, ACS, strategies against counterfeiting, and strategy effectiveness	EBSCO, PROQUEST (ABI Inform Complete), JSTOR, Emerald, Science Direct, Web of Science, Social Science Research Complete, and Business Research Complete.	Multiple Discipline	Phenomenon	Anti-counterfeiting strategies (ACS), and examines their strategic effectiveness	51
This study	"anticounterfeit(s)", "brand piracy", "brand protection", "counterfeit(s)", "fake product", "illicit product", "knockoff" and "product theft"	ProQuest ABI/INFORM Complete, EBSCOhost Business Source Complete	Marketing Literature	Firm-level	The firm-level brand protection, anti-counterfeiting and/or piracy prevention issues	78

Table 1-2: Summary of Prior Literature in Brand Protection

	Conceptual Studies/Commentaries	Empirical Studies	
		Consumer-level	Firm-level
Diamond (1962) JM	✓		
Miaoulis and D'Amato (1978) JM	✓		
Cohen (1991) JM	✓		
Peterson, Smith and Zerrillo (1999) JAMS	✓		
Commuri (2009) JM		✓	
Wilcox, Kim & Sen (2009) JMR		✓	
Amaral and Loken (2016) JCP		✓	
Wang, Stoner and John (2019) JCP		✓	
Eisend, Hartmann, and Apaolaza (2017) JIM		✓	
Bhagat and Umesh (1997) JMFM			✓
Ertekin, Sorescu and Houston (2018) JM			✓
This Dissertation			✓

Note: JM = *Journal of Marketing*; JMR = *Journal of Marketing Research*; JAMS = *Journal of the Academy of Marketing Science*; JIM = *Journal of International Marketing*; JMFM = *Journal of Market-Focused Management*

Table 2-1: Constructs, Definitions, and Operationalizations

Constructs	Operationalizations	Data Source
CAR_i	Short-term abnormal returns estimated for one day around the announcements of a firm initiated brand protection action	Center for Research on Security Prices
$BHAR_i$	Buy-and-Hold abnormal returns estimated for months after the announcements of a firm initiated brand protection action	Center for Research on Security Prices
Promotion related brand protection actions	Dummy variable that takes the value of 1 if this nonlegal news is promotion-related and zero otherwise	Factiva
Intellectual Property Right (IPR) protection intensity	The average of the standardized scores of The Law and Order index from the Gallup (Gallup 2018) and Park (2008) index	Gallup (2018); Park (2008)
Threat context	Dummy variable that takes the value 1 if the threat involves online context and takes 0 if it is a pure offline threat.	Factiva
BP Action Commitment/Cost	1-7 Likert scale that measures the investment (both financially or emotionally) that the firm is putting to tackle the counterfeiting	Factiva
Industry intensity	The total number of lawsuits filed in the same industry in the previous year	Factiva

Table 2-1 (cont'd)

Control Variables		
Leverage	Ratio of the long-term book debt to a firm's total assets	COMPUSTAT
Firm size	Natural logarithm of the annual total assets of the firm	COMPUSTAT
Cash flow	Net operating income before depreciation adjusted for working capital accruals	COMPUSTAT
Market value	Product of common shares outstanding and annual closing price	COMPUSTAT
News specificity	Total number of each news' word count	Factiva
Actions multiplicity	Count number of the brand protection actions mentioned in each news.	Factiva

Table 2-2: Means, Standard Deviations, and Correlations among Variable

			Correlations											
Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. CAR	0.20%	1.51%	1											
2. Promotion-related actions	.71	.45	.07	1										
3. IPR protection intensity	-.05	.88	-.06	-.03	1									
4. Threat context	.23	.42	.03	**.12**	**.16**	1								
5. BP Action Commitment/Cost	4.33	1.80	.02	**-.33**	**.17**	-.05	1							
6. Industry intensity	6.45	7.45	-.07	**.14**	.10	.05	**-.15**	1						
7. Leverage	.36	9.39	.09	-.01	**-.18**	-.06	-.02	-.01	1					
8. Firm size	5.87	2.73	-.08	**.14**	**-.17**	-.05	**-.34**	.04	.02	1				
9. Cash flow	-.08	.48	**.13**	-.09	.09	-.06	**.22**	**-.14**	.02	**.43**	1			
10. Market value	9688.17	29666.80	-.04	.08	-.10	-.00	**-.22**	**.14**	.00	**.53**	**.15**	1		
11. News specificity	401.32	277.37	-.03	-.01	**.15**	**.12**	-.08	.03	-.08	.03	-.05	.07	1	
12. Actions multiplicity	1.10	.33	.03	**-.12**	-.10	.10	-.01	**-.12**	-.03	**-.22**	**.16**	**-.13**	.03	1

