Multinational enterprises, risk management, and the business and economics of peace

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Abstract

Purpose – The purpose of this paper is to reconceptualize how managers of multinational enterprises (MNEs) manage risk, particularly in fragile and/or conflict-affected areas of operation. The authors suggest that MNEs consider reducing risk at its source rather than trying to avoid or react to risks as they occur. By incorporating peacebuilding strategies, managers may not only reduce investment risk but also contribute to stability and prosperity in the communities where they operate, and gain a competitive advantage in doing so.

Design/methodology/approach – The authors show how firms can take a more holistic approach to working in conflict-affected areas. They do so by overlaying conceptualizations of risk with those of peacebuilding and then use case examples to illustrate how such actions work in practice.

Findings – Using a series of examples, the authors find that MNEs that incorporate peacebuilding frameworks in their risk calculations in complex settings tend to have a better understanding of local environments and how they affect firm operations and profitability. These same MNEs may hold a long-term advantage over international competitors that do not share the same understanding.

Originality/value – The authors argue that the study of relationships between international businesses and society in conflict-affected or fragile areas of operation is under-developed and tends to focus on negative (risk-aversion) aspects as opposed to positive (value-added) opportunities. This paper offers new ways in which these relationships can be reconceptualized. The authors’ main takeaway is that a peacebuilding approach does not require corporations to be arbitrators of peace at the expense of profit. Rather, it is instead a broader way to conceptualize and weigh risk when working in the world’s most challenging regions. This approach is more likely to be in the long-term interest of both the firm and the local society where the firm operates.

Keywords CSR, Risk mitigation, Corporate sustainability, Peacebuilding, Business for peace

Paper type Research paper

Introduction

Understanding the environments in which multinational enterprises (MNEs) operate is a major topic of interest in international business. The institutional, cultural, political and economic characteristics of different countries and their impact on business activity have received substantial attention in the research (Brouthers, 2013; Cantwell et al., 2010; Luo,
Related research has also focused a great deal on the risks that businesses face including institutional failures, crime, political instability and violence (Asongu and Nwachukwu, 2017; Dai et al., 2016; Darendeli and Hill, 2016; Fatallah, 2017; Henisz et al., 2014; Katsos and Alkafaji, 2017; Oetzel and Getz, 2012; Oh and Oetzel, 2017; Ramos and Ashby, 2017). As international business scholars, we spend a great deal of time focusing on how to protect MNEs from risks, but seldom do we focus on how managers of MNEs might reduce risk at its source and promote peace and stability in countries facing complex challenges. Our goal in this article is to suggest that business can, in fact, contribute toward peacebuilding and that there are numerous self-interested reasons that managers may choose to do so.

To some, peacebuilding[1] may seem like an unlikely topic for the business literature. If polled, it is likely that a significant number of managers of MNEs would not consider peacebuilding as the “business of business”. For many academics and practitioners in conflict-prone regions of the world, however, it goes without saying that managers must understand how to address violence and political risk and work to strengthen institutions, promote the rule of law and support social justice.

For example, while every age has it grand challenges, today, businesses and societies are concerned with ongoing terrorist threats, political conflict, the rise of populism in many parts of world, including the USA, Britain and the Philippines, and strong anti-globalization sentiments. There is also a sense that global business and trade are leaving some portions of society behind. Given the central role that MNEs play in many of these debates, managers may need to consider how to effectively approach these types of problems.

One of the challenges in starting to think about the role of business in promoting peace is that peace, as a goal, is hard to define and difficult to measure. If a country is experiencing conflict and political violence, however, the risk and its impact on business and FDI can be immediate and obvious to managers (Seno-Alday, 2015; Suder and Czinkota, 2005; Vijayakumar et al., 2009). The result is that social scientists have generally focused more research on violence, conflict and political risk than on how to promote peace and stability. Contributing to the imbalance in research is the fact that, at least in the USA, research on conflict generates significantly more grant money than peace-oriented studies.

Another challenge is how to determine the factors that lead to a more peaceful society. In much of the contemporary literature, peace is defined as the absence of violence or negative peace. As peace is more than the absence of violence, this definition is incomplete. Positive peace suggests that at a minimum, there is a fundamental sense of justice and fairness, widespread economic opportunity, a legal system that functions freely and fairly and that the factors that caused conflict in the first place are not just suppressed but eliminated (Galtung, 1969; Oetzel et al., 2010). While there are certainly many other factors that are relevant to peace, businesses, especially MNEs, are unlikely to address all of them, and business cannot be expected to eliminate conflict on its own.

Before we discuss in greater detail how and why peacebuilding is relevant for international business, it is important to recognize that business is just one of a larger set of actors working to reduce conflict and increase peace. We also are not suggesting that businesses should be responsible for fixing all the problems in a country. In fact, historical evidence suggests that when business actually supplants the role of government and civil society, the outcomes can be grim (Reiff, 2000). Instead, our goals are to discuss how businesses might engage in peacebuilding, review what the benefits are to business of working toward positive peace and suggest how MNEs can avoid unintentionally contributing to conflict.
Why would multinational enterprises adopt peacebuilding strategies? If managers could actually reduce risk at its source, and possibly gain a competitive advantage by doing so, that would be a powerful motivation for peacebuilding as a means of risk mitigation. Doing so requires new ways of conceptualizing the problem and a willingness to redefine what we mean by risk management (Bansal et al., 2017). Several reasons that this process has begun to happen over the past two decades is because of the limitations and failures of current approaches, the changing expectations of stakeholders and the need for managers of MNEs to recognize and to address the complex risks facing business and society. Here we discuss each of the reasons in turn.

Limitations and failures of current approaches. The natural desire to avoid risk or to rely on governments to manage it is understandable. The problem with this approach is that avoidance is not realistic in the complex and dynamic business environment that many MNEs are facing today. In addition, many governments today lack the resources, capabilities or the will to contain problems within their borders. This puts the onus on managers to address problems that are traditionally the responsibility of the public sector.

Changing expectations. There are many reasons why MNEs may engage in peacebuilding efforts. One recent example is the case of Apple, Intel, Tiffany & Co., among others, and the 2010 USA Conflict Minerals Law overseen by the Security and Exchange Commission. The law requires US companies to avoid using minerals that fund conflicts and lead to human rights abuses in the Congo region. Contrary to many news reports indicating that business was staunchly against the law, once politicians suggested that they intended to eliminate it or water it down, businesses like Apple, Intel and Tiffany & Co. publicly announced their vocal support of the provision. According to the companies involved, the law has “created an expectation both inside their company headquarters and among consumers that their products will be ‘conflict free’” (Frankel, 2017). Eliminating the law, many groups argue, (e.g. the International Conference on the Great Lakes Region, 41 Congolese civil society organizations, Pact, etc.) would lead to a significant increase in violent conflicts in Congo. In this case, even though peacebuilding may not be the primary reason that the companies involved are supporting the Conflict Minerals Law, the fact is that their actions do make a positive difference for those living in conflict-affected countries. Moreover, widespread industry support for the law increases the power of the legislation.

Need for multinational enterprises to address complex risks that affect business and society. Even when businesses do not actively seek to promote instability, they may find that their day-to-day operations are unintentionally contributing to violence and conflict. The creation of the Global Internet Forum to Counter Terrorism is an example of one such effort to address this type of problem. Facebook, Microsoft, Twitter and Google (YouTube) have joined together to make it harder for extremist groups to use their hosted consumer services to promote terror and violence (Burgess, 2017). The group’s aim is to formalize and structure existing and future areas of collaboration between member companies and foster cooperation with smaller tech companies, civil society groups, academics, governments and supra-national bodies such as the European Union (EU) and the United Nations (UN). A similar group exists in the, the EU internet forum.

Gain a competitive advantage. MNEs that understand how to directly or indirectly reduce risk may find that they are well positioned to take advantage of business opportunities that other firms avoid. One example is the case of Four Seasons Hotels. Unlike many of its competitors, the Four Seasons has been able to open new hotels in countries facing violent conflict (Conlin, 2006; Oh and Oetzel, 2017). For example, despite the fact that Lebanon was in the midst of war in 2006 after the assignation of Rafic Hariri (the former
Prime Minister of Lebanon) in 2005, the Four Seasons continued its plan to establish a new hotel in Beirut. After a planning period, the new hotel opened for business in 2010. The company prides itself on the fact that, “After 9/11, we were one of the few hotel companies that did not stop any of our projects” (Conlin, 2006). These reports suggest that the Four Seasons has developed internal capabilities around risk management that enable it to operate in politically risky environments. Given their track record post-9/11, it appears that they may have an advantage over their competitors.

Building on the previous example, academic studies have shown that context-specific knowledge or local ties may lead to an advantage when managing complex risks. In one study of 379 MNEs and their subsidiaries operating across 117 countries, researchers found that firms with a deeper knowledge of the country-context are less likely to decrease their investments in conflict affected locations, even as the conflict intensifies (Oh and Oetzel, 2017, p. 714). In another study, researchers found that MNEs facing severe political risk can increase their chances of survival by strengthening their social ties and, “by offering goods or services that are perceived as socially valuable” (Darendeli and Hill, 2016, p. 68).

While these examples are not explicitly about peacebuilding efforts, other researchers have demonstrated that firm expertise in cross-sector collaborations or “partnerships for peace” aimed at reducing risk and promoting peace do have the potential to confer competitive advantage to firms operating in conflict zones (Kolk and Lenfant, 2015a, 2015b). In fact, there is evidence that knowledge of conflict-affected environments may spur innovation, particularly around MNE response to risk (Jamali and Mirshak, 2010; Kolk and Lenfant, 2010, 2016).

Is peacebuilding by business actually happening in practice? To some extent, academia is behind business practice in terms of recognizing the limits of existing business tools to address complex challenges in international business and acknowledging that MNEs have a role to play in contributing toward more peaceful and secure societies. The International Council of Swedish Industry (NIR) is arguably the leading business association in Sweden. The aim of NIR is to “support and broaden the scope of operations of Swedish business in markets which are politically, economically or socially complex” (NIR, 2017a). The organization specifically lists “Business and Peace” as one of its areas of expertise. The challenge with accessing many of the world’s fastest growing markets, suggests NIR, is that:

[...] with many of the world’s fastest-growing markets experiencing violent conflict or undergoing post-conflict processes, business increasingly faces concerns about how their activities may aggravate or alleviate the effects of violent conflict. Legitimate private sector actors have an interest in peace and political stability. Threats of open violence, lack of stable political institutions and unpredictable economic frameworks hinder or even prevent private sector activities from taking place by increasing operating costs and disrupting lines of supply. While the primary responsibility for peace, security and development must rest with governments, private sector actors can make an important contribution to stability and security in conflict-affected and post-conflict areas (NIR, 2017b).

Encouraged by many of the largest MNEs in Sweden to provide guidance on these issues, NIR has produced several publications including Managing in Complex Environments: Questions for Leaders and Private Sector Actors and Peacebuilding.

Another organization that promotes peacebuilding by managers is the “Business for Peace Foundation”, also in Oslo. Since 2009, this organization has recognized well over 40 business leaders from around the world, including Richard Branson, Paul Polman and Elon Musk, for their contributions to peacebuilding at the annual “Oslo Business for Peace Summit”.

Business and economics of peace
As suggested earlier, an especially challenging aspect to many of these issues is that the solutions to conflict reduction and peacebuilding are generally context-specific (Oh and Oetzel, 2017). Further, conflict dynamics rarely fit into neat categories like “post-conflict” or “formal peace” in practice, making it hard for even peace practitioners to be able to accurately survey conflict landscapes for risks and opportunities. Academics and practitioners in international business, however, should be well positioned in this respect. By definition, international business requires an understanding of the institutional, cultural, political and economic context in which business takes place (Suder and Czinkota, 2005).

Next, we discuss specific strategies and tactics that firms can adopt to promote peacebuilding.

*What can businesses do?*

There are a variety of strategies and tactics that managers can use to reduce conflict and promote peacebuilding. In deciding what approach to take, managers must consider whether they want to act alone or in collaboration with other firms or organizations. Depending upon the particular challenges at hand and the resources and capabilities of the firm, managers may choose to directly or indirectly reduce risk at its source by mitigating the factors that undermine peace (Oetzel et al., 2007).

For many reasons, we expect that most firms will choose to work with other organizations, either formally or informally. The benefits of doing so are numerous. First, this approach enables firms to share any costs associated with their efforts. Second, to address complex challenges, different perspectives are often quite valuable. Organizations working together from different sectors may also develop more creative solutions. Third, as managers are not trained to think about reducing risk at its source or to engage in peacebuilding, the necessary expertise is often outside the firm.

Most firms will probably not work alone to directly reduce risk at its source, but those that do will tend to be large MNEs with substantial resources. Anglo–American Mining Company is one such company that has been credited with directly promoting peace. Concerned about its ability to raise capital and its overall profitability and survival during the Apartheid era in South Africa, Anglo–American reportedly facilitated negotiations between the African National Congress (ANC) and the South African government between 1984 and 1990 in an effort to promote peace in the country (Lieberfeld, 2002; Oetzel and Getz, 2012). While only a firm with the size and influence of Anglo–American mining is likely to have the power to bring two groups like the ANC and Apartheid government in South Africa to the table for meaningful peace negotiations, firms of all sizes can play a positive role in mitigating violence and promoting peace.

Any organization can work to indirectly affect the factors that undermine peace in a country. For example, firms can act alone to address ethnic conflict or racial tensions in the work place. Doing so may not only improve organizational culture and productivity but also can have positive spillover benefits to the wider society (Benjamin et al., 2015; Bader and Schuster, 2015; Lee and Reade, 2015; Reade and Lee, 2012).

Managers can also audit their supply chains to make sure they are not directly or indirectly fueling conflict. Mo Ibrahim, founder of African mobile phone giant Celtel, has demonstrated that it is possible to operate in highly challenging environments without contributing to conflict or engaging in corruption. In the early days of Celtel in Africa (late 1990s), the company entered several countries embroiled in civil wars. One such country was Congo, specifically Brazzaville, the capital. At the time Celtel entered:

> [...] the city of Brazzaville was filled with checkpoints staffed by armed combatants, including child soldiers. Buildings had been looted, their windows blown out, and there was no functioning
road between Brazzaville and the second-largest city, Pointe Noire. The instability of the area kept
the UN from sending its personnel to the country. (Jones and Campbell, 2014, p. 11).

Despite the challenging country conditions in Congo, Celtel realized that there were no other
cellular services to speak of and phones were in high demand. Thus, because of the ongoing
conflict, there was virtually no competition.

Celtel did not let the environments where they operated affect their approach to business.
In a number of conflict-affected and corrupt countries they entered, the company never
“adapted” to the environment by paying bribes to purchase telecommunications licenses or
to set up their cellular towers. Instead, they made their no bribes policy clear up front. In one
country, Celtel found that there was no way to avoid paying a bribe if they wanted to
operate there. Rather than do so, Celtel withdrew from the country and forfeited a sizeable
initial investment in infrastructure (Jones and Campbell, 2014).

Mo Ibrahim’s successful approach to doing business in Congo and other conflict-affected
countries in Africa demonstrates that there are alternatives to “business as usual”. His
actions have inspired other managers and their firms to follow in his footsteps, and he is
now a highly influential thought leader on corporate governance in Africa.

Discussion and examples of multinational enterprises practices around peacebuilding
On the basis of our review of the literature and first-hand case studies and interviews, we
propose that MNE practices around managing complex challenges follow something of a
normal distribution. On one end of the distribution, there are firms engaged in war
profiteering or are operating in such a way that managers knowingly benefit from and
contribute to an increase in violence and conflict. For most firms in the distribution,
however, we expect that they are neither consciously working toward peace nor intending to
foster instability or conflict. In some cases, business as usual can actually have a large
positive impact on a country simply by providing jobs and promoting economic growth
(Fort, 2007). To the extent that businesses generate employment, offer a fair wage, good
working conditions, etc., they can positively contribute to people’s lives, decrease unrest
and, in some cases, reduce risk at its source. Unfortunately, it is not hyperbole to say that
“getting ahead based on your merits” and having safe working conditions and fair
compensation are still only aspirational in many parts of the world. If all businesses met
these most basic of standards, the economic life of millions of people could be transformed.

At the far end of the distribution, there are firms that are actively formulating strategies
and business practices aimed at minimizing risk at is source and promoting peacebuilding.
An important point, however, is that firms rarely define a strategy as a “strategy to promote
peace”. Rather, managers may define a firm’s actions by the issue it addresses or the long-
term economic and social effects it has on society. For example, Paul Polman, the CEO of
Unilever, received the Business for Peace Award in Oslo, Norway, for his efforts to reduce
Unilever’s environmental footprint and increase its positive social impact while
simultaneously doubling the size of the corporation. While the Anglo–American example in
South Africa is clearly and directly aimed at peacebuilding, Unilever’s approach is not
explicitly about peace. Nevertheless, by taking into account the environmental and social
impacts of its business, the company has increased the economic, social and health-related
well-being of those in its supply chain. In turn, these actions may reduce the likelihood of
conflict in the areas where Unilever operates and enhances the prospect for long-term
stability and peace.

Another example is the case of Starbucks. In response to the international refugee crisis,
Starbucks announced a pledge (in January of 2017) to hire 10,000 refugees worldwide over
the next five years (Spary, 2017). Doing so is expected to reduce the rate of social unrest, help
refugees to better integrate into their new home country and reduce the need for government assistance – outcomes that enhance stability and promote peaceful societies. Interestingly enough, a non-profit organization called Duo for a Job in Belgium has received international attention doing similar work. Unlike Starbucks, the organization does not directly employ program participants. Although the non-profit organization’s work is considered highly impactful, because of its non-profit status, Duo for a Job is only able to reach a small portion of the people that Starbucks will in the course of its program.

Starbucks’s effort is not exclusively altruistic. According to a consumer research firm in the UK, the British exit from the European Union (i.e. Brexit) will lead to a shortage of 40,000 baristas by 2025. By hiring refugees, at least in the UK, Starbucks not only helps refugees in need of employment but also benefits the company’s bottom line. Starbucks’ policy is not without its critics. Some consumers in the USA have advocated a boycott of the company suggesting that Starbucks put “America First” (Spary, 2017). Starbucks seems to be willing to take the heat, however, possibly emboldened by outgoing CEO Howard Shultz’s dedication to the issue. It appears that the long-term financial, reputational and humanitarian benefits of the policy are significantly greater than short-term threats to the business.

When “business as usual” unintentionally fuels conflict

While MNE behavior within and across countries is likely to vary substantially, in general, given the population of firms we discussed earlier, a large number of MNEs are going about “business as usual” and neither consciously working toward peace nor intending to foster instability or conflict. Doing business as usual, however, can unintentionally worsen peace dynamics in fragile places. While firms can help to grow markets and thus contribute to improved conditions for peace, they can also exacerbate underlying conflict dynamics when they do not understand the context in which they do business and the impact of their operations. Businesses may also be ignorant of, turning a blind eye to or considering themselves not responsible for, the actions of their local partners. At times, local partners may engage in activities that contribute toward conflict and may violate national and international laws.

In this section, we briefly explore a few cases where MNEs, doing business as usual, have threatened peace and stability in the countries where they operate. These cases illustrate how the seemingly benign practices of partnering with local firms and outsourcing certain business activities to local providers can have serious consequences. These consequences for the MNEs may include legal liability, increased operational risk and damage to firms’ reputations in the home and host markets. Following the case examples, we discuss alternative strategies for dealing with the complex problems raised in these cases. The first examples focus on Microsoft and Coca-Cola in Myanmar.

**Microsoft and Coca-Cola in Myanmar.** Microsoft and Coca-Cola were two of over 200 Western MNEs to enter Myanmar, or significantly expand operations there, when Myanmar’s military junta announced plans in 2011 to liberalize. Ranking 170 of 190 countries surveyed by the World Bank in ease of doing business (World Bank, 2016), most sectors of Myanmar’s economy have seen a dramatic expansion in investment, supported by international aid and development agencies under claims that foreign firms are solidifying a fragile peace through rapid socioeconomic development. While businesses are generating economic growth in the country, the unevenness of the distribution of wealth and opportunity has worsened societal cleavages. This is a serious concern as Myanmar still has 18 ongoing conflicts with most rooted in the uneven division of economic opportunities and civil rights, along with the heavy-handed rule used to maintain stability. There is little
indication that economic inequality in the country will improve in the near-term. For one reason, Myanmar’s new wealth has largely been captured by elites who expropriated valuable assets when the country liberalized its markets. Also, because of a government policy requiring MNEs to form joint ventures with local partners, these same elites (who are highly politically connected) have become the natural local partners for foreign firms entering Myanmar.

For Microsoft, the policy that required MNEs to form joint ventures with local firms has meant launching a multimillion dollar joint venture in 2013 with the Shwe Taung Group, led by Aik Htun. Htun has been flagged by the USA Treasury as being a major drug trafficker and money launderer (Peel, 2015a), and he and his family are also subject to EU sanctions for corruption and money laundering in his former role as owner of Myanmar’s largest bank. Shwe Taung Group is the sole licensor for Microsoft products in Myanmar. In response to the allegations, Microsoft claimed a “formal process of due diligence that includes verifying our (subcontractors) against the relevant local as well as US laws and regulations” (Peel, 2015a), and as of July 2017 continues to partner with Htun.

For Coca-Cola, this meant launching a partnership in 2012 with Daw Shwe Cynn, a jade kingpin under sanctions and barred from selling in the USA and other countries (Peel, 2015b). Cynn’s firm has also been accused of human rights violations, corruption, land-grabbing and extensive environmental pollution in his jade empire (Global Witness, 2015). Located in Kachin, it is also the site of an ongoing civil war between the government and Kachin Independent Army. In response to the allegations, Coca-Cola conducted:

[...] additional due diligence after engagement with the NGO Global Witness. While our original assessment was based on the best information at the time, (new) findings were consistent with our original due diligence [(The) Coca-Cola Company, 2014].

As of July 2017, Coca-Cola continues to partner with Cynn.

While both firms (and many others in similar situations in the country) argue that they have followed proper due diligence procedures and are thus not legally liable for the actions of their partners, the fact remains that both firms continue to partner with conflict-inducing actors. These partnerships only legitimate and empower such actors. Thus, standard benchmarks for due diligence when selecting local partners in conflict settings have failed to consider such actors as sufficiently risky and left the companies exposed to major reputational and operational risk.