Bold represents the significance level at p<.05

Table 2-3: Short Term Event Study Results

Mean Cumulative Abnormal Returns (Market Adjusted Model)

Type of Brand Protection Action	(-1.0)	(-1,2)	(0,0)	Sample size
Total actions	.26% **	.24% *	.20%**	349
Legal actions	.32%	.53% *	.27% *	88
Nonlegal actions	.24% *	.14%	.17% *	261
Place-related actions	-.06%	-.08%	-.07%	48
Product-related actions	.35%	-.60%	.31%	23
Promotion-related actions	.32% **	.32%	.24% **	188
Price-related actions	-1.54%	-2.95% *	-1.50% *	2

Mean Cumulative Abnormal Returns (Fama-French Four Factor Model)

Type of Brand Protection Action	(-1.0)	(-1,2)	(0,0)	Sample size
Total actions	.29% ***	.36% **	.21% ***	349
Legal actions	.27%	.51% *	.21%	88
Nonlegal actions	.30% **	.31% *	.21% **	261
Place-related actions	.10%	.09%	.07%	48
Product-related actions	.40%	-.53%	.38%	23

Table 2-3 (cont'd)

Promotion-related actions	.35% **	.49% **	.23% **	188
Price-related actions	-.65%	-1.46%	-.85%	2

* p <.10
** p <.05
*** p <.01

Table 2-4: Long Term Event Study Results

Mean Cumulative Abnormal Returns (Fama-French Four Factor Model)

Type of Brand Protection Action	(0,12)	(0,9)	(0,1)	(0,3)	(0,6)	Sample size
Total actions	1.25% *	2.39% ***	.31%	.71% *	.97% *	380
Legal actions	-3.46% **	1.83%	.42%	.83%	2.07% *	100
Marketing actions	2.93% ***	2.59% ***	.27%	.66%	.58%	280
Place-related actions	-5.08% *	-4.46% *	-.32%	.07%	.07%	52
Product-related actions	.48%	.88%	-.12%	-.55%	.38%	25
Promotion-related actions	5.35% ***	4.74% ***	.20%	.37% **	.23% **	201
Price-related actions	-2.04%	-9.57%	-1.56%	-1.67%	-.85%	2

* p <.10
** p <.05
*** p <.01

Table 2-5: Results of Heckman Model

A: Results of the First-Stage Heckman Selection

	Model 1		Model 2		Model 3	
Variable	*Coefficient*	*SE*	*Coefficient*	*SE*	*Coefficient*	*SE*
Constant	-5.008***	.402	-4.994***	.404	-6.435***	.456
Industry intensity	.034***	.007	.034***	.006	.045***	.007
Cash flow	1.349***	.256	1.344***	.256	1.810***	.264
Market value	$1.34e^{-5}$***	$1.25e^{-6}$	$1.34e^{-5}$***	$1.25e^{-6}$	$6.33e^{-6}$***	$9.56e^{-7}$
Leverage	$1.10e^{-3}$	4.29e-^{3}	$1.19e^{-3}$	4.35e-^{3}	$4.09e^{-4}$	3.96e-^{3}
Firm size	.273***	.044	.269***	.044	.433***	.048
Wald χ^2	1.52		25.34**		39.57**	

B: Results of the Second-Stage – Determinants of CARs

	Model 1		Model 2		Model 3	
Variable	*Coefficient*	*SE*	*Coefficient*	*SE*	*Coefficient*	*SE*
Constant	$-.5.29e^{-5}$	.002	-.023	.039	-2.635	1.078
Promotion dummy	.002	.002	.028***	.010	-.078	.224
Commitment			.005**	.002	-.057	.052
IPR			-.004*	.002	-.181***	.058
Context			.008*	.005	.261*	.137
Promotion*Commitment			-.006**	.002	.020	.058
Promotion*IPR			.005**	.002	-.212***	.065
Promotion*Context			-.009*	.005	-.307**	.151
News specificity			$-5.62e^{-6}$*	$3.06e^{-6}$	$6.21e^{-5}$	$7.94e^{-5}$