Why do these situations occur? During the process of selecting a local partner, Coke and Microsoft may have felt that they could only choose between potential partners who had ties to government and private sector elites. It is also possible that partnering with these firms may have paved the way for foreign firms to gain a quick foothold in Myanmar. Unfortunately, legitimizing and empowering questionable local partners contributes toward damaging Myanmar’s broader business ecosystem at a time when professional skills are needed. For example, elites in Myanmar have not only consolidated their control of revenue and trade streams but also garnered increasing support for the expansion of ethnic cleansing campaigns. By engaging in such campaigns, elites are better positioned to secure new operational monopolies (Miklian, 2017a). Thus, while no single MNE is definitively “causing conflict” through its partnerships, the collective effect of hundreds of such relationships has facilitated an environment where suppression, ethnic cleansing and conflict are growing even as Myanmar’s GDP spirals upward. The next two cases show how subcontracting, even though it is “business as usual”, can increase violence and undermine peace and stability.
Beer in the Congo and Colombia[2]. The global beer trade has undergone a decade of rapid expansion and consolidation and carries a global product reach that is nearly unprecedented; or as Heineken put it in a recent ad campaign, “In 172 Countries and Still Thirsty”. However, getting the beer from the production plant to the farthest reaches of the country can be a challenge, especially so in conflict regions with poor infrastructure and battles over transport lines between conflict actors. The cases of Heineken in the Democratic Republic of Congo and AB InBev in Colombia show how firms outsource risk by outsourcing business activities to conflict actors (knowingly or unknowingly) to gain and maintain access to markets.

Delivered under the Bralima brand in the DRC, Heineken controls around 70 per cent of the country’s market share and contributes a staggering 35 per cent of the state’s revenue (Miklian and Schouten, 2014). Heineken operates like most DRC MNEs. To minimize risk and maximize profits, managers will, at times, use subcontractors for the most difficult or sensitive tasks (Miklian and Schouten, 2014; Miklian, 2017c).

In continuous operation since 1923 and bought by Heineken in 1960, Bralima has successfully negotiated their way through dozens of DRC conflicts. Since 1996 alone, 10 per cent of the country’s 77 million people have been killed and new conflicts erupt almost annually, including most recently in Central Congo’s Kasai region. The primary sources of revenue for rebels are the ubiquitous checkpoints placed on nearly all rural roads throughout the country. The checkpoints themselves are often little more than a wooden log or rope thrown across a muddy trail, perhaps with a shack nearby sheltering armed rebels (Miklian and Schouten, 2013). Still, even a single checkpoint can bring in over $1m per year (UNGOE, 2008). This business model supplies enough money to fund a conflict in a country where the average wage is a dollar a day and AK-47s cost about $50 (Miklian and Schouten, 2013).

Bralima is not exempt from extortionary “taxation”. The company pays over $1m per year to such groups (Miklian and Schouten, 2013). For example, Mr. Damien, “tax collector” for the Congo rebel group M23, explained in 2013 that he charges a van about $38 to pass, $300 for a goods truck, and $700 for a fuel tanker, and hands out official-looking receipts upon payment (Miklian and Schouten, 2013). These checkpoints served as a significant source of funding for M23, which was in turn used to purchase weapons, pay insurgent salaries and even deliver social aid to eastern Congo’s poor in exchange for allegiance. Damien said that M23 takes $500 from the trucks hauling crates of Primus into rebel-controlled areas: “NGOs pay, people carrying charcoal pay, women going to the market pay – everyone pays! We don’t do preferential treatment. So, of course, those who transport beer also pay” (Miklian and Schouten, 2013).

If such payments were directly made by Heineken, they could be considered a violation of several laws in Holland, the USA and UN-supported sanctions. Thus, the firm uses a subcontractor model whereby independent truck drivers pick up the beer and are responsible for delivering it across the country. Any expenses, damages or conflict along the way is considered the sole responsibility of the drivers. The local Bralima headquarters in DRC’s capital Kinshasa also considers this issue outside their jurisdiction.

These dynamics are echoed in Colombia where SABMiller–AB InBev controls over 90 per cent of Colombia’s beer market and generates nearly 80 per cent of Colombia’s consumer tax revenue on sales of US$10bn/year (Arbeláez and Sandoval, 2006; Dinero, 2016). Delivered under the Bavaria banner, SABMiller–AB InBev has used a subcontractor model similar to Heineken. For decades SABMiller–AB InBev has used subcontractors to deliver beer to areas controlled by rebel groups in the country, most notably the Revolutionary
Armed Forces of Colombia (FARC) and National Liberation Army (ELN) but also including paramilitaries, drug traffickers and other conflict actors. These checkpoint revenues generate a substantial revenue stream that is used to fund insurgent activities.

Like most firms tasked with distribution in Colombia, Bavaria chose to pay both rebel and paramilitary groups in rural areas to continue operations throughout the 1990s and 2000s. From 1991 to 1998, it is estimated that Bavaria faced looting and extortion by guerrillas amounting to an illegal levy of approximately US$1.8m (Morales et al., 2012). Initially, Bavaria refused to pay the levy and faced retaliation from FARC (Pax-Christi, 2002). Seven Bavaria factories were shut down and FARC imposed a beer ban across its area of control for several months (El Tiempo, 2001). Eventually, Bavaria settled on a solution. In conflict regions, it would continue to produce beer but turn over sole responsibility for distribution to subcontractors. Bavaria’s contractors are thus SABMiller–AB InBev’s sub-sub-contractors. As one Bavaria senior distribution executive working in the conflict zone explained (Bull and Miklian, 2018):

There were times when (distributor) trucks were incinerated. Let me be clear – Bavaria was never going to let themselves be formally tied to anything illegal. Often, the (Bavaria) distributor had to pay extortions and (the rebels) made a lot of money, becoming very important regional players. (Still,) the company sees itself as unrelated to the conflict.

Delivery drivers subcontracted by Bavaria support this assessment. They say that guidance from the firm is limited to unrealistic claims to simply, “not go into the bad areas” (but meet your sales goals), reimbursing drivers for extortionist payments in exchange for receipts and using the firm’s lawyers to negotiate driver releases when they are kidnapped. One driver put it succinctly: “We are on our own the moment we drive out of the distribution center” (Bull and Miklian, 2018).

**Considering peace-sensitive business practice**

So, how might a conflict-sensitive approach improve the above cases? We recognize that leaving a market entirely is not always feasible or realistic. In addition, managers may focus more on the opportunity cost of leaving a potentially lucrative region rather than on the risk of staying. In addition, doing so may actually be counterproductive to business interests and even to peacebuilding if firms with less interest in conflict sensitivity and human rights take the place of those that leave. However, firms hold a significant amount of untapped political and social capital that can be unlocked through incorporating peacebuilding into risk frameworks. For example, nearly all firms entering Myanmar have stated their support of international human rights aims and established corporate social responsibility norms for operating in the country. The joint venture partners of these MNEs, however, may not share the same concerns.

Alternatively, managers can step back and leverage the substantial economic and reputational power of their MNEs. For example, both Coke and Microsoft could demand to choose a local partner whose practices are consistent with its stated values and whose actions do not violate international or MNE home country laws. In fact, they may have more leverage now than when first entering Myanmar given the global power of their brands and lack of precise substitutes. Also, if an MNE’s actions (i.e. partnering with local firms that violate human rights and engage in widespread corruption) are inconsistent with its stated values and legal obligations, NGOs are increasingly willing to raise the alarm on such perceived corporate hypocrisy. Rather than decreasing its political risk by partnering with unsavory local partners, MNEs will actually increase their risk exposure. The resulting damage to the global brand may not only hurt the MNE internationally but also undermine...
its reputation and threaten its long-term social and legal licenses to operate in the host country.

This outcome is not hypothetical. After the fall of Suharto in Indonesia in 1998, and the overthrow of Mubarak in Egypt in 2011, it became clear that many MNEs were complicit in the widespread corruption in both countries and turned a blind eye to the behavior of their local partners. Although these MNEs benefitted from the favors of these regimes while they lasted, the ultimate outcome was devastating in many cases. MNEs lost millions of dollars in investments in some cases and the countries as a whole suffered from substantial divestment by foreign firms (UNCTAD, 1999).

For Heineken and SABMiller–AB InBev, the reliance on subcontractors to use a “see no evil, hear no evil” hands-off approach regarding how their operations fund conflict is more problematic. These firms are paying rebel groups and paramilitaries millions of dollars with full knowledge at the national, regional and often global executive levels, that this money funds wars and terrorizes citizens. However, if they stopped working in such areas, these same rebels might simply import the products on the black market themselves and create a new lucrative revenue stream.

While there is no easy solution to this problem, one approach is to leverage the company’s “supplier” power. The beer companies could leverage the strong demand for their product to propose the terms of trade. While less likely, it may also be possible for the beer companies to refuse to pay the “tax” and negotiate an alternative arrangement. This option was reportedly used by at least one oil company during the civil war in Angola during the 1970s. Rather than pay bribes for a license to operate (money the company knew would be used to buy arms), the company negotiated a deal to build schools and provide social services[3]. Although the beer distributors may not have the political and economic leverage of a multinational oil company, they often have repeated dealings with the same group of combatants. As such, it may be possible to find an alternative agreement so that the company can provide schools or other social benefits but avoid making payments that will be used to fund conflicts. Finally, the guerrillas may also be aware that if these beer companies leave because of the difficult conditions they face, other companies may not fill the void.

Like the beer companies, Indupalma, a Colombian palm oil company, also faced violence and extortion by guerrilla groups. The ongoing threat to Indupalma’s employees, products and operations required the company to make substantial investments in security. As the costs associated with conflict increased, the company began to consider bankruptcy. Rather than close down or pay a security “tax”, the company completely changed is organizational structure (Rettberg, 2004). Indupalma outsourced production to some of its former employees who had formed cooperatives. Indupalma then specialized in financing production, selling equipment and seeds to the cooperatives and then buying their output and selling it in global markets. The guerrillas were much less likely to target small farmers for extortion and the decentralized structure made the central office less of a target. All in all, Indupalma’s strategy was reportedly quite effective (Rettberg, 2004).

At times, managers may not be able to find an alternative to paying the guerrillas’ “tax”. In that case, the company should think seriously about whether to continue to operate in such locations. In the case of Colombia, US companies that paid “taxes” to guerrilla groups have faced heavy fines and sanctions by the Justice Department; some of these include the Drummond Coal Company and Chiquita Brand International. Chiquita was found guilty of paying bribes to terrorist organizations that killed thousands of people in Colombia; the same type of bribes demanded of (and paid by) the
beer companies. As a result of its actions in Colombia, the US Justice Department imposed a $25m fine on Chiquita (CBS News, 2011).

We recognize that these cases are far more complex than presented here. A more in-depth discussion of these and other business-conflict interactions can be found elsewhere (Miklian, 2017a, 2017b; Miklian and Schouten, 2014; Miklian and Hoelscher, 2017; Miklian and Medina-Bickel, 2017). Our main takeaway, however, is that a peacebuilding approach is not one that requires corporations to be arbitrators of peace at the expense of profit. Rather, it is instead a “thicker” way to conceptualize and weigh risk when working in the most challenging business regions of the world (Miklian et al., 2016). We feel that such an approach is both more likely to be in the long-term interest of the firm and the local society where the firm operates.

**Conclusion and future directions**

Rethinking how businesses respond to complex global challenges requires a change in mindset. It is not surprising that to some, peacebuilding sounds like a radical approach to business. After all, the field of business strategy was heavily influenced by military strategy. The writings of Sun Tzu, a famous Chinese military strategist in the sixth century B.C., and Carl von Clausewitz, a Prussian general and military theorist, have heavily influenced how managers approach business decisions and formulate strategy (Holmes, 2010; McNeilly, 2011).

For those who live in challenging environments, particularly those in countries with the greatest external risks, the notion of peacebuilding is not at all surprising or radical. The only way to reduce violent conflict risk and address complex challenges around the world is to mitigate risk at its source. Large portions of society have a self-interest in addressing these threats, even if the actual violence is somewhat distant. As an article in this issue demonstrates, while the direct effect of violence, unrest and crime may be localized, the negative effects often extend well beyond the affected area. These threats can create a negative halo effect that deters foreign direct investments (FDI) across large portions of a country (Ramos and Ashby, 2017). This only increases the value of peace for everyone in a violence stricken region of the world.

We see two important avenues for future research in particular. First, as our understanding of how business and society interact in conflict-affected or fragile areas of operation is relatively under-developed, managers must be willing to change their mindset on how to approach risk. Rather than adopting an exclusive focus on mitigating threats (risk aversion), we suggest that managers consider the positive (value-added) approaches that might simultaneously reduce risk and improve the overall conditions for business. Second, while researchers have identified strategies for promoting peace and stability (Oetzel and Getz, 2012; Miklian, 2017c), there is still a great deal to learn about which strategies are the most effective.

Second, private sector engagement in support of the UN’s sustainable development goals (SDGs) provides a natural but heretofore under-studied way to examine business actions for peace. Goal #16 (peace, justice and strong institutions) is of particular interest, as it directly encourages deeper involvement by businesses in conflict-affected states to help deliver a peace dividend, and the UN considers the private sector to be an essential partner in this agenda. This agenda is also a major shareholder concern as over US$2tn in investments is already benchmarked to sustainable social investment, and another US$20tn is directed to do the same by large pension funds. These figures are growing rapidly, driven by a new generation of investors that demand more socially responsible companies to invest in, incorporating around 20,000 companies that are formal signatories to peace and sustainable
development initiatives around the world. Corporate engagement in the SDGs constitutes a mind-bogglingly large undertaking, but we still know little about what actually works (or even what is actually happening) as the private sector increasingly works to build peace through sustainable development in fragile and conflict contexts.

It is important to note that managers do not need to be experts in peacebuilding to adopt the strategies and tactics we have discussed here. For those companies who are open to trying alternative approaches to risk management, there are many external organizations like NGOs that can serve as valuable partners and/or resources. These organizations often have unique skillsets and knowledge of local peace and conflict dynamics that can be invaluable for the business community. NGOs often have experience mitigating conflict and can provide the skills and capabilities needed by MNEs to reduce risk. In turn, MNEs can offer guidance to NGOs on political risk, corruption and other elements of “doing business” that can help NGOs navigate private sector environments where they may be seen as the enemy. The critical point is that peacebuilding is actionable. Moreover, there are numerous self-interested reasons that managers may choose to do so.

Many of the challenges in the world today cannot be addressed by one segment of society. The public sector is stretched thin, is increasingly decentralized and, in many countries, lacks the resources and capabilities to solve problems within a country. As stable, peaceful societies are highly desirable for business (e.g. businesses pay a premium to locate in countries like Singapore where the rule of law is strong and the necessary conditions for peace are present), managers have an interest in peacebuilding and, in many cases, the power to do it.

Notes

1. In a post-conflict context, peacebuilding has been defined as identifying and supporting structures which will tend to strengthen and solidify a more peaceful society to avoid a relapse into conflict (as defined in Barnett et al., 2007).

2. The authors thank Juan Pablo Medina-Bickel for his research assistance in this section.

3. In an off-the-record meeting, a former top executive of a major oil company related this arrangement that he brokered in Angola (2007).

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Further reading


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The halo effect: violent crime and foreign direct investment

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Abstract

Purpose – The purpose of this paper is to develop and test theory regarding a geographic halo effect, whereby foreign investors draw overly broad impressions about a country based on high levels of violent crime in specific locations impacting foreign direct investment (FDI) across the country.

Design/methodology/approach – The authors analyze the impact of homicides on FDI by source country into Mexican states from 2001 to 2015. They estimate fixed effect and dynamic panel models controlling for several determinants of FDI at the state level and the potential geographic spillover of such violence from adjacent states.

Findings – The authors find robust support for the existence of a geographic halo effect caused by violent crime. The results show that the highest number of state homicides is associated with lower FDI across states.

Research limitations/implications – The research provides some evidence of the potential role of cognitive biases on FDI decisions. In addition, its focus on Latin America brings attention to an understudied region in international business research.

Practical implications – For practitioners engaged in FDI decisions, the results imply the need to be more aware of potential cognitive biases that may influence them.

Originality/value – Few papers have explored the influence of cognitive biases on FDI.

Keywords FDI, Cognition, Crime, Halo effect

Paper type Research paper

Introduction

Internationalization decisions are made under significant uncertainty (Aharoni, 1966; Johanson and Vahlne, 1977). A vast literature has analyzed the role of risk and uncertainty in foreign direct investment (FDI), going back to the incremental internationalization model and its argument that managerial risk aversion due to lack of knowledge on foreign markets discourages international expansion (Johanson and Vahlne, 1977; Eriksson et al., 1997). Other studies have analyzed how some facets of institutional risk, such as political uncertainty and expropriation risk, discourage investors (Henisz and Williamson, 1999; Kobrin, 1979). We focus on the impact of one form of institutional risk, violent organized crime, which can affect not only a firm’s assets in host locations but also the well-being and

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life of its employees. We believe that this source of severe institutional risk warrants attention because of its potential impact on foreign investors' perceptions and consequent investment decisions. Organized crime has grown to unprecedented levels globally (United Nations Office on Drugs and Crime, 2010), and “threatens peace and human security, violates human rights and undermines economic, social, cultural, political and civil development of societies around the world” (United Nations Office on Drugs and Crime, 2017).

Scholars have increasingly argued (Buckley et al., 2007; Buckley et al., 2016; Schotter and Beamish, 2013) for the need to recast the FDI decision-making processes by considering to a larger extent explanations that encompass individuals’ limits in information-processing capabilities, potential heuristics and cognitive biases. Aiming to contribute to this gap, and building on cognition (Piaget, 1985; Porac et al., 1989) and decision-making literature (Thorndike, 1920; Tversky and Kahneman, 1974), we develop and test theory on the impact of violent crime on FDI.

Extant literature examining extreme security risks in international business stemming from sources such as terrorism (Czinkota et al., 2010; Kotabe, 2005; Spich and Grosse, 2005), violent conflict (Dai, 2011; Dai et al., 2013, 2016; Oetzel and Getz, 2012; Oh and Oetzel, 2017) and organized crime (Ashby and Ramos, 2013; Brock, 1998; Daniele and Marani, 2011; Ramos and Ashby, 2013) tends to view such threats as a source of additional operating costs in the host locations characterized by them. However, we believe that the literature has largely overlooked the psychological impact of violent crime on investors’ decision-making process and consequent investment behavior. An exception is the work by Schotter and Beamish (2013), which provides evidence of the impact a “hassle factor” on managerial-level location shunning. This notion aims to capture the difficulties managers may have to live in or travel to certain places and their impact on foreign investment. Along this line of work, we explore cognitive mechanisms in the FDI decision-making process under radical conditions of institutional distress. Specifically, we propose the existence of a geographic halo effect, whereby in the face of signals of high levels of violent criminal activity in specific places within a country, foreign investors draw overly general impressions about the country, negatively impacting investment across it.

We develop and test this prediction, analyzing FDI flows into Mexican states from 2001 to 2015, a time when violent organized crime in the form of homicides experienced a sharp increase in some locations in Mexico, making global news headlines. We find support for a halo effect associated with the maximum number of homicides at the state level. Our results show that the maximum number of state homicides negatively impacts FDI across states.

This work contributes to the literature on determinants of within-country FDI by highlighting the potential role of individual-level decision-making biases in firm-level FDI decisions.

Theory development

Violent organized crime and FDI

Firms internalize activities across borders (Buckley and Casson, 1976; Buckley, 2014) for asset-exploitation (Hymer, 1976) or asset-seeking purposes (Wesson, 1993; for an in-depth discussion of FDI motives, see Benito, 2015; Cuervo-Cazurra and Narula, 2015; Meyer, 2015). Such FDI decisions are made under significant uncertainty (Aharoni, 1966) because foreign expansion brings uncertain additional costs (Hymer, 1976; Mezias, 2002, Miller and Parkhe, 2002; Zaheer, 1995).

Variation in institutional environments is a meaningful source of uncertainty in foreign expansion (Ghemawat, 2001; Henisz and Delios, 2002; Peng, 2003). Organized crime can be
an important source of institutional risk for foreign investors (Ashby and Ramos, 2013; Basile, 2001; Daniele and Marani, 2011; Hallward-Driemeier and Stewart, 2004; Ramos and Ashby, 2013). Organized crime can be defined as unlawful activity performed by organizations with no ideological goals which have durability, structure, membership, a desire for territorial control and willingness to use violence (Abadinsky, 2010). The illicit activities revolve around the supply of illegal goods or services (Schelling, 1971).

Because crime increases the cost of doing business in general (North, 1990; North et al., 2009), organized crime in foreign host locations augments costs of operating in them (Anderson and Marcoullier, 2002; Hallward-Driemeier and Stewart, 2004). Such costs stem from several potential sources. First, investors can ameliorate crime risk by allocating security budgets to protect their goods, assets and people as it is the case with other types of security threats (Czinkota et al., 2010; Kotabe, 2005; Spich and Grosse, 2005). Firms may need to incur expenses such as risk-management consulting, hiring of sophisticated security personnel and bear costs associated with shortages or delays of critical inputs in international supply chains (Branzei and Abdelnour, 2010; Czinkota, 2005), among others.

Second, foreign investors may need to incur salary and benefits premia for work in high-crime locations (The Economist, 2011). Third, foreign firms may be extorted by criminal organizations (Brock, 1998; Daniele and Marani, 2011). Finally, long-term, local demand may drop due to migration and business relocations or exits (Greenbaum et al., 2007). Consistent with the negative impact of these factors, some empirical evidence suggests that violent organized crime decreases FDI in the regions that exhibit it (Brock, 1998; Daniele and Marani, 2011; Madrazo Rojas, 2009), while others suggest that the influence can be contingent on industry (Ashby and Ramos, 2013) and source country (Ramos and Ashby, 2013). In sum, the extant literature tends to offer a notion of additional costs in host locations created by security threats, including violent crime, which foreign investors may be able to account for or manage. However, we expect the impact of violent crime on FDI decisions to be more complex.

While some sources of institutional risk can increase a foreign firm’s operating costs, violent crime can affect not only a firm’s assets, which can be destroyed, but also the well-being, safety and life of its employees in general, who can be robbed, kidnapped or murdered. We expect localized violent crime within a country to exert such a powerful effect in investors’ perception of safety of the country to ultimately bias their decision-making. This expectation first builds on the assumption that investor’s perceptions of safety are likely to matter for FDI. Consistent with this possibility, recent evidence by Schotter and Beamish (2013, p. 522) suggests, for instance, that foreign location choices made by multinational enterprises (MNEs) are influenced by how difficult managers perceived it is to travel and live in certain places, calling such deterrent a “hassle factor”. This factor includes personal safety risk perceived by managers, and it is found to be associated with location shunning. Similarly, evidence by Wagner and Westaby (2009) suggests that expatriates’ destination safety perceptions are a strong determinant in their willingness to relocate. We expect perceptions of highly hazardous conditions in particular locations within a country to influence FDI not only in such locations, as such evidence would suggest, but also elsewhere in the country. In our empirical context, for instance, the state of Chihuahua became one of the most violent places in the world in 2010 with 6,234 homicides registered (INEGI, 2017). In the same year and state, a car bomb also exploded in the streets of Ciudad Juárez, killing four people including two police officers and injuring six (Malkin, 2010; CNN, 2010), causing the government to declare a maximum alert city status (El Economista, 2010). Because of such threats, warnings for foreign travelers and US citizens living in Mexico have been issued at different points in time for different locations. While rare, foreigners and MNE
operations have also been affected by violent crime. For example, a US Consulate employee (with her spouse) and a local top executive of ArcelorMittal, a large MNE, were homicide victims of organized crime in 2010 and 2014 respectively (Cardona, 2010; Pérez and De Córdoba, 2014). Likewise, the operations of a PepsiCo subsidiary in two different states suffered firebombing attacks in 2012 by a crime syndicate (Public Radio International, 2012).

We expect such violent crimes to be highly salient in foreign investors’ perception of a country to influence investment beyond the locations that exhibit it.

Building on cognition and decision-making research, we develop this prediction next, which we label a geographic halo effect. Some indirect evidence from research on individual travel hints at this possibility. For instance, research on individual travel shows that perceived geographic distance or cognitive distance can significantly differ from actual geographic distance (Briggs, 1973; Canter and Tagg, 1975; Clark and Cadwallader, 1973; Downs and Stea, 1977; Ekman and Bratfisch, 1965; Gould and White, 1974; Mackay and Zinnes, 1981; for a review see Cook and Mc Cleary, 1983). The type of information about a particular location has a significant effect on such perception accuracy, with positive information improving accuracy in cognitive estimates (Lundberg, 1973). Furthermore, research on travel patterns lends support to the impact of perception distortion on travel choice, showing that tourism overreacts to terrorist attacks (Richter and Waugh, 1986) and violent conflict (Goodrich, 1991). Safety concerns “have the potential to become overriding factors altering the context of conventional models of decision making” (Sönmez and Graefe, 1998, p. 171). Building in such individual-level mechanisms, albeit in a different context, we theorize and predict a negative halo effect from violent crime across country regions decreasing FDI.

**Geographic halo effect of violent organized crime on FDI**

FDI decisions are cognitively complex (Aharoni, 1966; Johanson and Vahlne, 1977). As foreign investors scan the environment for potential host locations, they face substantial information asymmetry (Aharoni, 1966; Bass, McGregor, and Walters, 1977; Mariotti and Piscitello, 1995; Rivoli and Salorio, 1996). Compounding the challenges brought by information asymmetry, managers have limited information-processing capabilities (Simon, 1947). Such limitations influence foreign investment location decisions, making investors prone to use of decision-making heuristics, which can in turn lead to potential cognitive biases. Consistent with this possibility, based on their experimental work on FDI decision-making, Buckley et al. (2007, p. 1086) conclude that managers’ investment decisions are “subject to biases that they might not be aware of themselves when making those decisions”. This experimental evidence suggests the need to examine FDI decision-making processes with an approach that better incorporates manager’s perceptions of risk (Buckley et al., 2016).

We build on cognition and decision-making research to theorize on how violent crime in specific locations within a country biases the decision-making process of managers and affects FDI beyond such locations. Specifically, we propose a geographic halo effect of violent organized crime on FDI, whereby under conditions of high levels of violent crime in particular locations within a country, foreign investors are likely to develop overly broad perceptions about the country that will negatively impact investment elsewhere in country. The general notion of a halo effect goes back to Thorndike (1920), who proposed a halo effect at an individual level, which occurs when an individual’s overall impression of a subject they are judging is highly influenced by a single trait. In particular, Thorndike (1920, p. 28) noticed that when army superiors assessed their officers, the ratings of officers’ personal traits were highly correlated. He posited that such correlations were “a resultant of the real
facts, the constant error of the ‘halo’ as we may call it”. Thorndike (1920, pp. 28-29) concluded that:

[… ] even a very capable foreman, employer, teacher, or department head is unable to treat an individual as a compound of separate qualities and to assign a magnitude to each of these in independence of others.

We extend this notion to a geographic setting in FDI decision-making, where individual location traits within a country exert an overly powerful effect toward the perception of other locations. Some empirical evidence has suggested the possibility of cross-country geographic halo effects influencing investment or its determinants. For instance, evidence by Globerman et al. (2006) suggests of a positive halo effect for countries joining the European Union (EU), showing that joining the EU or the prospect of it promotes inward FDI. They argue that that potential and actual joining provides foreign investors a signal of future institutional stability. In addition, Islam et al. (2008) show that the September 11 terrorist attack on the USA increased country-level commercial risk premiums across all predominantly Muslim countries, regardless of a country’s direct association with the attack, arguing that this was caused by a socio-cultural spillover affecting managerial decision-making. Such spillover is explained to result from “alleged social and cultural linkages between various countries and attackers. Countries not directly linked to the events may be pooled together despite little or no endogenous institutional change” (Islam et al., 2008, p. 2).

We expect high levels of violent organized crime in specific locations to create an overly broad perception of high levels of crime across the country, despite the crime being constrained to specific areas. Decision makers assess the probability of an event by the ease with which instances can be brought to mind (Tversky and Kahneman, 1974). Some events can be more available than others, not because they are more frequent, but because they are easier to think about or more salient in the media, as it is the case with violent crime in the form of homicides (Combs and Slovic, 1979). In addition, loss of life due to violent crime conveys particularly vivid information. Information vividness refers to how emotionally charged the information is (Plous, 1983). Because vivid information is more available and easier to recall than pallid or abstract information, it can have a disproportionate influence on decision-making (Borgida and Nisbett, 1977; Nisbett and Ross, 1980). In addition, while foreign investors have the possibility of gathering additional information to assess more accurately each location’s specific risk, organizational decision makers may not necessarily examine comprehensively all alternatives in a decision (Fredrickson and Mitchell, 1984). Instead, because of their limited information-processing capability, managers may resort to cognitive shortcuts or heuristics (Simon, 1947), relying on informational cues (Hambrick, 1982). Supporting the reliance on heuristics, evidence from Mudambi and Navarra (2003) on FDI in Italy suggests a location short-listing heuristic, in which decision makers appear to first choose a set of locations based on a set of factors and subsequently choose from this set based on additional factors. In addition, experimental evidence from Buckley et al. (2007) suggests a similar process, in which managers first establish a set of potential investment destinations from which they subsequently choose, but noting again variation in the factors considered across stages. Such heuristics aid managers given their limited information-processing capabilities (Simon, 1947). However, such decision-making shortcuts can lead to cognitive biases (Tversky and Kahneman, 1974). The inclination to develop mental maps (Porac et al., 1989) driven by individuals’ tendency to categorize (Piaget, 1985) ultimately drives investors to draw overly general geographic abstractions. Thus, we expect the highest level of local crime within the country to become both overly salient and vivid in the
mind of potential foreign investors. As a result, we expect such investors to react to such localized violent crime by overlooking within-country geographic variation, instead assuming that high violence in one area may be a representative characteristic of the entire country, thereby reducing their investment across the country. In other words, we expect high levels of localized violent crime to ultimately bias foreign investor’s perceptions of reality of a country. We want to highlight the theoretical distinction between the geographic halo effect negatively impacting investment across regions in the host country in general and focalized concerns of geographic spillover of crime across adjacent regions when one is characterized by high levels of violence[2]. We summarize this in the following hypothesis:

\[ \text{H1. The higher the maximum level of violent crime in any location in the country the lower the level of investment across locations in the country.} \]

Methodology
To test our hypothesis, we examine FDI from 155 countries or territories (e.g. Puerto Rico) into the 32 Mexican states from 2001 to 2015. A stringent test of our prediction requires a large country with significant within-country variation in violent criminal activity and FDI flows. Otherwise, in a small country, it would be difficult to distinguish a halo effect from the threat of geographic spillover of violent crime from nearby places. Mexico offers such conditions. First, Mexico is the 14th largest country in the world geographically. It has 1,943,945 km\(^2\) of land area, with 4,380 km of land boundaries and 9,330 km of coastline (Central Intelligence Agency, 2017). From its farthest land points, Mexico’s extension is approximately 3,200 km. Second, there is significant variation in violent crime within the country. For instance, the number of homicides varied from 16 to 6,234 across states during our period of analysis.

The geographic unit of analysis within the host country is states. While FDI data are only available by such unit of analysis, potential institutional variation across states in crime-deterrence policy and rule of law would lend support for this choice. The dependent variable is net FDI flows into state \(i\) by country \(j\) in year \(t\) sourced from Secretaría de Economía (2016). It is measured in 2014 constant Mexican pesos (MXN). Net flows of FDI data at the source country-state level aggregate three categories that comprised new investment (which includes inflows and outflows), intracompany flows and reinvestment[3]. We do not transform them by taking their natural log because net flows can be negative. Because we lack firm-level data due to Mexico’s FDI disclosure policies aimed to maintain firm anonymity, we are unable to develop controls for firm-level factors which may lower the impact of violent crime on the halo effect we document. Prior firm-level experience in countries with high levels of violent crime or within our country setting are two such factors. For instance, recent research on MNE response to violent conflict (Oh and Oetzel, 2017) and war (Dai et al., 2016) lends support to firm-level experience as a coping mechanism. In addition, we do not control for industry effects because data are not available by source country and industry for our sample period. Furthermore, because FDI data in Mexico are only disclosed at the state level, we are unable to test the robustness of our results employing a different geographic unit of analysis such as metropolitan areas or cities.

Measuring violent crime in countries with unreliable judicial system, such as Mexico, is challenging (Fajnzylber et al., 2002). First, categorizing crime as violent versus non-violent represents particular challenges. For instance, criminals may bribe corrupt law enforcement entities or threaten judges to alter the classification of a criminal act to lower the severity of the punishment (Ramos and Ashby, 2013), as it could occur with intentional and unintentional homicides. Second, data on homicides published by different government
sources can exhibit some inconsistencies (Heinle et al., 2016, p. 8). Taking this into consideration, our analysis is based on total homicides tracked by Instituto Nacional de Estadística y Geografía (INEGI). According to Heinle et al. (2016, p. 43):

> While all datasets have limitations, the most consistent, complete, and reliable source of information in Mexico is the autonomous government statistics agency, INEGI, which provides data on death by homicide [...].

The bulk of this violent criminal activity is caused by criminal organizations (Heinle et al., 2016, p. 9).

While our theoretical focus is on violent crime in general, we are unable to explore the impact of other forms of violent crime. Because of impunity in Mexico and potential retaliation to victims, other violent crimes such as kidnappings, extortions or robberies are likely to be underreported (Amnesty International, 2007; Watson and Olson, 2010). Prior research in our setting has followed a similar approach (Ashby and Ramos, 2013; Ramos and Ashby, 2013).

To be consistent with our theoretical framing which highlights that events are more available for decision-making not because they are more frequent but because they are more salient, as it is the case with homicides (Combs and Slovic, 1979; for a review see Plous, 1993), we avoid using normalized violent crime data (e.g. homicides per capita). This choice is also consistent with the manner in which homicide data are often reported in the media. Accordingly, first, CrimeHalo\(_{t-1}\) consists of the maximum number of homicides in any Mexican state the year prior to investment. Second, Crime\(_{i,t-1}\) is based on the number of homicides in each state \(i\) in the year prior to the investment. Third, CrimeSpillover\(_{i,t-1}\) controls for the maximum number of homicides in any state geographically contiguous to state \(i\) the year prior to investment, as we want to distinguish the geographic halo effect from the impact of fear of geographic spillover of crime to a focal state from a contiguous one. Fourth, SameState\(_{i,t-1}\) is a dummy variable equal to 1 to flag cases in which states are contiguous to the state with highest crime (CrimeSpillover\(_{i,t-1}\) = CrimeHalo\(_{t-1}\)) to better isolate the effect of the halo variable. Without its inclusion, CrimeHalo\(_{t-1}\) could pick up the impact of crime from neighboring states rather than the halo effect only. Because changes at low levels of crime may have a bigger impact on investors’ perceptions than increments at high levels of crime, we take the natural log of all crime-related variables[4]. Last, while controlling for the role of national crime would be ideal, it is difficult in our setting due to its high collinearity with our halo variable ($r = 0.83$).

In addition to the crime-based variables, we include various host-region characteristics traditionally used to capture market size, production costs and skills (Cuervo-Cazurra, 2006; Wei, 2000). Population\(_{i,t-1}\) is the state population in 100,000s. Wages\(_{i,t-1}\) is the mean hourly wages of employed workers in a state the year prior to investment in 2014 constant pesos. Schooling\(_{i,t-1}\) is the mean years of schooling of the labor force in a state the year prior to investment. The source from these controls is also INEGI. We also take their natural logs following the same logic used for the crime variables. We include year affects across all models to account for potential year-to-year structural change, which could be caused by country-level policy changes (Young et al., 2014), or country-wide institutional conditions.

Following Bettis et al.’s (2014, pp. 950-951) suggestion on panel data analysis, we start with a fixed effect panel estimation and then move to dynamic panel estimation. Both types of estimation aim to account for the familiarity that investors from a given country may have investing into a given state[5]. The unit of analysis in all models is country-state-year. Our specific approach is as follows. First, we estimate unbalanced panel models with country-state fixed effects for any investment that occurred during our sample period. These
models include specifications with and without lagged FDI as an explanatory valuable. Second, because the introduction of a lagged dependent variable in the fixed effect models creates dynamic panel bias (Nickell, 1981), we also estimate system Generalized Method of Moments (GMM) models to account for it. However, although GMM techniques can improve the estimation of models with a lagged dependent variable as an explanatory variable, Roodman (2009a) demonstrates that they also can lead to an even larger bias in the coefficient estimates from overidentification if the number of instruments is not constrained. Roodman (2009b) also shows that the fixed effects coefficient estimate of a lagged dependent variable tends to be downward biased, whereas a naïve (underspecified) ordinary least squares (OLS) coefficient estimate of it tends to be upward biased, and that good estimates of the true parameter should lie in or near the range between these values. Hence, we also rely on such OLS and fixed effect coefficient estimators to in turn assess our GMM results. In sum, because both the fixed effect panel estimator with a lagged dependent variable and the GMM estimator have their limitations, we assess their results collectively.

Figure 1 plots total FDI in 2014 constant dollars and the maximum number of homicides in a state during our period of analysis. Total FDI drops in 2008 and 2009 as the maximum number of homicides begins to show a significant increase. However, in later years, the relationship is less clear. Thus, a halo effect is not easily evident across the entire period of analysis. In the next section, we discuss the results from our empirical analysis and provide additional methodological details.

**Results and discussion**

Table I presents the descriptive statistics and correlations for our variables. The sample period for the dependent variable ranges from 2001 to 2015. Since the explanatory variables...
<table>
<thead>
<tr>
<th>Variable name</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. FDI_{ij,t} (millions of constant pesos)</td>
<td>184.21</td>
<td>1,646.54</td>
<td>-38,370.11</td>
<td>118,466.40</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. FDI_{ij,t}/C0</td>
<td>182.47</td>
<td>1,649.53</td>
<td>-38,370.11</td>
<td>118,466.40</td>
<td>0.691*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Ln (CrimeHalo_{t-1})</td>
<td>7.8</td>
<td>0.41</td>
<td>7.11</td>
<td>8.74</td>
<td>-0.01</td>
<td>-0.003</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ln (Crime_{t-1})</td>
<td>5.57</td>
<td>1.21</td>
<td>2.77</td>
<td>8.74</td>
<td>0.061*</td>
<td>0.06*</td>
<td>0.26*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Ln (CrimeSpillover_{t-1})</td>
<td>6.59</td>
<td>1.058</td>
<td>3.61</td>
<td>8.74</td>
<td>0.03*</td>
<td>0.03*</td>
<td>0.31*</td>
<td>0.48*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Same State_{t-1}</td>
<td>0.3</td>
<td>0.46</td>
<td>0</td>
<td>1</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.11*</td>
<td>0.13*</td>
<td>0.31*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Ln (Wages_{t-1})</td>
<td>3.5</td>
<td>0.24</td>
<td>2.64</td>
<td>4.07</td>
<td>0.05*</td>
<td>0.05*</td>
<td>0.04*</td>
<td>0.04*</td>
<td>-0.11*</td>
<td>-0.09*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Ln (Population_{t-1}) (in 100,000s)</td>
<td>3.32</td>
<td>0.81</td>
<td>1.46</td>
<td>5.11</td>
<td>0.07*</td>
<td>0.07*</td>
<td>0.06*</td>
<td>0.79*</td>
<td>0.35*</td>
<td>0.12*</td>
<td>-0.04*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9. Ln (Schooling_{t-1})</td>
<td>2.17</td>
<td>0.13</td>
<td>1.69</td>
<td>2.45</td>
<td>0.05*</td>
<td>0.05*</td>
<td>0.33*</td>
<td>0.15*</td>
<td>0.16*</td>
<td>0.02*</td>
<td>0.79*</td>
<td>0.03*</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: Coefficients are Pearson correlations. The asterisks indicate statistical significance at the 1% level.
are lagged, their years range from 2000 to 2014. Recall that $F_{ij,t}$ is measured in millions of 2014 constant pesos. The highest FDI flow occurred in 2001 with approximately 119bn pesos from the USA into Distrito Federal. The highest divestment was 38bn pesos out of Distrito Federal from Spain in 2012. In most years in the sample, the state of Mexico had the highest number of homicides. The state of Chihuahua had the highest number of homicides in four of the years, between 2008 and 2011. These murders peaked in 2010 where there were 6,234 of them in the state of Chihuahua. The correlations among variables show no signs of concern overall. The correlation between FDI and lagged FDI is very high and significant, suggesting strong propensity of FDI over time. The correlation between the halo variable and FDI is not high, suggesting that the halo effect is not very evident. Wages and schooling are correlated as one would expect. Population and crime also exhibit a high correlation, showing that more populated states tend to have more homicides.

Table II presents results for specifications that control for country-state fixed effects and year effects. The standard errors are clustered by country–state pairs. The first three models show the fixed effect regressions with the lagged dependent variable, while the last three show the results without the lagged dependent variable. Within each group, we report the most specified models which include all controls (3 and 6), models which exclude state controls (2 and 5) and models which in addition exclude the state crime and crime spillover variables to analyze the sensitivity of our estimates (1 and 4). The lagged dependent variable comes up highly significant statistically with a coefficient of 0.18 suggesting 180,000 additional pesos in investment in year $t$ for every million pesos of investment in year $t-1$. This confirms the strong country-state propensity of FDI over time, suggesting that the inclusion of lagged FDI improves model specification. However, this comes at the expense of potentially biased coefficients (Nickell, 1981), which we further discuss below.

In all six models, CrimeHalo$_{i,t-1}$ exhibits a negative coefficient. The coefficient is statistically significant in five of the six specifications including the most comprehensive one. The estimates from the regressions with the lagged dependent variable suggest that a 1 per cent increase in crime in the state with maximum crime in a given year is associated with a reduction between 545m and 618m pesos into any given state by any given country. This is equivalent to between US$41m and US$46m. The estimates from regressions without the lagged dependent variable indicate a reduction between 339m and 413m pesos (US$26m and US$31m).

These effect sizes suggest that increases in homicides in the most violent state have a non-trivial economic impact.

The results suggest that the maximum level of homicides in any state decreases FDI flows across states in the country, lending initial support to our prediction. Such a halo effect has an impact on state FDI controlling for the impact of state crime and geographic spillover from contiguous states. Crime$_{i,t-1}$ yields a small and statistically insignificant impact. While somewhat puzzling, this is not inconsistent with results from prior research in our empirical setting (Ashby and Ramos, 2013, p. 86). The coefficient of CrimeSpillover$_{i,t-1}$ is negative but not statistically significant. Recall that Same State$_{i,t-1}$ is a dummy variable included to better isolate the impact of the halo variable from the geographic spillover variable. Its lack of significance suggests that there should be little concern in terms of such confounding.

The remaining control variables do not appear to have a significant relationship with FDI for the most part. This is likely caused by the inclusion of the large set of country-state fixed effects and lagged FDI. The exception is Schooling$_{i,t-1}$. A 1 per cent increase in state average years of schooling is associated with an increase between 1.4bn and 1.7bn pesos (US$106m to US$128m). As one would expect, Population$_{i,t-1}$ yields a positive coefficient, while Wages$_{i,t-1}$ yields a negative coefficient. All in all, these findings provide initial support for
<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Coefficient estimates (standard errors)</th>
</tr>
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<tbody>
<tr>
<td>FDI$_{ij,t}$ (millions of pesos)</td>
<td></td>
</tr>
<tr>
<td>Explanatory variables</td>
<td>(1)</td>
</tr>
<tr>
<td>FDI$_{ij,t-1}$</td>
<td>0.184*** (0.0416)</td>
</tr>
<tr>
<td>Ln (CrimeHalo$_{i,t}$)</td>
<td>–618.3** (251.9)</td>
</tr>
<tr>
<td>Ln (Crime$_{i,t-1}$)</td>
<td>–</td>
</tr>
<tr>
<td>Ln (CrimeSpillover$_{i,t-1}$)</td>
<td>–</td>
</tr>
<tr>
<td>Same State$_{i,t-1}$</td>
<td>–</td>
</tr>
<tr>
<td>Ln (Wages$_{i,t-1}$)</td>
<td>–</td>
</tr>
<tr>
<td>Ln (Population$_{i,t}$)</td>
<td>(in 100,000s)</td>
</tr>
<tr>
<td>Ln (Schooling$_{i,t-1}$)</td>
<td>–</td>
</tr>
<tr>
<td>Constant</td>
<td>5,107.3* (2015)</td>
</tr>
<tr>
<td>N</td>
<td>31,050</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.035</td>
</tr>
</tbody>
</table>

Notes: All regressions control for country-state fixed effects and year fixed effects. Standard errors in parentheses are clustered by source country and host state pairs. Statistical significance as follows: ***1%; **5%; *10%.
the predicted halo effect. However, because of the potential aforementioned bias produced by the inclusion of the lagged dependent variable as an explanatory variable, we proceed to discuss our results with system GMM estimation which aims to account for it. We also discuss the limitations of GMM estimation\[6\].