Table 2-5 (cont'd)

Action multiplicity			$8.89e^{-5}$	.003	-.150**	.066
Cash flow			.021	.019	.967**	.489
Market value			$-3.05e^{-9}$	$3.43e^{-8}$	$-1.25e^{-6}$	$8.19e^{-7}$
Firm size			$1.98e^{-4}$	.003	242***	.080
Leverage			.001	$5.11e^{-4}$	-.010	.012
Inverse Mills Ratio	$1.35e^{-4}$	.001	$1.72e^{-4}$	.005	.451***	.139

* p <.10
** p <.05
*** p <.01

Table 3-1: Variable List

Constructs	Operationalizations	Data Source
Firm idiosyncratic $risk_i$	Standard deviation of the residuals for each firm based on Carhart's (1997) four-factor model	Center for Research on Security Prices
Promotion related brand protection actions	Dummy variable that takes the value of 1 if this news is promotion-related and 0 otherwise	Factiva
Intellectual Property Right (IPR) protection	The average of the standardized scores of The Law and Order index from the Gallup (Gallup 2018) and Park (2008) index	Gallup (2018); Park (2008)
Long-term orientation	A score ranged from 1-100 that captures the extend to which a country possesses long-term orientation	Hofstede, Hofstede, and Minkov (2010)
Regulatory quality	A rating that measures the incidence of policies such as trade-related or foreign investment-related, as well as perceptions of those regulations. Higher ratings correspond to better outcomes.	Kaufmann, Kraay, and Zoido-Lobatón (1999)
Leverage	Ratio of the long-term book debt to a firm's total assets	COMPUSTAT
Firm size	Natural logarithm of the annual total assets of the firm	COMPUSTAT
Cash flow	Net operating income before depreciation adjusted for working capital accruals	COMPUSTAT
Market value	Product of common shares outstanding and annual closing price	COMPUSTAT
Advertising spending	Annual advertising expenditure of the corresponding firm	COMPUSTAT
R&D spending	Annual R&D expenditure of the corresponding firm	COMPUSTAT
Online vs. offline context	Dummy variable that takes the value 1 if the threat involves online context and takes 0 if it is a pure offline threat.	Factiva
Industry type	A dummy variable that takes 1 if the focal brand owner is from the pharmaceutical industry; otherwise, it takes the value of 0.	Factiva

Table 3-2: Descriptive Statistics

			Correlations										
Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1. Risk	.01	.01	1										
2. Promotion-related actions	.71	.45	.07	1									
3. IPR protection	-.05	.88	**.08**	-.03	1								
4. Long-term orientation	39.84	22.05	.06	-.02	**-.26**	1							
5. Regulatory quality	.80	.64	.04	**-.07**	**.86**	**-.52**	1						
6. Actions multiplicity	1.10	.33	**.19**	**-.12**	**-.10**	**-.07**	-.05	1					
7. News specificity	401.32	277.37	**-.13**	-.00	**.15**	**-.11**	**.15**	.03	1				
8. Brand Threat Context	.23	.42	**.10**	**.12**	**.16**	-.03	**.13**	**-.06**	**.12**	1			
9. Advertising Expenditure	583.78	1153.09	**-.35**	**.15**	**-.08**	-.04	**-.08**	**-.14**	**.08**	.01	1		
10. R&D Expenditure	728.82	2101.96	**-.34**	**.13**	**-.09**	**-.08**	-.06	-.05	-.00	.00	**.70**	1	
11. Industry type	.66	.47	**-.35**	-.02	-.05	.01	-.01	**-.11**	.01	**-.12**	**-.06**	**.12**	1

Bold represents the significance level at p<.05

Table 3-3: Regression Model Results

A: Results of the First-Stage Heckman Selection

	Model 1		Model 2	
Variable	*Coefficient*	*SE*	*Coefficient*	*SE*
Constant	.010***	.001	-4.678***	.239
Industry intensity	.020***	.005	.018***	.005
Cash flow	1.392***	.279	1.366***	.274
Market value	$1.21e^{-5}$***	$9.87e^{-7}$	$1.22e^{-5}$***	$9.86e^{-7}$
Leverage	.001	.002	-.001	.002
Firm size	.273***	.026	.263***	.026
Wald χ^2	48.92***		113.98***	

B: Determinants of Firm Idiosyncratic Risk

	Model 1		Model 2	
Variable	*Coefficient*	*SE*	*Coefficient*	*SE*
Constant	.010***	.000	.013***	.001
Promotion dummy	.001**	.000	-.005**	.002
IPR			.001***	.001
Long-term orientation			$-5.48e^{-6}$	.000
Regulatory Quality			-.003***	.001
Promotion*IPR			-.002**	.001
Promotion*LTO			$6.28e^{-5}$**	.000
Promotion*RQ			.004***	.001
News specificity	$-2.22e^{-6}$***	$4.12e^{-7}$	$-1.85e^{-6}$***	$3.98e^{-7}$

Table 3-3 (cont'd)

Action multiplicity	.003**	0.00	.003**	.001
Brand Threat Context	.001	.001	.001	.001
Advertising	$-2.30e^{-7}$	$-1.88e^{-7}$	$-1.38e^{-7}$	$2.00e^{-7}$
R&D	$-2.27e^{-7}$**	$-1.14e^{-7}$	$-2.03e^{-7}$*	$1.12e^{-7}$
Industry type	-0.001	0.001	-.001	.001
Inverse Mills Ratio	.002**	.000	.002**	.000

* p <.10

** p <.05

*** p <.01

APPENDIX B: FIGURES

Figure 1: The Trend in Yearly Total Number of Intellectual Property Rights Seizures