We rely on the system GMM estimator, as it uses more information relative to the difference GMM alternative (Roodman, 2009a, 2009b). We employ the xtabond2 command in Stata (Roodman, 2009b). Our baseline model is set with all variables except the year dummies as endogenous for a stringent test, forward orthogonal deviations (Hayakawa, 2009) and two-step estimation with the Windmeijer (2005) finite-sample correction to standard errors. We estimate an additional model constraining instrument count by limiting the lags for each instrumenting variable to one period. This choice is consistent with the advice in Roodman (2009b, p. 148) discussing some choices available to cope with instrument proliferation: “The first is to use only certain lags instead of all available lags for instruments”. Thus, these modeling variations are consistent with the advice in Roodman (2009b). Levine et al. (2000) follow a similar approach.

Table III shows the results of these two system GMM regressions (Models 7 and 8). The last two columns in this table show the benchmark coefficients for the lagged dependent variable to assess these GMM specifications (Model 3 in the last column is also Model 3 in Table II). The first model places no constraints on the number of instruments. The number of instruments estimated is 504. The coefficient for the lagged dependent variable is very close to what the basic OLS estimator yields, suggesting the possibility of significant remaining bias. In addition, while the coefficient for the halo

<table>
<thead>
<tr>
<th>Dependent variable: $FDI_{it}$ (millions of pesos)</th>
<th>GMM (full instruments)</th>
<th>GMM (limited lags)</th>
<th>Naive OLS</th>
<th>Fixed effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient estimates (standard errors)</td>
<td>Upper bound</td>
<td>Lower bound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$FDI_{it-1}$</td>
<td>0.617*** (0.0677)</td>
<td>0.476*** (0.0672)</td>
<td>0.675*** (0.0515)</td>
<td>0.183*** (0.0412)</td>
</tr>
<tr>
<td>$\ln (CrimeHalo_{it-1})$</td>
<td>-99.29** (31.78)</td>
<td>-31.69* (13.98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\ln (Crime_{it-1})$</td>
<td>-3.055 (11.14)</td>
<td>-1.094 (3.704)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\ln (CrimeSpillover_{it-1})$</td>
<td>1.05 (6.44)</td>
<td>-0.946 (2.852)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$Same State_{it-1}$</td>
<td>8.688 (29.89)</td>
<td>-2.804 (4.832)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\ln (Wages_{it-1})$</td>
<td>55.96 (57.39)</td>
<td>-4.414 (24.81)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\ln (Population_{it-1}) (in 100,000s)$</td>
<td>57.16** (19.64)</td>
<td>17.02* (7.492)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\ln (Schooling_{it-1})$</td>
<td>267.8* (129.6)</td>
<td>104.5 (65.88)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>31,050</td>
<td>31,050</td>
<td>31,050</td>
<td>31,050</td>
</tr>
<tr>
<td>Number of Instruments</td>
<td>504</td>
<td>190</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR(2) Test p-value (Null: No autocorrelation)</td>
<td>0.93</td>
<td>0.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hansen Test p-value (Null: Joint validity of instruments)</td>
<td>0.00</td>
<td>0.18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table III. GMM regression results

Notes: All regressions control for year fixed effects. GMM regressions utilize the two-step estimator with Windmeijer standard errors. Statistical significance as follows: ***1%; **5%; *10%
effect is negative and statistically significant, the $p$-value for the Hansen test rejects the null hypothesis of joint validity of instruments. Roodman (2009a, p. 41) also warns of Hansen tests which yield $p$-values close to 1, since such test weakens under instrument proliferation. Therefore, a $p$-value for a Hansen test that suggests reliable joint validity of instruments should not be close to 0 or 1. The second model (8) constrains the set of instruments to 190. The coefficient of the lagged dependent variable is close to the middle of the range between the benchmark coefficients estimated with the OLS and fixed effects estimator, suggesting a lower bias than that of the full instrument model. The coefficient for CrimeHalot-1 remains statistically significant and negative in sign. This specification yields a $p$-value for the Hansen test which fails to reject the null hypothesis of joint instrument validity. The Arellano-Bond test for second-order autocorrelation fails to reject the null hypothesis of no autocorrelation[7]. Roodman (2009a, p. 149) suggests to examine the behavior of the coefficients in addition to the Hansen test results. The coefficients in this model for non-focal variables have face validity in light of theoretical expectations and the prior fixed effect results, where the coefficient of population was also positive and statistically significant. In terms of economic significance, the coefficient for the halo variable suggests that just a 1 per cent increase in homicides in the state with the maximum number of homicides lowers FDI into any given state by any given country by roughly $2.4m the following year. Looking jointly at the results from the most specified fixed effects estimation and the instrument-constrained GMM estimation, the impact of a 1 per cent increase in homicides in the state with maximum homicides should lie between US$41m and US $2.4m. Our overall results suggest statistical support for our prediction. They also suggest that the economic impact of the halo effect is not trivial.

We conducted additional tests to examine the robustness of our results. First, we further examine whether our results are not driven by institutional weakness at the country level. There are several reasons which suggest that this is not the case. As noted, there is meaningful variation in crime across states. In addition, because the fixed effect specifications include state-country effects and our independent variables are mostly based on state measures, we expect that countrywide institutional weakness to be picked up by the year effects. To verify this, we estimated additional models including a country-level measure of rule of law to proxy the degree of institutional weakness at the country level. The coefficient sign of rule of law is highly sensitive to the inclusion of the year effects. In addition, in our GMM estimation the rule of law variable is dropped. These additional analyses suggest that the halo effect we document is likely not driven by country-wide institutional weakness. Second, we examine the sensitivity of our findings to the drastic increase in homicides in years 2008 and 2009. We estimated fixed effects models for two periods, the first from 2001 and 2007 and the second from 2008 to 2015. Our results are robust to this split. All in all, we believe that our results provide some supportive evidence for our prediction. In the next section we discuss the implications of our findings.

Conclusions
This research makes several contributions to the literature. First, it examines FDI decisions as entailing a complex cognitive process by boundedly rational decision makers facing significant uncertainty, highlighting the role of potential biases in investment decisions (Aharoni, 1966; Buckley et al., 2007). By doing so, it contributes to a growing research agenda which posits that individual cognitive processes can drive FDI decision in a non-trivial manner. Such emphasis can yield a better understanding
of FDI decisions (Buckley et al., 2016). Second, by examining violent crime as a source of risk, it contributes to a nascent body of work which aims to unpack different sources of country risk involving security threats such as violent conflict (Dai, 2011; Dai et al., 2013; Oetzel and Getz, 2012; Oh and Oetzel, 2017), and terrorism (Islam et al., 2008; Oh and Oetzel, 2011) and their impact on FDI decisions. We believe that the psychological impact of violence in potential host locations is likely to elicit responses by foreign investors which have not been fully explored in the literature (Schotter and Beamish, 2013). Moreover, because the violent crime in our setting is largely driven by organized crime, our work contributes to a better understanding of its impact on FDI decisions. We believe that the prevalence of organized crime is an institutional facet which warrants further exploration, given that organized crime has reached previously unseen levels (United Nations Office on Drugs and Crime, 2010). Third, our work brings a needed within-country perspective to the literature. Although there can be significant institutional variation not only between countries but also within them, research has largely focused on the latter (Dai et al., 2013, 2016; Meyer and Nguyen, 2005; Ramos and Ashby, 2013 are some exceptions). Fourth, our focus on Mexico sheds light on Latin America as an empirical context, a region which had been understudied in international business research (Martinez and Kalliny, 2012).

Our work also has managerial implications. By contributing to the aforementioned literature which emphasizes potential individual-level drivers of FDI, it suggests that individual-level cognitive biases can influence firm-level investment behavior, seemingly overriding firm-level decision-making processes and monitoring mechanisms that are supposed to ameliorate their likelihood (Buckley et al., 2016). Decision makers in charge of FDI decisions should be aware of such potential biases.

Finally, our analysis has limitations beyond the aforementioned measurement challenges. First, we hope that our results provide some initial evidence of psychological processes that can influence investment behavior. However, understanding investors’ decision-making process is a challenging task (Buckley et al., 2016) that is likely to require methodological designs involving surveys or experiments which we do not conduct. Second, while our choice of one host country helps us avoid cross-country data comparability issues, it comes at the expense of generalizability. Future research could test, for instance, the likelihood of such halo effect in larger or smaller countries. Finally, while we expect the geographic halo effect to occur via the dissemination of information on violent crime through a myriad of news sources, we do not examine such context due to the complexity it would entail.

Notes

1. In addition, business travel publications (McCormack, 1996) and government websites tend to draw attention to personal safety as a salient factor.

2. We control for this possibility empirically through research design by testing in geographically large country and by including a control for the likelihood of geographic spillover of crime between neighboring locations.

3. We are unable to analyze type of investment by source country because those data are not available.

4. We thank an anonymous reviewer for this suggestion.

5. We thank another anonymous reviewer for this suggestion.
6. We do not discuss the R² of our fixed effects estimators (xtreg in Stata) because its calculation overlooks the fixed effects (Gould, 2017).

7. The test for first-order autocorrelation is irrelevant in this context, as the GMM estimator generates first-order autocorrelation by design (Roodman, 2009b).

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Basile, R. (2001), *The Locational Determinants of Foreign-Owned Manufacturing Plants in Italy: The Role of the South*, ISAE.


Further reading

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Strategic motives, institutional environments, and firm’s FDI ownership

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Abstract
Purpose – The study conceptualizes how firms’ strategic motives interact with the heterogeneity of host country institutional environments in determining the subsidiary ownership. The author hypothesizes and tests two interaction effects. The study found that firms with market-seeking motives are more affected by the heterogeneity of host country institutional environments, while firms with resource-seeking motives are less affected by the heterogeneity. The empirical findings are based on a sample of overseas subsidiaries reported in the annual reports of listed firms in China.

Design/methodology/approach – In this study, an empirical investigation was conducted using a sample of subsidiaries of listed firms in China. The data were compiled from 2012 annual reports of listed firms in China. The sample consists of 2,270 subsidiaries of these firms.

Findings – The study conceptualizes that firms with market-seeking motives and resource-seeking motives are influenced differently by the heterogeneity of host country institutional environments in determining their subsidiary ownership. We hypothesize two interaction effects. Firms with market-seeking motives are more subject to the heterogeneity of host country institutional environments in determining their FDI ownership level. In contrast, firms with resource-seeking motives are less subject to this heterogeneity. The findings largely supported the study’s hypotheses.

Originality/value – This study fills an important gap in the literature by incorporating the interaction between strategic motives and host country environments in the analysis of subsidiary ownership. The findings of the study suggest that firms with a market-seeking motive are more particular about the host country institutional environments. They will acquire a high level of ownership in host countries with attractive institutional environments. In contrast, firms with resource-seeking motive are less concerned with the host country institutional environments. Their decision on subsidiary ownership is less affected by the variance in host country institutional environments. This study adds to the stream of studies that have examined outward investments of firms from emerging economies, particularly the outward expansion of Chinese firms with different strategic motives.

Keywords Institutional environment, Ownership, Outward foreign direct investment, Strategic motives

Paper type Research paper

Introduction
There are established literature studies on firms’ ownership strategies for subsidiaries outside their home country (Brouthers, 2002; Dhanaraj and Beamish, 2004; Gatignon and Anderson, 1988; Hennart, 2009; Pan et al., 2014). The main proposition is that firms prefer a high level of ownership in subsidiaries located in attractive and less-risky foreign countries (Chen, 2008; Chan, Isobe, and Makino, 2008; Dhanaraj and Beamish, 2009; Dunning, 2009; Hennart, 2009; Shaver, 1998). Economists examine the extent of openness of host countries to trade (Abiad and Mody, 2005). Management scholars investigate the impact of institutional environments such as political, economic and social aspects on firms’ outward investment (Delios and Beamish, 1999; Dhanaraj and Beamish, 2009; Dunning, 2009;
Henisz, 2000; Kobrin, 1979). Investing in countries with attractive institutional environments entails a lower transaction costs, and firms are more likely to have a higher ownership for subsidiaries located in these countries (Brouthers, 2002; Delios and Beamish, 1999; Gatignon and Anderson 1988). Firms’ investment in non-redeployable assets in these countries is less subject to the undesirable consequences arising from institutional environments (Dhanaraj and Beamish, 2009; Delios and Beamish, 1999; Pan et al., 2014). Therefore, it is established that the host country’s institutional environments have a significant impact on overseas subsidiaries’ ownership strategy.

One stream of study has examined the strategic motives of firms in expanding into foreign countries (Brouthers and Hennart, 2007). Firms’ choice of entry mode and ownership is endogenous to the motivation of the investment (Gil et al., 2006). This explains why firms may choose different modes of entry even under the same market conditions of a given host country (Aulakh and Kotabe, 1997; Shaver, 1998; Chan, Isobe, and Makino, 2008; Gil et al., 2006; Nisar et al., 2012). There are different strategic motives, such as market-seeking, resource-seeking, efficiency-seeking and client-following (Gil et al., 2006; Nisar et al., 2012). When studying firms from emerging economies, researchers have identified that the outward foreign direct investment (FDI) of Chinese firms has unique strategic motives and is subject to different home and host country institutional environments (Child and Rodrigues, 2005; Cui and Jiang, 2012; Pan et al., 2014; Wang et al., 2012). Firms from emerging economies are more likely to be motivated more by market-seeking, knowledge-seeking and natural resource-seeking and less by efficiency-seeking, as they often have established more cost competitiveness in their home market (Buckley et al., 2007; Luo and Tung, 2007; Morck et al., 2008).

The literature suggests that firms with market-seeking motives are more likely to have a high level of subsidiary ownership for two reasons (Brouthers and Hennart, 2007; Erramilli, 1990; Gil et al., 2006; Nisar et al., 2012). First, these firms possess ownership advantages and need to protect their proprietary competitive advantages through a high ownership in the subsidiary (Filatotchev, Strange, Piesse, and Lien, 2007; Gatignon and Anderson, 1988; Hennart, 2009). Second, these firms want to benefit from leveraging such advantages in the overseas markets as fully as possible through a high subsidiary ownership and ownership-based profit sharing (Brouthers, 2002; Pan, 1996). Firms with resource-seeking motives are going after the resources they lack. For firms going after the natural resources, the likelihood is high that firms go for a low subsidiary ownership. Equity ownership in natural resources can be expensive and potential return less certain (Bass and Chakrabarty, 2014). Furthermore, acquisition of natural resources by firms from emerging economies often meets with protectionist and/or nationalistic resistance from host country local institutions (Buckley et al., 2007).

The existing literature has not incorporated the heterogeneity of host country institutional environments in the study of strategic motives and subsidiary ownership. As of March 2013, World Trade Organization recognized 159 member countries and 25 observer countries. There is a huge variance in the attractiveness of institutional environments across these countries. In other words, we know that host country institutional environments play an important role (Child and Rodrigues, 2005; Cui and Jiang, 2012; Pan et al., 2014; Shaver, 1998; Wang et al., 2012). We also know that firm’s strategic motives are endogenous to entry mode decisions (Dunning, 2009; Buckley et al., 2007; Ramasamy et al., 2012; Roth and Morrison, 1992). We do not know if the heterogeneity of host country institutional environments moderates firms’ strategic motives in determining the entry modes and subsidiary ownership. In other words, we may predict that market-seeking firms prefer high level of subsidiary ownership, but we do not know if such a preference varies across
different market conditions in different host countries. We do not know if resource-seeking firms prefer the same low-level subsidiary ownership regardless of host country institutional environments. This is an important gap to fill, partly because of the rapid rise of firms from emerging economies with unique strategic motives in the global FDI activities.

In this study, we will focus on two major strategic motivations of firms from emerging economies. We conceptualize that firms with market-seeking motives and resource-seeking motives are influenced differently by the heterogeneity of host country institutional environments in determining their subsidiary ownership. We hypothesize two interaction effects. Firms with market-seeking motives are more subject to the heterogeneity of host country institutional environments in determining their FDI ownership level. In contrast, firms with resource-seeking motives are less subject to this heterogeneity. We further go beyond the aggregate measure of host country institutional environments and examine the specific components of institutional environments. We hypothesize that firms with market-seeking motives pay attention to the regulatory efficiency in the host country, while firms with resource-seeking motives pay attention to the power government in the host country. Empirically, we compiled data from 2012 annual reports of listed firms in China. Our sample consists of 2,270 subsidiaries of these firms. The findings largely supported our hypotheses.

This study has noteworthy contributions. Conceptually, it fills an important gap in the literature by incorporating the interaction between strategic motives and host country environments in the analysis of subsidiary ownership (Chen, 2008; Pan et al, 2014). Our findings suggest that firms with market-seeking motives are more particular about the host country institutional environments. They will acquire a high level of ownership in host countries with attractive institutional environments. In contrast, firms with resource-seeking motive are less concerned with the host country institutional environments. Their decision on subsidiary ownership is less affected by the variance in host country institutional environments. This study offers a more thorough understanding of firms’ foreign entry and ownership decisions. Furthermore, this study adds to the stream of studies that have contributed to the better understanding of the rapid outward investments of Chinese firms (Morck et al, 2008; Peng et al, 2008; Shinkle et al, 2013).

Conceptualization

There is a sizeable literature on the relationship between host country institutional environments and firms’ FDI activities (Chan et al, 2008; Dhanaraj and Beamish, 2009; Dunning, 2009; Shaver, 1998). Institutions are defined as human-devised rules and regulations that govern human activities (North, 1990). It consists of formal rules, such as regulations and laws, and informal rules, such as culture, values and norms (Scott, 1995). Each country has its own unique institutional environments. Deficiencies in knowledge regarding local institutional environments constitute a significant competitive disadvantage for multinational firms wishing to do business there (Hymer, 1976). Drawing on the three pillars of institutional environment by Scott (1995), Kostova and Zaheer (1999) propose that institutional environments compose of regulatory, cognitive and normative domains. The literature on institutional environments has provided the theoretical underpinnings for measuring and tracking of institutional environments of various countries in recent years by various organizations. For example, the index of economic freedom from the Heritage Foundation and Wall Street Journal tracks ten indicators grouped into four major components of rule of law, limited government, regulatory efficiency and open markets (Cebula and Clark, 2012). The attractiveness of institutional environments rests on the extent of development in rule of law, limited government, regulatory efficiency and open markets in a given country. When firms invest in a foreign host country, firms pay attention
to the heterogeneity of institutional environments and formulate their strategies accordingly to achieve their strategic motives.

The literature of strategic motives suggests that there are three key motives for firms’ FDI activities, namely, market-seeking, resource-seeking and efficiency-seeking (Dunning, 2009; Buckley et al., 2007; Luo and Tung, 2007; Gil et al., 2006; Nisar et al., 2012). Market-seeking firms invest in a foreign country to market their products and services in that country. Often it is to overcome trade-related barriers that firms establish an operation in the local market (Peng et al., 2008). Firms pursuing resource-seeking motives go after the resources that they lack. Resources can be raw materials and energy resources, and these can also be knowledge resources, such as technology, manufacturing and management know-how. Firms pursuing efficiency-seeking motives often incur high costs of operation in their home market, and move whole or part of their operation to a foreign location with lower costs of operation.

Many empirical studies have examined strategic motives in the research of entry modes (Brouthers and Hennart, 2007; Erramilli, 1990). Kim and Hwang and Rajan and Pangarkar found that both global synergies and global strategic motives helped explain mode choice. Aulakh and Kotabe (1997) found that global integration strategy and differentiation strategy were significant predictors of mode choice, while market position strategy was not. Hennart and Park looked at exchange-of-threats and follow-the-leader strategies, but found only partial support for the follow-the-leader strategy. Domke-Damonte found that degree of global strategy was not directly related to mode choice but had an indirect effect on entry mode choice. Erramilli and Rao found that client following strategy tended to be associated with significantly different mode types compared to market-seeking strategy. Shi et al. examined export orientation (low-cost labor seeking) and market-seeking strategies, whereas Tsai and Cheng looked at the business strategies of expanding sales and fighting competitors versus acquiring market knowledge and strengthening relationships with existing customers. Gil et al., (2006) looked at the impact of market-seeking, resource-seeking and client-following strategies on international entry mode choice. They found that the business strategies of market-seeking and resource-seeking significantly influenced entry mode choice, but the client-following strategy was not related to mode choice. Nisar et al. (2012) examined the motives of SMEs in Norway and found that cooperative modes of entry were more linked with motives of market development and technology development, while wholly owned mode of entry was motivated by the control of proprietary resources. One important gap is that these studies have not examined directly how firms’ strategic motives interact with the heterogeneity of foreign host country institutional environments. This study is to fill this gap.

Buckley et al. (2007) point out that firms from emerging economies are less motivated by efficiency-seeking motives, as these firms often enjoy cost advantages in their home market instead of in foreign locations. Firms from emerging economies are primarily motivated by either market-seeking or resource-seeking motives (Luo and Tung, 2007; Wang et al., 2012). We will focus on these two motives in this study.

**Market-seeking motives**

Drawing upon the literature, we expect that firms with market-seeking motives are more likely to have a high level of subsidiary ownership (Brouthers and Hennart, 2007; Erramilli, 1990; Gil et al., 2006; Nisar et al., 2012). First, these firms possess ownership advantages and need to protect their proprietary competitive advantages through a high ownership in the subsidiary (Filatotchev, Strange, Piesse, and Lien, 2007; Gatignon and Anderson, 1988; Hennart, 2009). Second, these firms want to benefit from leveraging such advantages in
overseas markets as fully as possible through a high subsidiary ownership and ownership-based profit sharing (Brouthers, 2002; Pan, 1996).

From the perspective of institutional theory and transaction cost theory, we expect that investing in countries with attractive institutional environments entails a lower transaction costs, and firms with market-seeking motives are more likely to have a higher ownership for subsidiaries located in these countries (Brouthers, 2002; Delios and Beamish, 1999; Gatignon and Anderson 1988). In other words, we posit that firms with market-seeking motives pay more attention to the heterogeneity of host country institutional environments in deciding FDI subsidiary ownership for the following reasons.