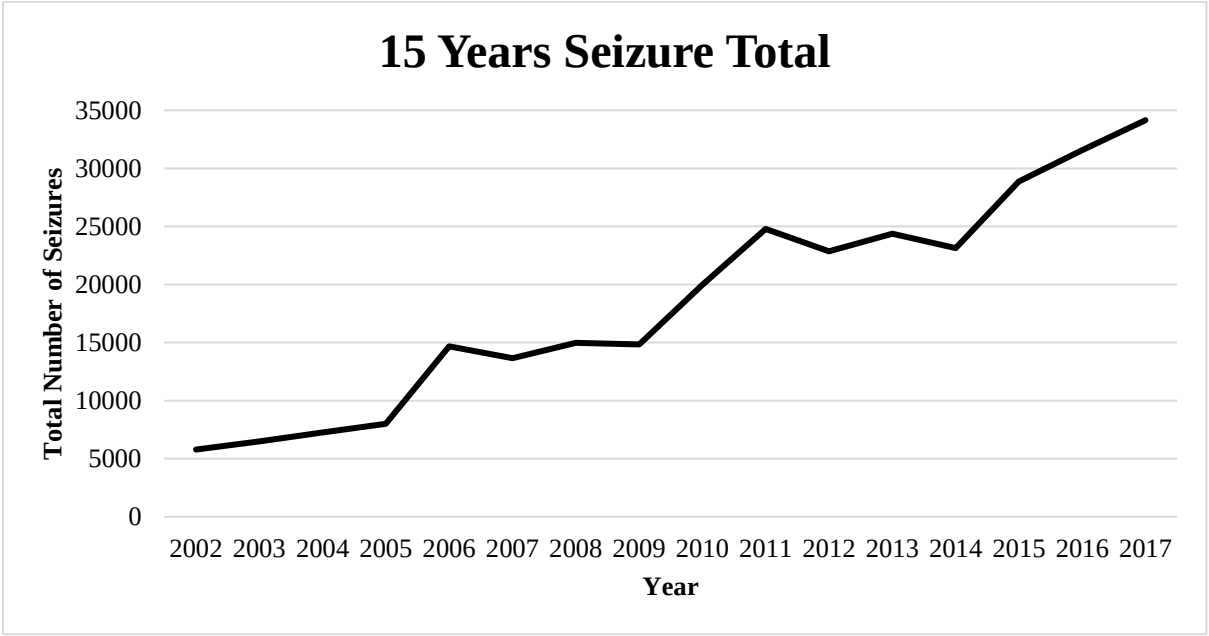


Figure 2: Summary of Sources Contributing to the Systematic Review

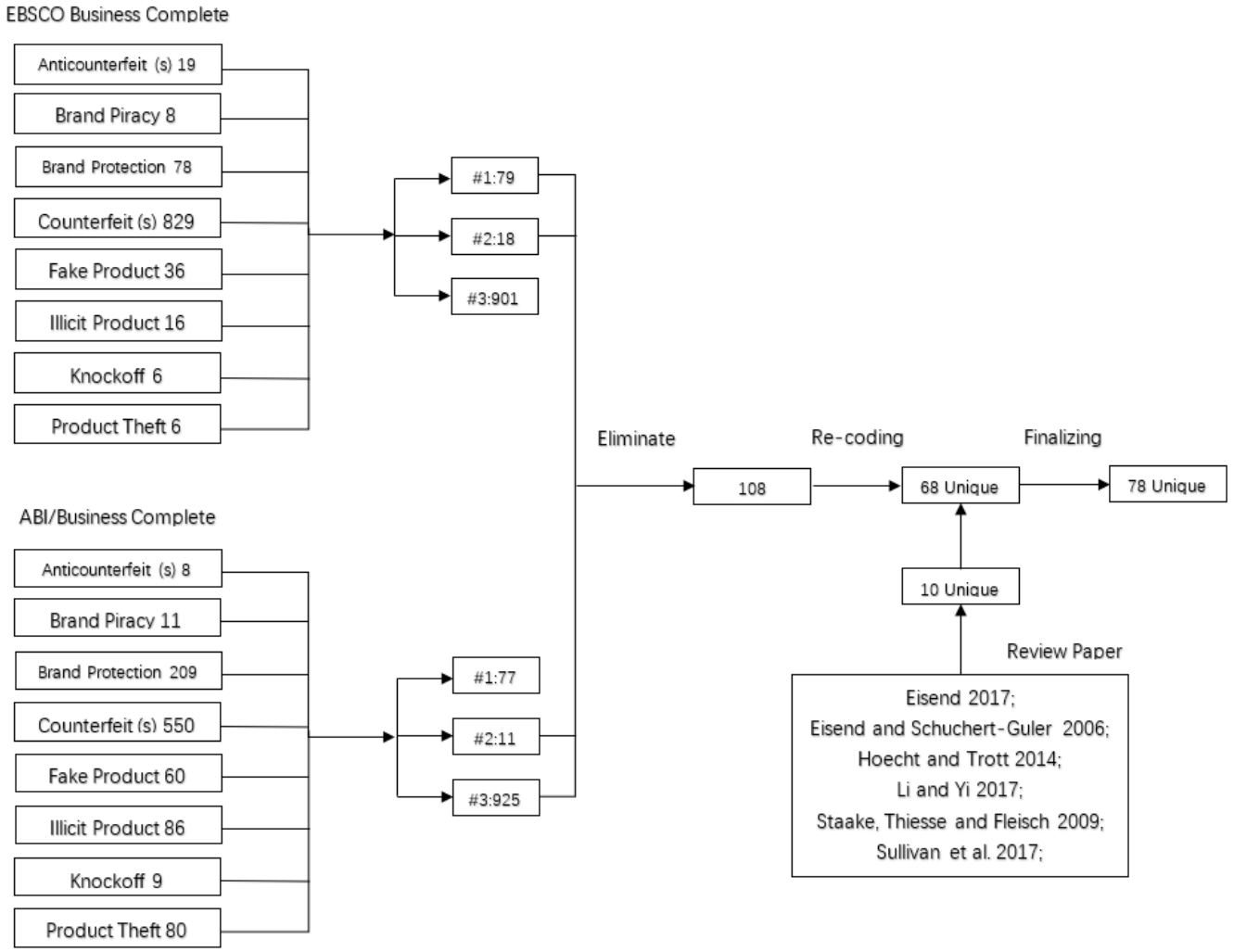


Figure 3: Conceptual Framework for this Dissertation

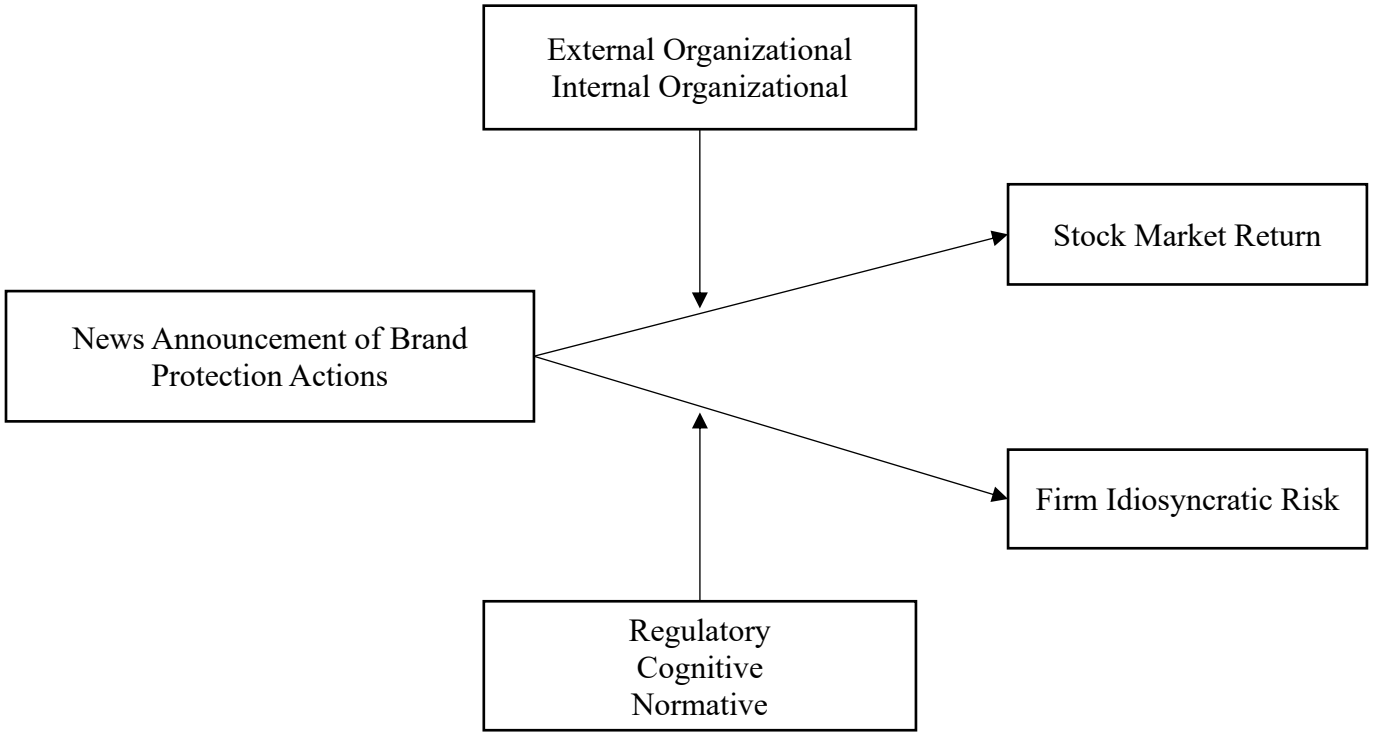