First, firms with market-seeking motives possess ownership advantages, incentives to expand sales and capabilities to extend their ownership advantages from home to foreign host countries (Dunning 2009). They have the products or services that are competitive not only in their home market but also potentially in many foreign countries. Firms with competitive products or services have a large set of countries to consider. There are 159 member countries and 25 observer countries in World Trade Organization as of March 2013. Whether host country institutional environments are attractive is likely to be given more attention. This is especially important for firms from emerging markets that have less experiences competing outside of their home market and are beginning to invest outside of their home countries (Cantwell et al., 2010). Therefore, when facing the large number of potential markets, these firms are more likely to pay attention to the heterogeneity across different host country institutional environments. They are more likely to invest non-redeployable assets in countries with attractive institutional environments and own a higher proportion of ownership in the subsidiary located in these countries, holding other factors constant.

Second, firms with market-seeking motives aim at expanding sales in foreign markets. They are motivated to investigate and learn about foreign markets to establish the strategic fit between their competitiveness and the foreign host countries (Buckley et al., 2007; Deng, 2009). Firms may need the help of local partners for access to local knowledge. The need for local partnership becomes more important in less-advanced economies because of less-developed institutional environments and government interventions. Firms have less dependence on local partners to gain access to local knowledge in advanced economies, and hence, have a higher level of ownership in advanced economies (Makino and Delios, 1996). Holding other factors constant, firms with market-seeking motives are more likely to pay attention to the heterogeneity of host country institutional environments. They are more likely to invest non-redeployable assets in countries with attractive institutional environments and own a higher proportion of ownership in the subsidiary located in these countries. Studies show that a higher equity ownership is associated with an increase in subsidiary survival (Dhanaraj and Beamish, 2004; Gaur and Lu, 2007). A higher ownership provides the firm with a greater degree of control over the subsidiary, such as the appointment of senior management positions, resulting in a faster and efficient implementation of the parent firm strategies (Gaur and Lu, 2007). Bouquet and Birkinshaw (2008) suggest that corporate headquarters are more likely to give attention to subsidiaries of importance, in our case, those with a higher equity ownership. Therefore, a higher ownership in subsidiary is conducive to achieving the objective of faster local market expansion.

Third, firms with market-seeking motives are extending their competitive ownership advantages at home to the global market. Even though firms from emerging economies have relatively less-ownership advantages in general, an increasing number of firms possess competitive ownership advantages, such as Tata in India and Huawei in China
Firms with market-seeking motives need to not only protect their ownership advantages but also find ways to effectively leverage upon such advantages (Luo and Tung, 2007; Yiu and Makino, 2002). A higher level of ownership in overseas subsidiaries allows the protection of proprietary assets and also ensures effective management control and execution (Dhanaraj and Beamish, 2004; Filatotchev et al., 2007; Hennart, 2009; Pan, 1996). Firms with a higher ownership have the means to deter the opportunistic behavior of local partners and dismiss managers involved in self-serving behavior (Filatotchev et al., 2008). Controlling ownership in a subsidiary is a substitute for legal protection in providing the functions of corporate governance (Claessens et al., 2000; Filatotchev, Stephan, and Jindra, 2008). A higher level of ownership is warranted only in safer host country institutional environments (Brouthers, 2002; Pan et al., 2014). Therefore, firms with market-seeking motives may prefer a high subsidiary ownership in attractive and less-risky foreign institutional environments.

In other words, as default, firms prefer a higher level of ownership so as to exercise control over local operations, avoid leakages of proprietary know-how and appropriate revenues. Firms need to rely on local partners for access to local knowledge in less advanced economies because of less-developed institutional environments and government interventions than in countries with developed institutional environments. This means that firms have less dependence on local partners to gain access to local knowledge in advanced economies, and hence, they have a higher level of ownership in advanced economies (Makino and Delios, 1996). This relationship tends to be stronger when firms have market-seeking motivations because such firms are more likely to depend on local partners as a source of local knowledge than those firms with no motivations for market seeking.

Taken together, we hypothesize that firms with market-seeking motives are more likely to pay attention to the heterogeneity of foreign institutional environment than firms without such motives. The effect of host country institutional environments on subsidiary ownership is stronger for firms with market-seeking motives, implying a positive moderating effect. Thus:

**H1a.** Host country institutional environments moderate positively subsidiary ownership for firms with market-seeking motives.

The overall host country institutional environments are made up of the specific components. In our study, we will use the four-component structure developed by the Heritage Foundation and the *Wall Street Journal*, namely, rule of law, limited government, regulatory efficiency and open markets (Cebula and Clark, 2012; Pan et al., 2014). We will focus on two components, i.e. regulatory efficiency and limited government, for the following reasons. First, we expect that these two components are more salient for Chinese firms. Second, we recognize that there exists a high level of correlation among the four components, which may pose a problem in the testing of hypotheses.

Regulatory efficiency refers to the degree that firms operate and benefit from business freedom, labor freedom and monetary freedom. Regulatory efficiency is highly relevant to the Chinese firms because the domestic market in China suffers from the lack of regulatory efficiency when compared to many countries in the world (Buckley et al., 2007). As Chinese firms operate in a less regulatory efficient domestic market, they are more likely to notice the differences in regulatory efficiency when they invest in foreign host countries (Luo and Tung, 2007; Morck et al., 2008). Chinese firms with a market-seeking motive are more concerned about how to operate efficiently in the foreign host country. We expect that they are attracted to invest and own a greater ownership when the investments are located in host countries with greater regulatory efficiency.
Limited government denotes the power of the government in host countries. This is another factor that Chinese firms will notice a big difference when they invest and operate outside China (Pan et al., 2014). Chinese firms are used to operate in a market environment with powerful government inside China. Once they invest outside of China, firms realize that competitiveness is determined in the market place. Therefore, the power of government is not a significant factor for firms to operate well outside of China. We expect that firms with a market-seeking motive will pay a less attention to the power of government when deciding on the subsidiary ownership outside China:

\[ H1b. \] Regulatory efficiency in host country moderates positively subsidiary ownership for firms with market-seeking motives, while limited government in host country does not.

**Resource-seeking motives**

Another key strategic motive for firms from emerging economies is the acquisition of resources that they lack in their home market. Many Chinese firms go after the natural resources as the motive for their FDI (Buckley et al., 2007). Natural resources are location-bounded. Firms seeking these resources have to operate in these localities. As part of critical resources, firms from emerging economies also go after advanced technologies and manufacturing know-how in more developed countries. Because, these proprietary technologies and know-how are often embedded in firms and can only be accessed by takeover of these firms or subdivisions of the firm (Cantwell et al., 2010; Dunning, 2009; Buckley et al., 2007). This motivation sets apart firms from more developed countries, which generally possess the needed proprietary assets to compete at home and abroad. In other words, firms from emerging economies use outward investments as a springboard to compensate for their competitive disadvantages (Luo and Tung, 2007).

We posit that firms with resource-seeking motives are less subject to the heterogeneity of host country institutional environments in FDI ownership for the following reasons. Firms with resource-seeking motives are in the market for resources that they lack, be it natural resources or superior technology and know-how. These critical resources are likely to be scarce and are located in a limited number of countries (Bass and Chakrabarty, 2014). Therefore, it is not the firms choosing where to invest, but where these resources are located dictates where these firms have to invest in. Therefore, we expect that the heterogeneity of host country institutional environments plays a less salient role, regardless of whether firms seek natural resources or knowledge resources.

For natural resources, there is a decreasing number of countries where the sought-after resources are available because of the scarcity and non-renewability of natural resources (Bass and Chakrabarty, 2014). While firms may attempt to pick countries with attractive institutional environments, such consideration is likely to be limited given the small number of choices in the consideration set. Further, firms’ investment or acquisition in natural resources is likely to be subject to many more important considerations, apart from the financial and economic calculations (Buckley et al., 2007). It is often a political, social and environmental decision, and a decision with geo-political consequences (Ramasamy et al., 2012). For instance, various local institutions are protective of their natural resources, creating harsh local market institutional environments (Bass and Chakrabarty, 2014; Child and Rodrigues, 2005). Therefore, firms from emerging markets are less driven by the attractiveness of host country institutional environments, but by the availability of the resources. Furthermore, when firms are going after natural resources, they are more interested in getting the resources out of the host country and are less worried about local
customers, local market competition and the demand side of the local market environments. Whether the host country market environment is desirable is relatively less important, and firms’ investment is less dependent on whether host country institutional environments are attractive.

For knowledge resources, firms are going after superior technology, manufacturing know-how and management know-how. Compared to firms in developed countries, firms from emerging economies have weaker ownership advantages and actively seek advanced technologies and manufacturing know-how in the global market (Deng, 2009; Ramasamy et al., 2012). The most preferred choice for many firms is the licensing of advanced technology and know-how (Aulakh et al., 2010). If technology licensing can be done, then firms do not have to undertake the FDI. However, there are technologies and know-how that are embedded in the operation and can only be acquired and accessed by takeover of the firm or its subdivisions, such as the acquisition of IBM PC unit in 2005 by Lenovo (Meyer et al., 2014). Going after such knowledge resources requires the establishment or acquisition of foreign subsidiaries that operate and manufacture in the foreign locations.

The more superior the technology or know-how gets, the fewer the countries which possess such knowledge becomes (Buckley et al., 2007). For firms from emerging economies, as Buckley et al. (2007) point out, one of their strategic motives in outward investment is to acquire technology and know-how to augment their ownership advantages that they lack (Child and Rodrigues, 2005; Luo and Tung, 2007; Yiu et al., 2007). Firms from emerging economies invest in greenfield projects or through acquisitions as a springboard to catch up with the latest technology and know-how in the world (Deng, 2009; Luo and Tung, 2007). The desire to augment their ownership advantage is so strong that these firms are willing to assume substantial risks in host country institutional environments (Ramasamy et al., 2012). Therefore, such investment is less dependent on whether host country institutional environments are attractive.

Furthermore, like natural resources, firms from emerging economies look for knowledge resources to augment their competitiveness in their home market. After they have secured a competitive advantage in their home market, they are ready to compete in the global market (Deng, 2009; Luo and Tung, 2007). Therefore, they are less worried about the institutional environments in the local market. In other words, whether the host country market environment is desirable is relatively less important.

Finally, firms with resource-seeking motives tend to take the form of vertical integration, which tends to lead to shared ownership structures given the cost of investment (Hennart, 1991). Furthermore, as natural resources are important sources of comparative advantages of host countries, irrespective of whether they are advanced or less-advanced economies, the host country governments tend to require foreign firms to share the ownership with local firms.

Taken together, we posit that firms with resource-seeking motives are less subject to the heterogeneity of foreign institutional environment. The effect of host country institutional environments on subsidiary ownership is weaker for firms with resource-seeking motives than without resource-seeking motives, implying a negative moderating effect. Thus:

\[ H2a. \text{ Host country institutional environments moderate negatively subsidiary ownership for firms with resource-seeking motives.} \]

We now examine the two specific components of institutional environments. We expect that the power of government will play a significant role for firms with resource-seeking motives.

There have been many cases in the literature where Chinese firms failed to conclude resource acquisitions because of disapproval by the host country government institutions.
(Buckley et al., 2007). As a result, Chinese firms with resource-seeking motives now pay close attention to the approval processes in the host country.

Many Chinese firms learn that the acquisition of natural resources in foreign host countries often meets with protectionist and/or nationalistic resistance from local institutions (Buckley et al., 2007), making a high ownership acquisition less likely to go through successfully. Further, it is often the non-governmental institutions that hold the strong oppositions to the Chinese firms’ bid for resource acquisitions (Bass and Chakrabarty, 2014). Interestingly, the more limited the host country government is, the more powerful the non-governmental institutions (e.g. societal environmental protection activities, labor unions, media and so on) tend to be. Being used to the powerful government at home, Chinese firms with resource-seeking motives will look for countries with the strong host country governments to get the project approval done, holding other factors constant (Shi et al., 2014). Thus, we expect that the extent of power in the host country government moderates the subsidiary ownership in foreign host countries.

We do not expect the regulatory efficiency to play a significant role. As discussed earlier, firms from emerging economies with resource-seeking motives are more concerned with the availability of resources and with the approval of the acquisitions in the host countries than with the operating efficiency. Taking together, we hypothesize:

**H2b.** Limited government in host country moderates negatively subsidiary ownership for firms with resource-seeking motives, while regulatory efficiency does not.

In this study, our focus is on two key strategic motives. Firms with market-seeking motives attempt to push outward and extend their competitiveness to a broader market. In contrast, firms with resource-seeking motives attempt to pull inward and acquire from external sources the factors that they lack. In this sense, it is interesting to compare the two motives across a diverse set of host country institutional environments.

**Method**

We compiled the information of overseas subsidiaries from the annual reports of listed firms in Shanghai Stock Exchange and Shenzhen Stock Exchange in 2012, following the methodology in the literature (Meyer et al., 2014; Pan et al., 2014). In total, we found that 829 listed firms in China had overseas subsidiaries in 2012 annual reports. These firms had a total of 2,823 overseas subsidiaries located in 111 countries/regions. Host country-specific information came from two extant data sets. We used the 2010 index of economic freedom from Heritage Foundation and the *Wall Street Journal* and the cultural index from Hofstede (2001), following Pan et al. (2014).

**Dependent variable**

The dependent variable is firms’ ownership level in an overseas subsidiary in percentage, consistent with the literature (Filatotchev et al., 2007; Pan et al., 2014). Firms disclosed this information in their reporting of subsidiaries in the annual report.

We also used a categorical variable, which took the value of 1 if the subsidiary was a sole ownership and 0 if it was a shared ownership. As indicated in the literature, subsidiaries with more than 90 per cent owned by the Chinese firm were deemed a sole ownership (Mani et al., 2007).
Independent variables

Market-seeking motives. In compiling the data from annual reports, we analyzed the firm’s statement of strategic motives for setting up overseas subsidiaries. Firms could state a single motive or multiple motives. For market-seeking motives, we looked for subsidiaries with the statement of expanding sales in local markets or expanding the trading. Subsidiaries with these statements were coded 1 for market-seeking motives and 0 otherwise. Though it takes a longer time, we have one researcher to encode these data on strategic motives to ensure consistency in the data coding.

Resource-seeking motives. For resource-seeking motives, we looked for both natural resources and knowledge resources. For natural resources, we coded the data as 1 if the subsidiary states the purpose of seeking natural resources such as mining. There were 110 firms reporting seeking natural resources. For knowledge resources, we coded the data as 1 if the subsidiary states the purpose of local manufacturing. There were 348 firms in this category. As discussed earlier, our study did not look at technology licensing. We only look at seeking knowledge resources through direct investment. These resources are likely to be embedded in the foreign localities. Therefore, we look for foreign subsidiaries that engage in manufacturing, as it is the substantive form of engaging in the localities (Buckley et al., 2007; Dunning, 2009; Luo and Tung, 2007). As the literature suggested, the cost-efficiency motives can be ruled out for manufacturing by firms from emerging economies (Buckley et al., 2007). Our measures are based on the direct reporting of firms about the strategic motives of their subsidiaries overseas. For resource-seeking motive, the subsidiary is coded 1 if it is either natural resource-seeking or knowledge resource-seeking and 0 otherwise.

There were 208 subsidiaries that stated both resource-seeking and market-seeking as their motives. In our sample, the correlation between market-seeking motives and resource-seeking motives was −0.051, reflecting a small proportion of overlap between the two coded motives. Apart from the aggregate measure, we hypothesized the effect of two specific components. Regulatory efficiency was measured by business freedom, labor freedom and monetary freedom, and limited government was measured by fiscal freedom, government spending, as per the Heritage Foundation and Wall Street Journal.

Host country institutional environment. In this study, the index of economic freedom from the Heritage Foundation and Wall Street Journal was used as a surrogate measure for foreign institutional environment (Cebula and Clark, 2012; Pan et al., 2014). It has ten indicators grouped into four pillars of economic freedom, namely, rule of law (property rights, freedom from corruption), limited government (fiscal freedom, government spending), regulatory efficiency (business freedom, labor freedom, monetary freedom) and open markets (trade freedom, investment freedom, financial freedom). Each country is given a score ranging from 0 to 100 on each of the ten measures, and these scores are then averaged (using equal weights) to get the country’s final index of economic freedom score. Similar to Pan et al. (2014), we reported the results that used the average score for each country over the recent 10 years (2000-2009).

Control variables

We incorporated control variables that are commonly applied in the research of entry modes literature (Buckley et al., 2007; Meyer et al., 2014; Pan et al., 2014). We included the state ownership as a percentage in listed firms (Pan et al., 2014). We controlled for the firm’s political ties that were measured by whether one of the firm’s top officers being a member of the national parliament (Faccio, 2006; Shi et al., 2014). In China, it is the National People’s Congress of China (Pan et al., 2014). The extent of firms’ internationalization was measured by the ratio of foreign sales to the total sales of the firm. Firm size was measured by the log-
transformed total asset of the listed firm (Buckley et al., 2007). Firm age was measured by the number of years since the incorporation year of the firm (Shi et al., 2014). Return on sales was measured by the ratio of profits to total sales of the firm (Pan et al., 2014). Firm productivity was measured by the ratio of profits to the total number of employees (Pan et al., 2014).

For informal institutional environments (Holmes et al., 2013), we used the four cultural dimensions of power distance, uncertainty avoidance, individualism and masculinity as identified by Hofstede (2001). Given the importance of Hong Kong, we included a dummy variable that was coded 1 for those subsidiaries located in Hong Kong and 0 otherwise. For product sectors, we included dummy variables based on the product sector categorization of Chinese Securities Regulatory Commission. Finally, we controlled for potential bias that could arise from multiple subsidiaries within one firm.

**Analysis**

We checked for potential multicollinearity, and we found that VIF value was below 2 for all variables, much below the 10 rule of thumb signaling presence of multicollinearity (Neter et al., 1990). Simple diagnostic information is presented in Table I.

It is noted that correlations were high among regulatory efficiency, rule of law and open markets, while correlations with limited government was relatively low. That is partly the reason why we only hypothesized and tested the effects of regulatory efficiency and limited government in our study to avoid high correlations among independent variables.

For the dependent measure as ownership percentage, Tobit analysis (SAS LIFEREG) was used to appropriately account for the censored nature of the dependent variable (Greene, 2001). For the dependent variable as sole or shared ownership, we estimated a logistic regression, given the binary nature of the variable. In Tobit regression, a positive coefficient means that an increase in the value of the variable leads to a greater likelihood of the firm’s choosing a higher percentage of ownership. In logistic regression, a positive coefficient means that an increase in the value of the variable leads to a greater likelihood of the firm’s choosing a sole ownership over a shared ownership.

In Table II, we reported the results that the aggregate measure of institutional environment was used in the Tobit and logistic regressions without control variables. We excluded the potential confounding from control variables in the multivariate analysis. Similarly, in Table III, we reported the results that two specific components of institutional environment were used in the Tobit and logistic regressions without control variables.

<table>
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<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<td>1.00</td>
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<td>Market-seeking motives</td>
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<td>0.50</td>
<td>0.097</td>
<td>1.00</td>
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<tr>
<td>Resource-seeking motives</td>
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<td>0.37</td>
<td>-0.094</td>
<td>-0.046</td>
<td>1.00</td>
<td></td>
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<td>Host country institutional environment</td>
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<td>0.138</td>
<td>0.027</td>
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<td>1.00</td>
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<td>Host country regulatory efficiency</td>
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<td>10.82</td>
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<td>0.032</td>
<td>-0.260</td>
<td>0.878</td>
<td>1.00</td>
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<td>Host country limited government</td>
<td>77.51</td>
<td>17.53</td>
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<td>-0.045</td>
<td>-0.158</td>
<td>0.523</td>
<td>0.307</td>
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<td>0.046</td>
<td>-0.298</td>
<td>0.883</td>
<td>0.851</td>
<td>0.132</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Host country open markets</td>
<td>74.36</td>
<td>21.12</td>
<td>0.105</td>
<td>0.000</td>
<td>-0.251</td>
<td>0.803</td>
<td>0.676</td>
<td>0.187</td>
<td>0.779</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Table I.** Descriptive statistics and correlations

**Notes:** N ranges from 2,561 to 2,810. Absolute value of greater than 0.04 is significant at \( p < 0.05 \); absolute value of greater than 0.05 is significant at \( p < 0.01 \)
We examined the two interaction effects for our two hypotheses. In Tables II and III, we first reported results without interactions and then compared the results with interactions. Interaction terms significantly improved the model fit, as shown by reduced AIC value. To better interpret the interaction results, we plotted the two interaction effects in Figures 1 and 2, based on the Tobit regression results reported in Model 2 in Table II.

With regard to the robustness of the results, it is noted that we used two different regressions, i.e. logistic and Tobit regressions, and we found that the hypothesized effects were largely consistent. We will also analyze the robustness of results by incorporating control variables.