Figure 4: Conceptual Model for Essay One

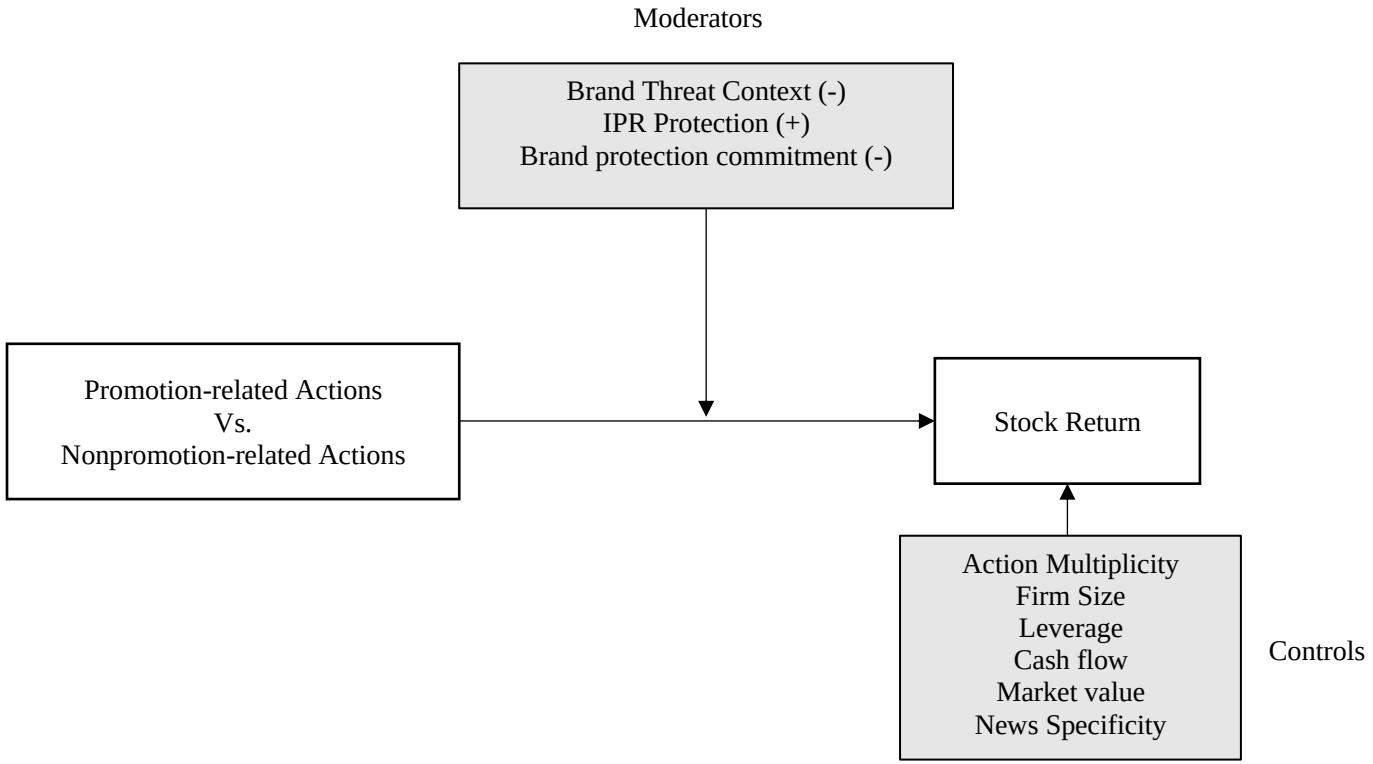
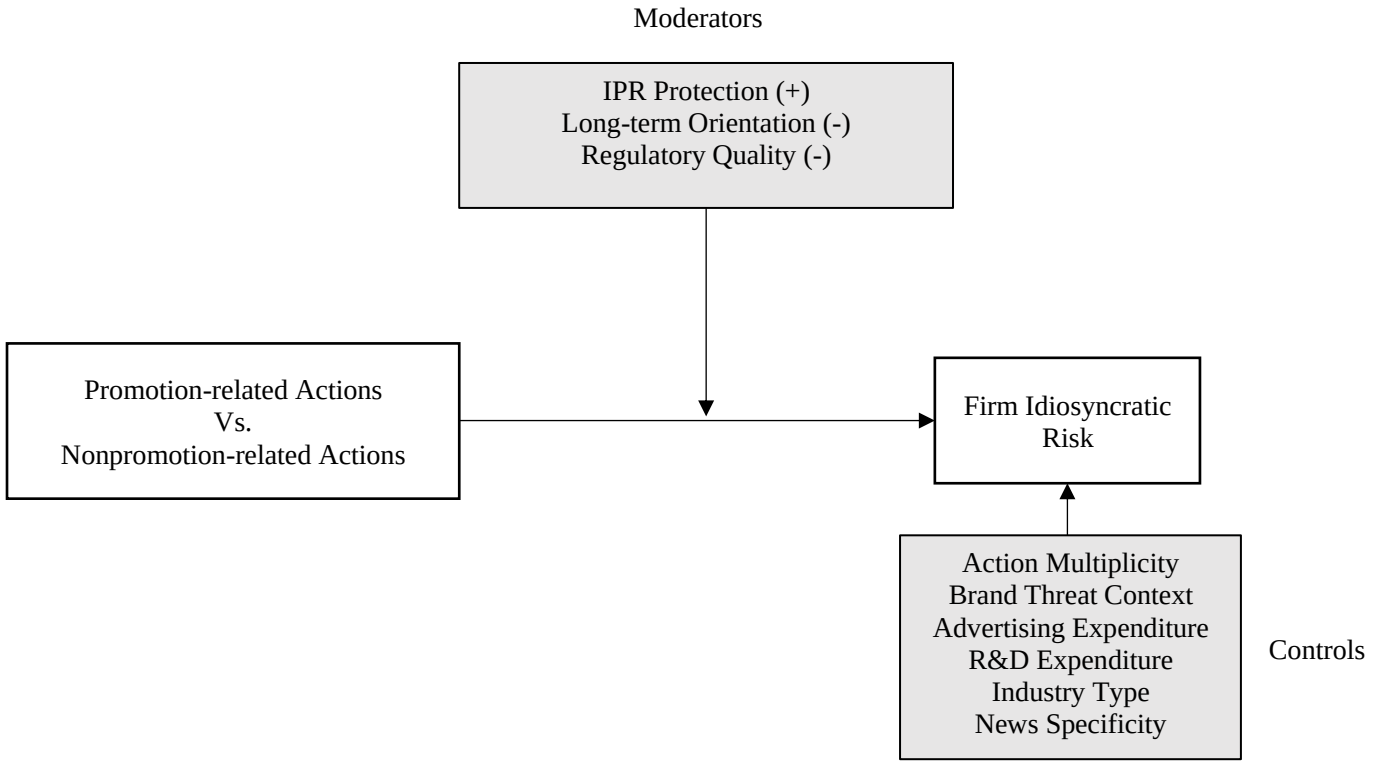