<table>
<thead>
<tr>
<th>Table II.</th>
<th>Subsidiary ownership: the impact of aggregate host country institutional environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>% of ownership</td>
</tr>
<tr>
<td></td>
<td>Model 1</td>
</tr>
<tr>
<td>Intercept</td>
<td>59.61 (8.66)***</td>
</tr>
<tr>
<td>Host country institutional environment (HCIE)</td>
<td>0.80 (0.11)***</td>
</tr>
<tr>
<td>Market seeking</td>
<td>13.76 (2.75)***</td>
</tr>
<tr>
<td>Market seeking × HCIE</td>
<td>−9.41 (3.64)***</td>
</tr>
<tr>
<td>Resource seeking</td>
<td>−0.62 (0.26)**</td>
</tr>
<tr>
<td>−2 Log likelihood</td>
<td>10,297.47</td>
</tr>
<tr>
<td>AIC</td>
<td>10,307.47</td>
</tr>
<tr>
<td>Number of observations</td>
<td>2,562</td>
</tr>
</tbody>
</table>

**Notes:** Dependent variable: Percentage of ownership (Tobit analysis). Dependent variable: Shared ownership = 0; Sole ownership = 1 (Logistic analysis). Numbers in brackets are standard errors. Significance: *p < 0.1; **p < 0.05; ***p < 0.01

<table>
<thead>
<tr>
<th>Table III.</th>
<th>Subsidiary ownership: the impact of host country open market and limited government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>% of ownership</td>
</tr>
<tr>
<td></td>
<td>Model 1</td>
</tr>
<tr>
<td>Intercept</td>
<td>54.21 (11.08)***</td>
</tr>
<tr>
<td>Host country regulatory efficiency (Reg)</td>
<td>0.53 (0.13)***</td>
</tr>
<tr>
<td>Host country limited government (Gov)</td>
<td>0.32 (0.08)***</td>
</tr>
<tr>
<td>Market seeking</td>
<td>13.30 (2.76)***</td>
</tr>
<tr>
<td>Market seeking × Reg</td>
<td>0.43 (0.25)*</td>
</tr>
<tr>
<td>Market seeking × Gov</td>
<td>−0.55 (0.22)**</td>
</tr>
<tr>
<td>Resource seeking</td>
<td>−12.65 (3.58)***</td>
</tr>
<tr>
<td>Resource seeking × Reg</td>
<td>−0.21 (0.29)</td>
</tr>
<tr>
<td>Resource seeking × Gov</td>
<td>−0.55 (0.22)**</td>
</tr>
<tr>
<td>−2 Log likelihood</td>
<td>10,311.26</td>
</tr>
<tr>
<td>AIC</td>
<td>10,321.01</td>
</tr>
<tr>
<td>Number of observations</td>
<td>2,562</td>
</tr>
</tbody>
</table>

**Notes:** Dependent variable: Percentage of ownership (Tobit analysis). Dependent variable: Shared ownership = 0; Sole ownership = 1 (Logistic analysis). Numbers in brackets are standard errors. Significance: *p < 0.1; **p < 0.05; ***p < 0.01
Results

$H1a$ states that host country institutional environments moderate positively subsidiary ownership for firms with market-seeking motives. The multivariate results showed that the interaction between host country institutional environments and market-seeking motives was positive and significant on the likelihood of a greater percentage of ownership (Model 2 in Table II) and the likelihood of a sole ownership (Model 4 in Table II).

As Figure 1 shows, the slope for firms with market-seeking motives was steeper than the slope for firms without market-seeking motives. In other words, firms with market-seeking motives react more strongly to the variance in foreign institutional environments than firms without market-seeking motives. When foreign institutional environments are favorable, firms with market-seeking motives are more likely to own a higher proportion of stake in subsidiaries than firms without market-seeking motives. $H1a$ is supported.

$H1b$ states that regulatory efficiency in host country moderates positively subsidiary ownership for firms with market-seeking motives, while limited government in host country does not. The results showed that interaction between host country regulatory efficiency and market-seeking motives was positive and significant on the likelihood of a greater percentage of ownership (Model 2 in Table III) and the likelihood of a sole ownership (Model 4 in Table III). However, interaction between host country limited government and market-seeking motives was not significant on the likelihood of a greater percentage of ownership (Model 2 in Table III) and the likelihood of a sole ownership (Model 4 in Table III). $H1b$ is supported.

$H2a$ states that host country institutional environments moderate negatively subsidiary ownership for firms with resource-seeking motives. The multivariate results showed that the interaction between host country institutional environments and resource-seeking motives was negative and significant on the likelihood of a greater percentage of ownership (Model 2 in Table II) and the likelihood of a sole ownership (Model 4 in Table II).
As Figure 2 shows, the slope for firms with resource-seeking motives was less steep than the slope for firms without resource-seeking motives. It means that firms with resource-seeking motives were less influenced by the host country institutional environments in determining their subsidiary ownership. In contrast, firms without resource-seeking motives had a high subsidiary ownership in countries with attractive institutional environments and a low subsidiary ownership in countries with less attractive environments. $H2a$ is supported.

$H2b$ states that limited government in host country moderates negatively subsidiary ownership for firms with resource-seeking motives, while regulatory efficiency does not. The results showed that interaction between host country limited government and resource-seeking motives was negative and significant on the likelihood of a greater percentage of ownership (Model 2 in Table III) and the likelihood of a sole ownership (Model 4 in Table III). However, interaction between host country regulatory efficiency and resource-seeking motives was not significant on the likelihood of a greater percentage of ownership (Model 2 in Table III) and the likelihood of a sole ownership (Model 4 in Table III). $H2b$ is supported.

We tested the robustness of hypothesis testing. First, we incorporated a set of control variables as reported in Tables IV and V. The results remained robust. Second, we recognized that the interpretation of the non-linear models may be more complex than OLS models (Wiersema and Bowen, 2009). Following Wiersema and Bowen (2009), we plot out the two interaction effects in Figures 3 and 4 using STATA. In these figures, the solid symbols indicate the values of the interaction effect (recorded on the left axis), while the diamond-shaped symbols indicate z-statistic values (recorded on the right axis). For market-seeking motives, we saw the values of the interaction effect range from 0.001 to 0.006, with the mean value of 0.003 and the z-statistic values largely significant. For resource-seeking motives, the values of the interaction range from $-0.002$ to $-0.007$, with the mean value of $-0.004$ and the z-statistic values also significant. Therefore, the results confirm the support for the hypothesized effects.
Discussion

There are notable contributions of this study. First, studies of subsidiary ownership have not examined the interplay between strategic motives and host country institutional environments in the analysis (Chen, 2008; Hennart, 2009; Pan et al., 2014). In this study, we conceptualize how firms pursuing market-seeking versus resource-seeking motives are influenced differently by the heterogeneity of foreign institutional environments. We hypothesize that firms with resource-seeking motives are less subject to the heterogeneity of host country institutional environments in determining their subsidiary ownership level, while firms with market-seeking motives are more subject to this heterogeneity. Further, we go beyond the aggregate measure of host country institutional environment and examine the components of the aggregate measure. We hypothesize that for firms with market-seeking motives, the component of regulatory efficiency plays a significant moderating role. We hypothesize that for firms with resource-seeking motives, the component of limited government plays a significant moderating role. Our findings not only confirm that strategic motives play a significant role but also enrich our understanding regarding how strategic motives interact with host country institutional environments.

Second, this study adds valuable insight regarding the expansion of Chinese firms. Recent literature has begun to address the uniqueness of Chinese firms (Morck et al., 2008; Peng et al., 2008). Specific to our study, the literature suggests that outward FDI of Chinese firms may have different motivations and are subject to different home and host country institutional environments (Child and Rodrigues, 2005; Cui and Jiang, 2012; Pan et al., 2014). This study provides timely findings that Chinese firms with different strategic motives approached the ownership of subsidiaries located in different host countries differently.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>3.383 (1.109)**</td>
<td>3.978 (1.124)***</td>
</tr>
<tr>
<td>Control variables</td>
<td>included</td>
<td>included</td>
</tr>
<tr>
<td>Product sector dummies</td>
<td>included</td>
<td>included</td>
</tr>
<tr>
<td>Firm dummies</td>
<td>included</td>
<td>included</td>
</tr>
<tr>
<td>Market seeking</td>
<td>−0.922 (0.287)***</td>
<td>−0.596 (0.373)**</td>
</tr>
<tr>
<td>Resource seeking</td>
<td>0.619 (0.342)*</td>
<td>1.026 (0.459)**</td>
</tr>
<tr>
<td>Host country institutional environment (HCIE)</td>
<td>0.005 (0.004)</td>
<td>0.001 (0.004)</td>
</tr>
<tr>
<td>Host country regulatory efficiency (REG)</td>
<td>−0.000 (0.004)</td>
<td></td>
</tr>
<tr>
<td>Host country limited government (GOV)</td>
<td>−0.000 (0.004)</td>
<td></td>
</tr>
<tr>
<td>Market seeking × HCIE</td>
<td>0.013 (0.004)***</td>
<td></td>
</tr>
<tr>
<td>Market seeking × REG</td>
<td>−0.008 (0.005)*</td>
<td></td>
</tr>
<tr>
<td>Market seeking × GOV</td>
<td>−0.000 (0.003)</td>
<td></td>
</tr>
<tr>
<td>Resource seeking × HCIE</td>
<td>−0.011 (0.005)**</td>
<td></td>
</tr>
<tr>
<td>Resource seeking × REG</td>
<td>−0.009 (0.005)*</td>
<td></td>
</tr>
<tr>
<td>Resource seeking × GOV</td>
<td>−0.007 (0.004)**</td>
<td></td>
</tr>
<tr>
<td>−2 Log Likelihood</td>
<td>3070.79</td>
<td>3080.13</td>
</tr>
<tr>
<td>AIC</td>
<td>3364.79</td>
<td>3380.14</td>
</tr>
<tr>
<td>BIC</td>
<td>4206.74</td>
<td>4239.27</td>
</tr>
<tr>
<td>Number of observations</td>
<td>2270</td>
<td>2270</td>
</tr>
</tbody>
</table>

Notes: Control variables included in the analysis are inverse Mills ratio, state ownership, political connections, internationalization, firm size (assets), firm age, firm return on sales, firm productivity, power distance, uncertainty avoidance, individualism, masculinity and Hong Kong; significance: *p < 0.1; **p < 0.05; ***p < 0.01.
Empirically, our results were based on 2,270 subsidiaries of Chinese listed firms outside China that were reported in the 2012 annual reports.

In this study, our focus is on market-seeking motives and resource-seeking motives. Firms with market-seeking motives attempt to push outward. They try to extend their competitiveness to a broader market. In contrast, firms with resource-seeking motives attempt to pull inward. They try to acquire from external sources the factors that they lack.

Table V.
Subsidiary ownership (shared = 0; sole = 1): logistic analysis with control variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>−1.723 (2.632)</td>
<td>−1.252 (2.649)</td>
</tr>
<tr>
<td>Control variables included</td>
<td>included</td>
<td>included</td>
</tr>
<tr>
<td>Product sector dummies</td>
<td>included</td>
<td>included</td>
</tr>
<tr>
<td>Firm dummies</td>
<td>included</td>
<td>included</td>
</tr>
<tr>
<td>Market seeking</td>
<td>−2.430 (0.735)***</td>
<td>−1.621 (0.957)*</td>
</tr>
<tr>
<td>Resource seeking</td>
<td>1.643 (0.892)*</td>
<td>3.086 (1.184)***</td>
</tr>
<tr>
<td>Host country institutional environment (HCIE)</td>
<td>−0.002 (0.012)</td>
<td>−0.011 (0.012)</td>
</tr>
<tr>
<td>Host country regulatory efficiency (REG)</td>
<td>0.006 (0.010)</td>
<td></td>
</tr>
<tr>
<td>Host country limited government (GOV)</td>
<td>0.032 (0.009)***</td>
<td>0.028 (0.012)**</td>
</tr>
<tr>
<td>Market seeking × HCIE</td>
<td>0.027 (0.012)**</td>
<td>−0.027 (0.013)**</td>
</tr>
<tr>
<td>Market seeking × REG</td>
<td></td>
<td>−0.018 (0.009)**</td>
</tr>
<tr>
<td>Market seeking × GOV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource seeking × HCIE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource seeking × REG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource seeking × GOV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.165</td>
<td>0.164</td>
</tr>
<tr>
<td>AIC</td>
<td>2473.18</td>
<td>2404.44</td>
</tr>
<tr>
<td>Concordant</td>
<td>76.4</td>
<td>76.6</td>
</tr>
<tr>
<td>Tau-a</td>
<td>0.206</td>
<td>0.207</td>
</tr>
<tr>
<td>Number of observations</td>
<td>2270</td>
<td>2270</td>
</tr>
</tbody>
</table>

Notes: There were 516 shared ownership subsidiaries and 1,087 sole ownership subsidiaries in the sample. Control variables included in the analysis are inverse Mills ratio, state ownership, political connections, internationalization, firm size (assets), firm age, firm return on sales, firm productivity, power distance, uncertainty avoidance, individualism, masculinity and Hong Kong; significance: *p < 0.1; **p < 0.05; ***p < 0.01
In this sense, it is parsimonious to make such a comparison at this level. Nonetheless, we recognize that knowledge resource and natural resource represent different types of resources within the category of resource seeking. In our analysis, we separated these two types of resources in the analysis, and we found that the effect for knowledge resource seeking is robust, while the effect for natural resource seeking is not significant. In our data, there are 348 subsidiaries reporting knowledge resource-seeking, while 110 reporting natural resource-seeking. We believe our conceptualization is sound, and we call for future research to further test for the impact of natural resource seeking.

This study has its limitations. First, we analyzed the market-seeking and resource-seeking motives. We did not analyze the efficiency-seeking motives, even though the literature suggests that firms from emerging economies were not seeking efficiency in their outward FDI (Buckley et al., 2007). There is, nonetheless, an emerging trend of industries and firms relocating out of China, reflecting the pursuit of efficiency motives by Chinese firms and foreign invested firms in China. Future research should examine the efficiency-seeking motives of outward investment by Chinese firms. Future studies, based on a survey data, should also conceptually explore and test the intricacy of multiple strategic motives.

Second, we conceptualize host country institutional environments as a dimension of attractiveness. Nonetheless, Cuervo-Cazurra and Genc (2011) have suggested that at times it is the fit between home and host country institutional environments that matters more importantly. In other words, it is the institutional distance between the host and home countries. Future research should also look into the interplay of institutional fit or institutional distance and strategic motives. Third, our data were extracted from firms’ annual reports which provided a brief statement for the purpose of establishing overseas subsidiary. These outward FDI were reported in the annual report of 2012, but did not have the precise date of investment. In this study, we expect that market-seeking and resource-seeking motives should be strategic and stable over time, and the average score for 10 years (2000-2009) for institutional environments may correspond with the most recent surge of Chinese outward FDI. However, we still recognize the limitation of a cross-sectional data that lacks date of investment, which be addressed in future research. Apart from the information of annual reports, future research should follow-up on a sub-sample of listed firms and explore the rationale for the stated strategic motives and how successful the firm executed according to its plan in different host country institutional environments.

Finally, in this study, we narrowly focused upon the interaction between strategic motives and host country institutional environments on firm’s FDI ownership. While this

![Figure 4. Interaction effect of resource seeking and host country institutional environment on the equity ownership (Stata logit analysis)](image-url)
was necessary to have a clear focus, we ran the risk of missing key factors driving the firm’s FDI ownership that have yet to be studied. Future research should take a broader theoretical scope and incorporate a broader array of constructs in this important domain of international business.

References


Further reading

About the author
Professor Yigang Pan (PhD, Columbia University) does research in marketing strategies and international business, and has published in SMJ, JMR, JCR, JIBS, among others. Most noticeable is that he has published 12 in Journal of International Business Studies (JIBS), making him one of the leading contributors in JIBS’s history. Yigang Pan can be contacted at: pan@yorku.ca

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Host-country characteristics, corporate sustainability, and the mediating effect of improved knowledge

A study among foreign MNCs in Malaysia

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Universiti Malaysia Kelantan, Kota Bharu, Malaysia, and

Muhammad Mohiuddin

Thompson Rivers University, Kamloops, British Columbia, Canada

Abstract

Purpose – Under the premise of resource-based view (RBV), this study aims to examine the influence of host-country characteristics (i.e. market environment, cultural factors, government policies and absorptive capacity) on improved knowledge acquired by means of intra-firm technology transfer and the latter’s subsequent effect on corporate sustainability among subsidiaries of foreign multinational corporations (MNCs) in Malaysia.

Design/methodology/approach – The following study adopted a cross-sectional design. Quantitative data were collected through structured interview from the representatives of selected 252 subsidiaries of foreign-based MNCs located in Peninsular Malaysia.

Findings – The findings of this study revealed that market environment, government policies and absorptive capacity significantly affect the adoption of innovative knowledge, which also has a significant positive effect on corporate sustainability. The findings also revealed a partial mediation of improved knowledge between market environment, government policies and absorptive capacity on corporate sustainability.

Research limitations/implications – This study recommends that the host country should formulate and adopt trade and FDI friendly policies, as well as stricter intellectual property laws, and, at the same time, provide higher education and training to its citizens to maximize foreign investment and knowledge transfer.

Originality/value – Apart from highlighting the under-researched issue of organizational sustainability, this study is unique in its approach of connecting the external environment of the host country with the internal knowledge of the firm and corporate sustainability in a single framework. The empirical findings of this study support the hypothesized relationships and thereby extend the scope of the contingency theory and RBV in addition to simultaneously enriching the existing intra-firm knowledge management literature, particularly in the Malaysian context.

Keywords Malaysia, Corporate sustainability, Technology transfer, Improved knowledge

Paper type Research paper

Introduction

Sustainable development became a concern for ongoing entities particularly after the Brundtland’s report of the United Nations World Commission on Environment and Development (1987) that emphasized on corporate sustainability, as the buzzword of the
The concept of corporate sustainability could be considered as a business investment strategy that seeks to use the best business practices to meet, and thereby, balance the needs of current and potential stakeholders (Brundtland, 1987). The significance of corporate sustainability lies in its potential to provide competitive solutions in the short term while questing to preserve, maintain and enhance natural and human resources, which could be needed in the future. This can be achieved by measuring the extent to which an organization integrates environmental, economical, social and governance-related factors into its operations and the impact these factors have on the firm and society (Artiach et al., 2010).

Although the issue of sustainability extends beyond the premises of any particular type of organization (Seuring and Gold, 2013), multinational corporations (MNCs), as global organizations, must play a leader’s role in the progression and fulfillment of global sustainability goals (Andersson et al., 2005). MNCs are considered to be major producers of technological knowledge in terms of world economy, actively playing a leading responsibility in the development of innovative technologies for industrial applications (Zeile, 2014). The 75,000 MNCs in the world contribute to 20 per cent of the world’s economic activity. Moreover, in terms of financial significance, the World Investment Report (2014) disclosed that the cash holdings of MNCs are in the order of US$5tn, with sovereign wealth fund assets exceeding US$6tn and investing US$7.7tn currently in developing economies alone (Unctad, 2014). This exhibits the enormous contribution of MNCs not only to a nation but also to the world economy.

A consensus among existing studies seems to emphasize the role of innovation as the key to sustainable development and sustainable performance (Staub et al., 2016; Senge, 2008). Technology transfer as a difficult and complex process remains one of the most impressive and important features of MNCs that preserves innovative knowledge developed across the globe, thereby empowering firms throughout the world to avail benefits by simply exposing themselves to the developed innovative technology (Kogut and Zander, 2003; Wahab et al., 2012). The significance of technology transfer for the host country is embedded in its ability to generate important technological impacts for the host economies (Jordaan, 2013). Additionally, research reveals that the integration of global knowledge enables MNCs to reap the incremental value of being multinational (Kogut and Zander, 2003). It is argued that an MNC exploits its superior knowledge in a host country by transferring hereditary knowledge to its foreign affiliates (Driffield et al., 2010), which could be translated as improved knowledge, enhanced working practices and improved technology adoption (Al-abed, 2014; Gilbert and Cordey-Hayes, 1996; Gold et al., 2001) among its subsidiaries in the host economy, which, in turn, is expected to benefit the corporate sustainability performance of the unit receiving the technology. In such context, one major concern for foreign MNCs, while transferring their capital and technology across borders, is the performance and sustainability of their subsidiaries in any host country (Cui et al., 2006). It is perceived that understanding the effect of host-country characteristics by overseas affiliates enhances their understanding of the domestic environment, which also benefits the parent companies as a chain reaction (Gnyawali and Hatfield, 2007).

However, empirical investigations, on what and how host-country characteristics affect the intra-firm technology transfer of improved knowledge, remain rare (Chesbrough, 2012; Waroonkun and Stewart, 2008). Moreover, the significant question of how such improved knowledge as a product of intra-firm technology transfer processes affects the sustainability of organizations remains unanswered. Although it must be acknowledged that technology transfer is blessed with a rich body of literature,
the intersections of host-country features, technology transfer and organizational sustainability remain a significantly unexplored research area. Particularly in the context of Malaysia as a country trying hard to move toward a high technology and skilled-labor intensive knowledge-based economy by 2020 (Ramayah et al., 2014), such an empirical exploration is both timely and significant. As existing evidence suggests that MNCs are yet unenthusiastic to share key technological knowledge with Malaysia (Michailova and Mustaffa, 2012), this study argues that it is the market, cultural and other aspects of the host nations, such as Malaysia, that influence such transfer of innovative knowledge, which in turn affects the sustainable performance of organizations.

Literature review
Foreign direct investment and multinational corporations in Malaysia
MNCs not only are the major producers of technological knowledge in the world but also play a leading role in the development of innovative technologies, by means of their extensive R&D activities (Zeile, 2014). With respect to Malaysia, foreign direct investment (FDI), particularly by MNCs, has constantly been a principal factor in developing the industrial sector and the employment trend of the country’s residents (Noor, 2000). Conforming to the World Investment Report, 2014, Malaysia is ranked 19th along with the world’s other 21 striking destinations for foreign investments and ranked 15th out of 17 countries as a potential host economy (2014-2016). It is regarded as one of the major FDI recipients in the ASEAN (Association of Southeast Asian Nations), with a total of up to 12bn investment (Unctad, 2014). A report by the Ministry of International Trade and Industry (MITI) says that Malaysia itself hosts around 400 foreign MNCs (MITI, 2012). Intel’s design center for producing microprocessors for their portable equipment, Motorola’s Research and Development center in Malaysia, the world’s leading producer of thin-film disks, Komag USA and Matsushita R&D center for designing air conditioners are a few of the many foreign MNCs operating subsidiaries in Malaysia (Bursa Malaysia, 2014).

The foreign investment path in Malaysia follows the steps stated below. The Malaysian Industrial Development Authority (MIDA) screens FDI initiatives, similar to that in the case of MNCs, to confirm that the FDI is in line with social and strategic Malaysian policies. To commence a business in Malaysia, foreign MNCs have the choice to register a branch office, set up a representative office, set up a joint venture with a local body, provide franchising licenses to local partners or award patents. Although the Malaysian Government limits foreign equity to 30 per cent in any organization, 100 per cent foreign ownership is open for export-oriented industries, making Malaysia a lucrative land for MNC investments. Owing to the positive business environment blessed with strong information structure and infrastructure, and an educated and multilingual workforce, many MNCs find Malaysia to be an attractive host for investments. MNCs originating from more than 40 nations (mainly from the USA, Germany and Japan) have empowered more than 3,000 local Malaysian companies within the manufacturing sector and are solely responsible for making Malaysia one of the world’s best choices for manufacturing activities and services.