Figure 5: Conceptual Model for Essay Two



APPENDIX C: FOOTNOTES

Footnote 1:
The most frequently used terms in the literature are product counterfeiting and piracy, which describe a range of illicit activities related to intellectual property right infringements (OECD 2016). Consistent with prior literature reviews (e.g., Staake, Thiesse, and Fleisch 2009), I use the term *counterfeiting* to describe Intellectual Property Right infringements that involve "any unauthorized manufacturing of goods whose special characteristics are protected as intellectual property rights (trademarks, patents and copyrights)" (Cordell, Wongtada, and Kieschnick 1996, p. 41).

Footnote 2:
Title 15 of U.S. Code Section 1127 defines a trademark as "any word, name, symbol, or device, or any combination thereof, adopted and used by a manufacturer or merchant, to identify his goods and distinguish them from those manufactured or sold by others." Bennett (1995, p. 27) defines a brand as a "name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers."

Footnote 3:
These companies include Pfizer (U.S.), Novartis (Switzerland), Roche (Switzerland), Merck & Co. (U.S.), Johnson & Johnson (U.S.), Sanofi (France), GlaxoSmithKline (U.K.), Abbvie (U.S.), Gilead Sciences (U.S.), Amgen (U.S.), AstraZeneca (U.K.), Bristol-Myers Squibb (U.S.), Eli Lilly (U.S.), Teva Pharmaceutical Industries (Israel), Bayer (Germany), Novo Nordisk (Denmark), Allergan (U.S.), Shire (Ireland), and Takeda (Japan). Although Boehringer Ingelheim (Germany) is one of the top 20 companies in terms of sales, I excluded this firm because it is not traded on US stock exchanges.

Footnote 4:
Eight indices have been frequently used in prior research to measure the strength of IPR protection in host countries (Zhao 2006). These are the Law and Order index from the International Country Risk Guide Risk Rating System (PRS Group 1997), the O-Factor from the PricewaterhouseCoopers Opacity Survey (PricewaterhouseCoopers 2001), the Property Protection index from the Index of Economic Freedom (The Heritage Foundation 1995), the Rapp and Rozek (1990) index, the Ginarte and Park (1997) index, the Rule of Law index (Kaufmann et al. 1999, 2002), the piracy index from the annual BSA Global Software Piracy Study (Business Software Alliance 2000), and the United States Trade Representative's Special 301 Watch List from 1999. Some of these are updated only periodically—for example, the Ginarte and Park (1997) index in 2008 (Park 2008) and the Law and Order index (Gallup 2018), the O-Factor from the PricewaterhouseCoopers Opacity Survey (PricewaterhouseCoopers 2001), and the Property Protection index (The Heritage Foundation 2018) in 2018.

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