Theoretical foundation
This study attempts to examine the influence of host-country characteristics on the adoption of improved knowledge and its subsequent effect on corporate sustainability among subsidiaries of foreign-based MNCs in Malaysia. This requires exploring theories that cover
the external environment within which a firm operates along with the internal environment of the firm. Considering the aforesaid, the present study is based on the organizational contingency theory, which can accommodate both the external and internal environments of a firm and can be used to explain the dependency of the internal strategic decisions of the subsidiaries on the external environment of the host country within which it operates (Donaldson, 2001); along with the resource-based view (RBV) to explain the relationship between internal, unique and inimitable resources, such as innovative technologies and the firm's corporate sustainability performance (Barney, 1991).

Contingency theory suggests that the best way to organize depends on the nature of the environment to which the organization must relate (Donaldson, 2001). According to the theory, the environment in which the firm operates must also be taken into account (Edquist, 1997) for organizational success. Specifically for the purpose of the current study, it is posited that the contingency theory governs the relationship between the relevant independent variable (i.e. host-country characteristics) and the dependent variables (i.e. improved knowledge adoption and corporate sustainability performance). Contingency theory hypothesizes that organizations or work units are most effective when they are aligned to particular elements of their contextual environment, and it is the alignment between the technologies and their shifting contextual conditions that impacts different organizational constructs such as knowledge creation or technology transfer (Teasley and Robinson, 2005). Hence, it is argued that in the present context, market environment, cultural factor, government policy and absorptive capacity of the host country represent the dynamic contextual elements or conditions that impact organizational strategic decisions, such as transfer and adoption of improved knowledge. In Dunning’s (2003) words, the logic of developing technology-based forms of corporate cooperation tends to develop naturally if cultural and institutional factors are already orienting managements toward all forms of relational collaboration. This reflects that both internal and external environments of organizations or subsidiaries (subunits) are contingent or influence each other in terms of knowledge creation, technology transfer and hence performance. Therefore, logically connecting the issue related to the effect of host-country characteristics on the adoption of improved knowledge, thereby enabling organizational sustainability performance, reclines on the shoulders of the organizational contingency theory to serve the purpose of this study.

On the other hand the issue on how transferred technologies (i.e. improved knowledge) affects organizational sustainability performance is an issue that could be posed by the RBV (Lin and Wu, 2014). RBV theorizes that firms can achieve sustainable competitive advantage or core capabilities by developing and using valuable resources and capabilities (Wernerfelt, 1984). According to the RBV, resources of firms include all assets and capabilities, organizational processes, attributes of the firm, knowledge, information, etc. that are controlled by the firm, allowing it to conceive and implement strategies that improve overall efficiency and effectiveness (Barney, 1991). On the other hand, internal firm capabilities represent the potential internal dimension and different internal competitive sources and could be casually categorized into resources, production process inputs and capabilities that emphasize the activities or tasks for transforming such resources (Grant, 1991). According to recent study, RBV offers the opportunity to examine enterprise management practices from both external and internal perspectives (Kelliher and Reinald, 2009); therefore, it is considered suitable for this study. Moreover, the RBV also emphasizes that knowledge is the key source, which shows the way to build competitive advantages (Barney, 1991). The focal point of the RBV firm standpoint is to exhibit the adoption of intra- and inter-organizational practices; therefore, it is presumed that such practices, being socially intricate and causally indefinite, can instigate additional capabilities in the organization and direct the firm to
overcome rivals in terms of social responsibility, environmental efficiency and influence the capability of firms to expand and attain competitive advantage from non-replicable resources and knowledge (Barney, 1991; Grant, 1991).

Market environment and improved knowledge

Market environment shapes the nature and intensity of competition and influences industry dynamics (Cui et al., 2006). In markets, where rivalry is high and underlying market mechanisms fluctuate incessantly, the importance of market factors in influencing strategic initiatives are augmented (Cui et al., 2006; Luo and Park, 2001). For the purpose of this study, particularly two market factors, market dynamism and competitive intensity, have been considered given that the existing literature has acknowledged them as significant influencers of strategic initiatives (Cui et al., 2006; Grewal and Tansuhaj, 2001). Market dynamism refers to regular transformations in the industry, including transformations of market factors such as technology, customer demand and competition structure (Cui et al., 2006). Competitive intensity refers to the degree of competition an organization faces in the market (Cui et al., 2006; Grewal and Tansuhaj, 2001). On the other hand, improved knowledge, for the purpose of this study, is perceived as an output of technology transfer processes (Al-abed et al., 2014; Waroonkun and Stewart, 2008; Gilbert and Cordey-Hayes, 1996; Gold et al., 2001). Waroonkun and Stewart (2008) stated that technology transfer performance can be evaluated by measuring the enhancement of knowledge, working practices and technology adoption in the context of the receiving unit (Gilbert and Cordey-Hayes, 1996; Gold et al., 2001). Moreover, Al-abed et al. (2014) agreed that improved knowledge in terms of management techniques is the outcome of the technology transfer process.

Contingency theory suggests that for firms, the best way to organize depends on the nature of the environment to which the organization must relate (Donaldson, 2001). RBV’s perspective of a firm also stresses that achieving and sustaining a competitive advantage remains contingent on new knowledge of the business environment (Wernerfelt, 1984; Zack, 1999). The theory seems to suggest that external business environment (market environment of the host country) influences firm’s quest of new knowledge and superior performance. Empirically, Cui et al. (2006) found that the intensity and nature of competition, the mechanism of organizational transactions and the input–output motion of local industries are all determined by country-specific environments. Additionally, the strategic initiatives of a firm directly result from the context of the environment within which it operates. Environmental factors form fundamental ingredients, whereas firms formulate strategic decisions. According to Luo and Park (2001), the market environment in which a firm operates directly influences its selection of strategic orientation. Moreover, in an earlier study, it was argued that market environment conditions are responsible for the typology of strategic orientation of a firm, and by means of synchronizing certain general strategies with these conditions, the firm could optimize performance (Miles et al., 1978).

According to prior research, particularly the rapid changes in consumer preferences (market dynamism) and competitor actions (competitive intensity) increase the importance of collecting, disseminating and responding to market intelligence; thus, firms facing high levels of market turbulence and competitive intensity are keen to seek knowledge externally (Chen and Lin, 2004). Therefore, considering theory and existing literature, this study perceives market environment and its dimensions as important factors that influence improved knowledge, and hence, this study hypothesizes the following:
**H1.** Market environment and its dimensions have a significant and positive effect on improved knowledge among subsidiaries of foreign MNCs in Malaysia.

**Cultural factor and improved knowledge**

The culture in which a firm operates is referred to as the cultural environment. Culture is the blueprint of values and beliefs, which are apparent in behaviors, practices and diverse artefacts that differentiate the members of one category of people from another (Cui et al., 2006). Culture functions at both the organizational level and national level (Cui et al., 2006; Hofstede, 1980). Therefore, for the purpose of this study, two cultural dimensions, national cultural distance and organizational cultural distance, have been considered. The fundamental differences in the national culture of the home country and the host country of an MNC are referred to as national cultural distance (Cui et al., 2006; Shenkar, 2001), whereas the underlying dissimilarity in organizational cultures amid two firms is referred to as organizational cultural distance (Cui et al., 2006).

Following the contingency theory and RBV, it could be perceived that the cultural traits of the external business environment (host country) influence a firm’s quest for new knowledge and superior performance (Donaldson, 2001; Wernerfelt, 1984; Zack, 1999; Zack, 1999), as international technology transfer is interpreted as cross-cultural technology transfer between countries. In this context, it is logical to seek problem-solving approaches originating from cultural origins and the relationship between efficient technology transfer and firms’ business performance. To address this issue, this study uses the concept of cultural distance, which could be defined as the difference between the cultures of the home and host countries, the difference being such that it influences information and communication sharing between organizations (Cui et al., 2006). According to prior research, geographical distance, traditions or culture and national discrimination between workforces may hinder collective efforts and prevent technology transfer (Kogut and Zander, 2003). Culture plays an important role not only at the organizational level but also at the national level (Hofstede, 1980), particularly in intra-firm studies concerning MNCs that constantly witness inter-cultural opportunities and challenges (Nguyen and Aoyama, 2014).

Previous studies agreed that cultural differences between the transferor and transferee at both the national and organizational levels play a vital role in the international technology transfer process (Waroonkun and Stewart, 2008). Therefore, considering theoretical and empirical evidence, this study acknowledges national cultural distance and organizational cultural distance as the two significant dimensions of cultural factor that are perceived to affect improved knowledge adoption as a component of technology transfer performance between the MNC headquarters and their subsidiaries in Malaysia. Hence, this study puts forth the following hypothesis:

**H2.** Cultural factor and its dimensions have a significant and positive effect on improved knowledge among subsidiaries of foreign MNC in Malaysia.

**Government policy and improved knowledge**

Apart from directly influencing the expansion of domestic outputs, employment, capital formation and exports, FDI indirectly facilitates skill upgradation and local ancillary development by means of technology transfer and diffusion (Techakanont and Terdudomtham, 2004). International trade and FDI by MNCs have been recognized as important channels for international knowledge diffusion (Coe et al., 2009). In this context, the potential influence of the host government policies on the benefits of investing and doing
business in a specific host country is potentially important (Blomström et al., 2001). Based on the contingency theory and RBV, it could be articulated that policies of the external business environment (host country) influence a firm’s quest for new knowledge and superior performance (Donaldson, 2001; Wernerfelt, 1984; Zack, 1999). According to prior research, the laws of the land, rules and regulations, systems and policies, customs, traditions and norms of the host community are crucial factors considered by MNCs before transferring any technology to the developing markets (Chesbrough, 2012). It is asserted that legal and regulatory certainties equate to more attractive foreign investments for a country (Hayakawa et al., 2013), leading to increased technology transfer. However, some areas of government policy are obvious determinants of FDI spillovers, such as host-country policies regarding FDI, trade and technology, which impose restrictions on the extent and nature of foreign ownership (Blomström et al., 2001). This study, therefore, acknowledges trade and FDI policies as one-dimension and technology policies as the other significant dimension of the host country’s government policies that are expected to affect improved knowledge gained through intra-firm technology transfer.

Barton (2007) suggested that trade is the key channel for technology transfer, while FDI has been identified in previous studies as a prime vehicle for transferring technology and increasing the technological level of the economy (Munteanu, 2015). On the other hand, technology policies, with respect to R&D and intellectual property rights (IPR) implemented by the host-country government is another area that has potentially important impacts on FDI spillover benefits, thereby influencing intra-firm technology transfer. According to prior research, government policies encouraging the performance of R&D in the host economy ought to enhance the technical capability of firms along with governments’ technology policy toward intellectual property protection, which is a potentially important aspect of FDI and technology transfer (Blomström et al., 2001). Therefore, considering the theory and existing literature, this study takes into account FDI and trade policies along with technological policies (R&D and IPR) of the host nation as significant determinants of improved knowledge acquired by means of inter-country technology transfer. Thus, the following hypothesis is proposed:

**H3.** Host-country policies and its dimensions have a significant and positive effect on improved knowledge among subsidiaries of foreign MNCs in Malaysia.

**Absorptive capacity of host-country citizens and improved knowledge**

The rapidly changing business environment characterizing many firms today indicates that absorptive capacity should be an important focus for all firms (Ramayah et al., 2014). Because this study focuses on host-country characteristics, for the purpose of this study, absorptive capacity refers to education and technical training, labor skills and learning capability traits of the host-country citizens employed in the subsidiaries of foreign MNCs in Malaysia. According to Waroonkun and Stewart (2008), host countries will achieve some advancement in their economies once they have the ability to absorb the transferred technology. Absorptive capacity has been defined as the “ability to recognize the value of new external information, assimilate it, and apply it to commercial ends” (Minbaeva et al., 2003; Cohen and Levinthal, 1990).

Prior knowledge base refers to existing individual units of knowledge available within the organization (Minbaeva et al., 2003). Thus, employees’ ability, as reflected by their educational background, and acquired job-related skills may represent the “prior related knowledge”, which the firm needs to incorporate and apply (Minbaeva et al., 2003; Cohen and Levinthal, 1990). However, according to the existing literature, ability alone is not
adequate to predict absorptive capacity. Employees require motivation to assimilate and apply new knowledge acquired externally. Motivated employees are perceived to contribute toward the effectiveness of the organization. Research reveals that despite the fact that the organization might have individuals with a high capability to learn, “its ability to utilize the absorbed knowledge will be low if employees’ motivation is low or absent” (Baldwin and Magjuka, 1991). Moreover, the existing literature repeatedly stresses that technology recipients require attaining a minimum human resource capacity for them to take advantage from technology transfer (Girma, 2005), thereby establishing absorptive capacity as a strong facilitator of technology transfer performance. This study, therefore, perceives ability and motivation as two significant dimensions of absorptive capacity and examines their influence on improved knowledge as a component of intra-firm technology transfer performance. Therefore, the following hypothesis is proposed:

\[ H4. \] Absorptive capacity of host-country citizens and its dimensions have a significant and positive effect on improved knowledge among subsidiaries of foreign MNCs in Malaysia.

**Improved knowledge and corporate sustainability**

Brundtland (1987) articulated that sustainable organizations are the ones that endeavor to constantly improve their environmental, social and economic performance, enabling the possibility that future generations will be able to meet their needs. According to the Turkish Ministry of Development (2007), science, technology and innovative knowledge are among the major factors determining sustainability. Technology transfer as a mechanism preserves innovative knowledge developed across the globe, thereby empowering firms throughout the world to avail benefits by simply exposing themselves to the developed innovative technology (Kogut and Zander, 2003). Existing literature which upheld MNC exploits its superior knowledge in a host country by transferring hereditary knowledge to its foreign affiliates (Driffield et al., 2010), which could be translated as improved knowledge, enhanced working practices and improved technology adoption (Al-abed, 2014; Gilbert and Cordey-Hayes, 1996; Gold et al., 2001) among its subsidiaries in the host economy, which, in turn, is expected to benefit the corporate sustainability performance of the unit receiving the technology.

Theoretically, the relationship between improved knowledge acquired from technology transfer processes and corporate sustainability could be explained by using the RBV, which emphasizes that knowledge is the key source that shows the way to build a competitive advantage (Barney, 1991). RBV suggests that the adoption of intra- and inter-organizational practices, being socially intricate and causally indefinite, can instigate additional capabilities in the organization and direct the firm to overcome rivals in terms of social responsibility, environmental efficiency and influence the capability of firms to expand and attain competitive advantage from non-replicable resources and knowledge (Barney, 1991; Grant, 1991). Furthermore, Staub et al. (2016) forwarded that innovative knowledge is one of the most effective methods of ensuring the sustainability of institutional strategies. Prior research also argued that innovative knowledge could be perceived as a source of competitive advantage and plays an important role in achieving sustainability. Moreover, Senge et al. (2008) portrayed that sustainable development cannot be achieved without innovation. Therefore, based on RBV and existing literature, this study perceives that innovative improved knowledge gained through technology transfer processes significantly influences the corporate sustainability performance among the subsidiaries of foreign MNCs operating in Malaysia. Thus, the following hypothesis is proposed:
H5. Improved knowledge has a significant and positive effect on corporate sustainability among subsidiaries of foreign MNCs in Malaysia.

The mediating effect of improved knowledge
This study conceptualizes market environment, cultural factor, government policy and absorptive capacity of the host country as factors affecting improved knowledge acquired by means of intra-firm technology transfer, and simultaneously, a relationship of such improved knowledge affecting the corporate sustainability has also been articulated. The study, therefore, rationally expects improved knowledge to significantly mediate the relationship among market environment, cultural factor, government policy and absorption capacity of the host country with the corporate sustainability performance among subsidiaries of foreign MNCs in Malaysia. Moreover, leaning on the organizational contingency theory and RBV, it could be conceptualized that the external business environment influences a firm’s adoption of new knowledge, which in turn enables the firm to achieve sustainability (Donaldson, 2001; Wernerfelt, 1984; Zack, 1999), further implying the possible necessity of improved knowledge for the effect of external environment on organizational sustainability. Empirically, Desarbo et al. (2005) also confirmed that in a dynamic external environment, faster diffusion and adoption of innovative technologies occur between MNC headquarters and their subsidiaries, which plays a significant role in firm performance, thus indicating the mediating effect of innovative. Hence, the following hypothesis is proposed:

H6. Improved knowledge significantly mediates the relationship between market environment, cultural factor, host-country policies and absorptive capacity of host-country citizens with corporate sustainability among subsidiaries of foreign MNCs in Malaysia.

Methodology
This study used a cross-sectional design and quantitative approach to measure the effect of market environment, cultural factor, government policy and absorptive capacity of the host country on improved knowledge and corporate sustainability among subsidiaries of foreign-based MNCs operating in Malaysia. Data were collected from top managers of foreign subsidiaries in Malaysia by means of self-administered questionnaires, and later, the collected data were analyzed using SPSS.

Research instrument
The questionnaire for the survey was designed using simple and unbiased wordings to ensure that the respondents could easily understand the questions. The variables designed for market environment and cultural factor were adopted from Cui et al. (2006) and Simonin (1999). Meanwhile, questions for government policies were adopted from Blomström et al. (2001); Javorcik (2004); and Almeida and Fernandes (2008). The measures for absorptive capacity were adapted from the study of Minbaeva et al. (2003), and the items for improved knowledge were borrowed from Al-Abed et al. (2014). Finally, items for corporate sustainability were adopted from Staub et al. (2016). A seven-point Likert scale of 1 to 7 points (strongly disagree, disagree, maybe disagree, neutral, maybe agree, agree and strongly agree) was used for all the variables.
Sample selection
The population for this study included 5,147 subsidiaries of foreign MNCs that operate within Malaysia. The details of the respondents were gathered from the databases available from MIDA, Bursa Malaysia and the FMM (Federation of Malaysian Manufacturer) Directory of Malaysian Industries, 2014, which could be considered the most official and authentic sources of information regarding foreign investments in Malaysia. A total of 500 foreign-based MNC firms were selected by adopting a random sampling method to identify potential respondents using a table of random numbers. This study selected 500 SMEs with an expectation that more than 300 subsidiaries would agree to participate in the study's survey. However, only 269 responses of 252 respondents from all sectors located all over Peninsular Malaysia were found to be complete and usable for analyses.

Data analysis methods
This study used the partial least squares (PLS) technique to analyze data using the SmartPLS 3.0 software for validating measurements and testing the hypotheses. The PLS approach was applied to estimate the causal models (using SmartPLS; Hansmann and Ringle, 2004), following Hulland's (1999) procedure, which suggests evaluating each model in two stages. This method provides the basics for estimation and a parsimonious model for higher-level analysis with the presence of lower-order constructs (LOCs) (Becker et al., 2012). The evaluation of the measurement model was based on the assessment of internal consistency (CR), indicator reliability (Cronbach’s alpha), convergent validity (AVE) and discriminant validity. The values of composite reliability and AVE to test the reliability and validity of the constructs revealed that the values were greater than 0.5 for all the constructs; thus, the construct reliability and convergent validity were achieved and explained. Later, the discriminant validity for each measure was calculated and finally, at the second stage, the paths between the constructs in the models were estimated (Table I).

Data analysis
Descriptive analysis
Among the 252 participating subsidiaries of foreign MNCs in Malaysia, 34.9 per cent belonged to North American parent companies, 33.7 per cent belonged to European parent companies and 29 per cent were subsidiaries of Asian origin. In terms of the number of employees, most parent companies employed 100,001 to 200,000 employees (29.8 per cent). Next, there were companies with their number of employees between 50,001 to 100,000 (22.2 per cent). For the industry type of the parent company, the sample was divided into 19 major industry types, including both manufacturing and service sectors. Most organizations were found to belong to the electrical and electronics industry (15.1 per cent), followed by the clothing and consumer goods industry (10.7 per cent), automotive industry (9.5 per cent), technology and IT industry (3.2 per cent) and others. For years of subsidiary establishment, it was found that 43.3 per cent of the samples had been established in Malaysia for more than 30 years, 18.7 per cent had been established between 21 to 30 years, followed by 11.5 per cent between 16 to 20 years, 10.7 per cent between 6 to 10 years, 8.7 per cent between 11 and 15 years and finally, 7.1 per cent of the subsidiaries were established recently between 1 to 5 years in Malaysia.

Finally, in terms of the size of the subsidiary and the number of host-country citizens employed by the subsidiary, the responses were classified into nine categories. Most subsidiaries were found to employ 101 to 200 employees (34.5 per cent). Similar was the case with host-country employees, with 30.6 per cent (the highest) of the subsidiaries employing 101 to 200 Malaysian citizens, followed by 25 per cent subsidiaries that employed 1 to 100
<table>
<thead>
<tr>
<th>Constructs/items</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market environment</strong></td>
<td>Cui et al. (2006)</td>
</tr>
<tr>
<td>The customer demands on our subsidiary are constantly changing within the host country</td>
<td></td>
</tr>
<tr>
<td>The business practices in our industry within the host country are constantly changing</td>
<td></td>
</tr>
<tr>
<td>The production technologies within our industry are constantly changing in the host country</td>
<td></td>
</tr>
<tr>
<td>The management technologies within our industry are constantly changing in the host country</td>
<td></td>
</tr>
<tr>
<td>The level of competition in this industry is high in the host country</td>
<td></td>
</tr>
<tr>
<td>This industry in the host country has many promotional wars</td>
<td></td>
</tr>
<tr>
<td>Price competition in this industry in the host country is great</td>
<td></td>
</tr>
<tr>
<td>There are many new moves by our competitors in the industry within the host country</td>
<td></td>
</tr>
<tr>
<td><strong>Cultural factor</strong></td>
<td>Cui et al. (2006); Simonin (1999)</td>
</tr>
<tr>
<td>The national culture of our parent company greatly differs from that of the host country</td>
<td></td>
</tr>
<tr>
<td>The language difference is a major obstacle in communicating with the parent company</td>
<td></td>
</tr>
<tr>
<td>The custom of doing business in the home country of the firm greatly differs from ours</td>
<td></td>
</tr>
<tr>
<td>The business practices of our headquarters are very similar to ours</td>
<td></td>
</tr>
<tr>
<td>The operational mechanisms of our headquarters are very similar to ours</td>
<td></td>
</tr>
<tr>
<td>The corporate culture of our headquarters is very similar to ours</td>
<td></td>
</tr>
<tr>
<td>The management style of our headquarters is very similar to ours</td>
<td></td>
</tr>
<tr>
<td><strong>Government policy</strong></td>
<td>Almeida and Fernandes (2008); Blomstrom et al. (2001); Javorcik (2004)</td>
</tr>
<tr>
<td>Trade regulations of the host country constrain our business</td>
<td></td>
</tr>
<tr>
<td>Labor policies of the host country is a problem for our business</td>
<td></td>
</tr>
<tr>
<td>Tax regulations of the host country constrain our business</td>
<td></td>
</tr>
<tr>
<td>Regulations related to business licensing and operating permits of the host country constrain our business</td>
<td></td>
</tr>
<tr>
<td>Policies of the host country adequately protect intellectual property</td>
<td></td>
</tr>
<tr>
<td>Duration of protection for intellectual properties offered by the host country is adequate. The intellectual property laws of the host country have adequate enforcement mechanisms</td>
<td></td>
</tr>
<tr>
<td><strong>Absorptive capacity</strong></td>
<td>Minbaeva et al. (2003)</td>
</tr>
<tr>
<td>Overall ability of my employees is better compared to our competitor(s)</td>
<td></td>
</tr>
<tr>
<td>Job-related skills of my employees are better compared to our competitor(s)</td>
<td></td>
</tr>
<tr>
<td>Educational level of my employees is better compared to our competitor(s)</td>
<td></td>
</tr>
<tr>
<td>Motivation of my employees is higher compared to our competitor(s)</td>
<td></td>
</tr>
<tr>
<td>Work effort of my employees is higher compared to our competitor(s)</td>
<td></td>
</tr>
<tr>
<td>The behavior of locals employed in the subsidiary helps firm performance</td>
<td></td>
</tr>
<tr>
<td>Host-country citizens employed in the subsidiary contribute positively to firm performance.</td>
<td></td>
</tr>
<tr>
<td>The subsidiary, compared with its headquarters, has highly motivated employee groups</td>
<td></td>
</tr>
</tbody>
</table>

Table I. Research instrument (continued)
Malaysian citizens, 10.7 per cent employed 501 to 1000 Malaysians, 10.3 per cent employed 201 to 300 Malaysians, 7.5 per cent employed 1001 to 2000 Malaysians, 7.1 per cent employed 301 to 500 Malaysians, 5.2 per cent employed 2001 to 5000 Malaysians, 2.4 per cent employed 5001 to 10,000 Malaysians and 0.8 per cent employed more than 10,000 host-country citizens.

Reliability and validity
Cronbach’s alpha values for market environment (represented by market dynamism and competitive intensity), cultural factor (national cultural distance and organizational cultural distance), government policies (trade and FDI policies and technological policies), absorptive capacity (ability and motivation), improved knowledge and corporate sustainability were all found to be more than 0.7. Because Cronbach’s alpha for all items was more than 0.7, this study considers all items reliable. For composite reliability, the indicators have different loadings for all items, and all the values were found to be more than 0.7. According to experts, if the indicators are higher than 0.7, it is considered reliable (Hair et al., 2013). Convergent validity signifies that a set of indicators represents one and the same underlying construct, which can be demonstrated through their unidimensionality. Further, because the average variance extracted (AVE) value for all items is more than 0.5, it indicates sufficient convergent validity (Hair et al., 2011) (Table II).

Indicators could be assumed to be reliable if the absolute standardized outer loadings are higher than 0.7. As presented in Table III, all items used to measure the market environment, cultural factor, government policies, absorptive capacity, technology transfer performance and corporate sustainability were found to be more than 0.7. The cross-loading values were below the outer loadings, which suggests good discriminant validity. Experts noted that discriminant validity is assessed by examining the cross loadings of the indicators (Hair et al., 2013). The Fornell-Larcker criterion assesses the discriminant validity at the construct level. The Fornell-Larcker criterion in Table II is largely unable to detect any lack of discriminant validity. Furthermore, the heterotrait-monotrait ratio (HTMT) is an
estimate of the correlation between constructs, which parallels the disattenuated construct score creation. Using a value of 0.9 as the threshold, this study concludes that there is no evidence of the lack of discriminant validity and all the constructs meet the criteria.

Path coefficients
Path coefficients are estimated as path relationships in the structural model between the constructs in the model. As presented in Table IV below, the path coefficients of market environment, have been found to have a positive and statistically significant effect on improved knowledge (at the chosen 5 per cent level of significance), indicating that the adoption of improved knowledge is positively influenced by market changes and competitors’ actions within which a firm operates. Government policy has also been found to have a positive and statistically significant effect on improved knowledge, conveying that policies of the host-country government, particularly in terms of foreign investment, R&D and IPR significantly influence innovative knowledge adoption among subsidiaries of foreign MNCs in Malaysia.

As for absorptive capacity, Table IV displays a positive and statistically significant effect of absorptive capacity on improved knowledge (at the chosen 5 per cent level of significance), thereby indicating that ability and motivation among local employees are crucial for the adoption of new knowledge from the foreign parent company. However, according to Table IV, cultural factor has a positive but statistically insignificant effect on improved knowledge. This means that it is possible that there exists insignificant cultural differences between the sender (parent company) and receiver (subsidiary) of improved knowledge. Furthermore, improved knowledge is found to have a positive and statistically significant effect on corporate sustainability, proving that innovative knowledge as an output of intra-firm technology transfer significantly contributes toward achieving corporate sustainability among subsidiaries of foreign-based MNCs in Malaysia.

In terms of effect sizes ($f^2$) as observed in Table IV, it could be interpreted that market environment, cultural factor and government policies have little effect on improved knowledge, whereas absorptive capacity has a moderate effect on improved knowledge. On the other hand, improved knowledge displays a large effect on corporate sustainability. Table IV further portrays the $r^2$ and $Q^2$ values for improved knowledge and corporate sustainability. Hair et al. (2013) states that generally, $r^2$ values of 0.75, 0.50 or 0.25 for endogenous constructs can be described as substantial, moderate and weak, respectively. For this study, the value that explains variance in the dependent variables is considered weak and could be acceptable. The $Q^2$ value assesses the relative predictive relevance of a predictor construct on an endogenous construct value, and the larger than zero value

<table>
<thead>
<tr>
<th>Variables</th>
<th>Items</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Cronbach's alpha</th>
<th>Composite reliability</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market environment</td>
<td>8</td>
<td>5.1151</td>
<td>0.8474</td>
<td>0.899</td>
<td>0.919</td>
<td>0.588</td>
</tr>
<tr>
<td>Cultural factor</td>
<td>7</td>
<td>4.9257</td>
<td>0.9707</td>
<td>0.903</td>
<td>0.923</td>
<td>0.633</td>
</tr>
<tr>
<td>Government policy</td>
<td>7</td>
<td>4.9286</td>
<td>0.8905</td>
<td>0.901</td>
<td>0.922</td>
<td>0.629</td>
</tr>
<tr>
<td>Absorptive capacity</td>
<td>8</td>
<td>5.2391</td>
<td>0.8642</td>
<td>0.907</td>
<td>0.925</td>
<td>0.608</td>
</tr>
<tr>
<td>Improved knowledge</td>
<td>4</td>
<td>5.2887</td>
<td>0.8590</td>
<td>0.857</td>
<td>0.904</td>
<td>0.701</td>
</tr>
<tr>
<td>Corporate sustainability</td>
<td>8</td>
<td>5.2401</td>
<td>0.7020</td>
<td>0.898</td>
<td>0.918</td>
<td>0.582</td>
</tr>
</tbody>
</table>

Table II. Reliability analysis
Note: AVE – average variance extracted
Source: Author’s data analysis
<table>
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<tr>
<th>Items/variables</th>
<th>ME</th>
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<th>GP</th>
<th>AC</th>
<th>IK</th>
<th>CS</th>
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<td>S3A7</td>
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<td>S3A8</td>
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**Fornell-Larcker criterion**

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<th>CF</th>
<th>GP</th>
<th>AC</th>
<th>IK</th>
<th>CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.767</td>
<td>0.58</td>
<td>0.849</td>
<td>0.462</td>
<td>0.486</td>
<td>0.552</td>
</tr>
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</table>

Table III. Outer model loading and cross-loading (continued)
indicates that the path model’s accuracy is acceptable (Hair et al., 2013). Based on Table III, $Q^2$ values are small but still higher than zero and are, therefore, considered acceptable.

**Mediating effect of improved knowledge**

In terms of the mediating effect of improved knowledge between market environment and corporate sustainability, the steps, requirements for the next steps and the status are presented in Table V. In Step 1, the coefficient of market environment on corporate sustainability is found to be 0.553 with a $p$-value of 0.000, which satisfies the requirements and allows us to conduct Step 2. Step 2 tests the effect of market environment on improved knowledge. As the coefficient value for Step 2 is found to be 0.125 with a $p$-value of 0.046, it satisfies the requirements and allows us to conduct Step 3. In Step 3, the coefficient of improved knowledge on corporate sustainability is found to be 0.654 with a $p$-value of 0.000, which satisfies the requirements and allows us to conduct Step 4. Step 4 tests the effect of market environment and improved knowledge on corporate sustainability. The coefficient value for Step 4 is found to be 0.308 with a $p$-value of 0.000. The statistically significant ($p$-value < 0.05) effect of market environment on corporate sustainability in Steps 1 and 4 indicates partial mediation of improved knowledge between market environment and corporate sustainability among subsidiaries of foreign-based MNCs in Malaysia.

<table>
<thead>
<tr>
<th>Items/variables</th>
<th>ME</th>
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<th>GP</th>
<th>AC</th>
<th>IK</th>
<th>CS</th>
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<tr>
<td>GP</td>
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<td>AC</td>
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<td>0.712</td>
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<td>CS</td>
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<td>0.570</td>
<td>0.634</td>
<td>0.645</td>
<td>0.738</td>
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</tbody>
</table>

Notes: The values in italics in the matrix above are the item loadings, and all others are cross-loadings; ME, market environment; CF, cultural factor; GP, government policy; AC, absorptive capacity; IK, improved knowledge; and CS, corporate sustainability

Source: Author’s data analysis

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Coefficient</th>
<th>t-value</th>
<th>p-value</th>
<th>$f^2$</th>
<th>$r^2$</th>
<th>$Q^2$</th>
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<td><strong>Improved knowledge</strong></td>
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<td></td>
<td></td>
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<td></td>
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<td>0.006</td>
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<td>0.318</td>
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<td>1.686</td>
<td>0.046</td>
<td>0.013</td>
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<td>0.000</td>
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<tr>
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<tr>
<td>$H5$ IK $\rightarrow$ CS</td>
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<td>0.746</td>
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</tbody>
</table>

Notes: ME, market environment; CF, cultural factor; GP, government policy; AC, absorptive capacity; IK, improved knowledge; and CS, corporate sustainability

Source: Author’s data analysis
The mediating effect of improved knowledge between cultural factor and corporate sustainability, the steps, requirements for the following steps and the status are presented in Table V. In Step 1, the coefficient of cultural factor on corporate sustainability is found to be 0.077 with a p-value of 0.151, which does not satisfy the requirements and therefore, does not allow us to conduct Step 2. As for the third variable, government policies, the mediating effect of improved knowledge between government policies and corporate sustainability, the steps, requirements for the next steps and the status are reported in Table IV. Accordingly, in Step 1, the coefficient of government policies on corporate sustainability is found to be 0.574 with a p-value of 0.000, which satisfies the requirements and allows us to conduct Step 2. Step 2 tests the effect of government policies on improved knowledge. As the coefficient value for Step 2 is found to be 0.182 with a p-value of 0.003, it satisfies the requirements and allows us to conduct Step 3. In Step 3, the coefficient of improved knowledge on corporate sustainability is found to be 0.654 with a p-value of 0.000, which satisfies the requirements and allows us to conduct Step 4. Step 4 tests the effect of government policies and improved knowledge on corporate sustainability. The coefficient value for Step 4 is found to be 0.309 with a p-value of 0.000. The statistically significant (p-value < 0.05) effect of government policies on corporate sustainability in Steps 1 and 4 indicates partial mediation of improved knowledge between market environment and corporate sustainability among subsidiaries of foreign-based MNCs in Malaysia.

Finally, for absorptive capacity, the steps, requirements for the following steps and the status are presented in Table V. Accordingly, in Step 1, the coefficient of absorptive capacity on corporate sustainability is found to be 0.594 with a p-value of 0.000, which satisfies the requirements and allows us to conduct Step 2. Step 2 tests the effect of
absorptive capacity on improved knowledge. The coefficient value for Step 2 is found to be 0.452 with a p-value of 0.000; thus, it satisfies the requirements and allows us to conduct Step 3. In Step 3, the coefficient of improved knowledge on corporate sustainability is found to be 0.654 with a p-value of 0.000, which satisfies the requirements and allows us to conduct Step 4. Step 4 tests the effect of absorptive capacity and improved knowledge on corporate sustainability. The coefficient value for Step 4 is found to be 0.298 with a p-value of 0.000. The statistically significant (p-value < 0.05) effect of absorptive capacity on corporate sustainability in Steps 1 and 4 indicates partial mediation of improved knowledge between absorptive capacity and corporate sustainability among subsidiaries of foreign-based MNCs in Malaysia.

Importance performance matrix analysis
As an extension to the results of the study, the present study ran a post hoc importance-performance matrix analysis (IPMA) using market environment, cultural factor, government policies, absorptive capacity and improved knowledge as variables and improved knowledge and corporate sustainability as the target construct. Based on Table VI, it can be observed that absorptive capacity is the most important factor in predicting improved knowledge as reflected by its highest importance and performance values compared to the rest of the variables, followed by market environment, government policies and cultural factor.

Results
The results of the analyses revealed that market environment (i.e. market dynamism and competitive intensity) has a positive and significant effect on improved knowledge, thus supporting hypothesis, H1. Second, government policy is also found to have a positive and significant effect on improved knowledge, thus supporting hypothesis, H3. As hypothesized, the results portrayed that absorptive capacity also has a positive and significant effect on improved knowledge (H4). However, for cultural factor, although the results of analyses identified a positive effect among the respondents, the effect of cultural factor on improved knowledge was not found to be statistically significant (H2). Finally, the results confirmed a positive and significant effect of improved knowledge on corporate sustainability performance among subsidiaries of foreign MNCs in Malaysia, thus supporting hypothesis, H5. In terms of the mediating effect of improved knowledge, the results indicate a statistically significant effect of improved knowledge on the relationships between market environment, government policies and absorptive capacity with corporate sustainability, thus supporting hypothesis, H6.

<table>
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<th>Target construct</th>
<th>Improved knowledge</th>
<th>Corporate sustainability</th>
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<tbody>
<tr>
<td>Variables</td>
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<td>Performance</td>
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<tr>
<td>Cultural factor</td>
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<tr>
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<td>–</td>
<td>–</td>
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<tr>
<td></td>
<td></td>
<td>5.285</td>
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</tbody>
</table>

Table VI. Performance and total effects

Source: Author’s data analysis
Discussion and conclusion

The findings of this study indicate that adoption of improved knowledge is contingent to changes in the market, such as customer demands and competitors’ actions, within which a firm operates. Moreover, the finding of this study also revealed that government policies of the host country in context of foreign investment, trade and technology facilitate the adoption of innovative knowledge among subsidiaries of foreign MNCs in Malaysia. Furthermore, the findings of this study reflected that both ability and motivation of local employees are significant factors for the adoption of innovative knowledge in the case of intra-firm technology transfer among subsidiaries of foreign-based MNCs in Malaysia. The findings of this study further forwarded that as intra-firm technology transfer occurs within the boundaries of the same organization, cultural distances between the headquarters and its subsidiaries do not significantly affect improved knowledge as a product of such technology transfer processes. Finally, the findings of the study asserted that improved knowledge, as a unique, inimitable and internal resource enables subsidiaries of foreign-based MNCs in Malaysia to achieve corporate sustainability.

Implications

In terms of implications, overall, the findings of this study provide empirical support toward organizational contingency theory and RBV, advocating that host-country characteristics as a dynamic external environment affect the transfer and adoption of firm’s internal resources, such as innovative knowledge, which in turn, forms valuable and unique capabilities that are crucial for organizational sustainability. The findings of this study empirically support relevant previous studies and extends the findings of Cui et al. (2006) by showing that market environment not only affects the process of technology transfer but also influences its output, improved knowledge as a component of technology transfer performance. Moreover, this study provides empirical evidence for Blomström et al. (2001), in which a relationship between government policies and technology transfer was theorized. Furthermore, the findings provide empirical support and extend Minbaeva et al. (2003) by confirming the association between absorptive capacity and improved knowledge, as product of intra-firm technology transfer.

Limitations

As for limitations, this study uses data collected from a single host country; thus, the results may not be applied at a global level. Moreover, the limited number of host-country constructs included in this study’s model could be acknowledged as another limitation of the study.

Conclusion

The primary objective of this study was to establish an empirical relationship between various host-country characteristics (market environment, cultural factor, government policy and adsorptive capacity) and improved knowledge, as a component of intra-firm technology transfer performance, among subsidiaries of foreign MNCs in Malaysia. Moreover, this study attempted to establish an empirical association between improved knowledge and corporate sustainability among organizations of interest. The findings of the study show a positive and significant effect of market environment, government policies and absorptive capacity on improved knowledge and a positive and significant effect of improved knowledge on corporate sustainability.

This study contributed both theoretically to the body of knowledge and practically to the government and authorities of relevant organizations in various ways as follows. This study
focuses on the significant but under-researched area of organizational sustainability performance by means of a model that accommodates the external environment of the firm, the unique internal resources of the firm and the firm’s corporate sustainability performance in a single framework under the premise of organizational contingency theory and RBV. The present combined the organizational contingency theory and RBV model to explain and empirically prove the effect of market environment, cultural factor, government policies and absorptive capacity on corporate sustainability by means of improved knowledge acquired from intra-firm technology transfer processes, among subsidiaries of foreign MNCs in Malaysia. This study, thus, theoretically contributes toward organizational contingency theory and RBV, by examining the effect of various host-country characteristics on corporate sustainability mediated by improved knowledge, within the scope of the theory. In terms of practical implications, the results achieved from this study could guide the Malaysian government in taking appropriate policy actions regarding foreign investment in general. Specifically, the findings of this study could be used by the Malaysian government in decision-making related to trade, FDI, R&D and IPR policy formulation. The findings of this study could also support both present and potential foreign MNCs in terms of strategic decision-making while transferring innovative knowledge to host countries such as Malaysia.

Finally, in articulating recommendations, this study suggests that the Malaysian government formulate and adopt more trade- and FDI-friendly laws and stricter intellectual property laws, and at the same time, provide higher education and training to its citizens to maximize foreign investment and knowledge transfer. Academically, this study could guide future researchers to better understand the effect of host-country characteristics on corporate sustainability via improved knowledge, particularly in the Malaysian context. However, it is much encouraged that future work could attempt to integrate more constructs into the study’s model or implement the same model in different geographical settings to reveal a deeper and generalized understanding of both host- and home-country characteristics regarding their influence on organizational performance and sustainability among developed and developing nations.

References


Mediating effect of improved knowledge


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Intellectual property rights protection and technological innovation

The moderating effect of internationalization

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Abstract
Purpose – The purpose of this paper is to assess the role of firms’ internationalization on the relationship between intellectual property right (IPR) protection and their technological innovation. While recent studies provide a negative relationship between IPR protection and technological innovation, this paper argues that firm’s internationalization weaken the negative relationship. This research is a meaningful step to clarify the theoretical conflict and empirical ambiguity of the effect of IPR protection on technological innovations.

Design/methodology/approach – This paper empirically analyzes the theoretical arguments with 204 US firms, which registered their patents in the United States Patent and Trademark Office and have been listed in the Compustat database between 2007 and 2010.

Findings – The paper suggests that IPR protections brings more benefit to firms with high multinationality and are more export-oriented in terms of developing technological innovation, whereas the effects of international knowledge stock is unclear in the relationship between IPR protection and technological innovation.

Research limitations/implications – This study shows the effects of internationalization factors, which provide the benefits of cost efficiency and of more resource accessibility on the relationship between IPR protection regime and a firm’s technological innovation. The implication for policy makers and firm managers is that utilizing internationalization resources and capabilities is essential in developing their firms’ technological innovation under a strong IPR protection.

Originality/value – This paper enriches the literature of IPRs and offers the direction for future research on how a firm’s internationalization matters in its innovative activities under IPR protection.

Keywords Innovation, Firm internationalization, Intellectual property rights protection

Paper type Research paper

1. Introduction
Corporate technological innovation is one of the most important factors for firms’ growth and market share (Cantwell, 1992). Although firms’ technological innovation and patent numbers granted in global patent systems have surprisingly been increased over the past 30 years, some issues such as technology leakage and imitation, however, have delayed technology development among those firms during the same period. Because the demotivation of technological development negatively influences innovative activities by firms and industries, the interest of protecting intellectual property rights (IPR) to technological innovations has been discussed in international economics, international business, law and politics (Brüggemann et al., 2016).
Although the IPR protection has become stronger recently, there are still great variations among countries. In general, developed countries have relatively strong regulations or laws, but less developed countries, especially the least-developed countries, have relatively weak protections for IPR (Ginarte and Park, 1997). These differences can cause the international conflicts on trade and business activities. To set up the minimum standards for the IPR internationally, the agenda of the Uruguay Round under the General Agreement on Tariffs and Trade (GATT) proposed the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), which is the most comprehensive international agreement on intellectual property. TRIPS agreement applies to all World Trade Organization (WTO) members even though the effective dates are different depending on the extent of the economic development.

Traditional and recent economics and business studies on IPR and innovation have shown mixed arguments and results. Many traditional studies have shown the positive effect of IPR protection on economic growth and innovation (Chen and Puttitanun, 2005; Kanwar and Evenson, 2003; Gould and Gruben, 1996; Kanwar and Varsakelis, 2001; Kim et al., 2012). Those studies mainly argue that a stronger IPR encourages firms’ innovative activities as well as national economic growth. Some economic and strategic reasons explain the positive relations. In more open and competitive markets, studies have shown that stronger IPR protection allows more R&D investment, and encourages technological changes (Gould and Gruben, 1996; Varsakelis, 2001). The following study empirically showed that the technological changes under stronger IPR are significant in both developing and developed countries (Kanwar and Evenson, 2003). In addition, some studies have shown the positive relations between IPR and innovation, but relatively different developing and developed countries under the strategic setting (Chen and Puttitanun, 2005; Kim et al., 2012).

On the other hand, some studies in other stream of traditional literature have shown negative relationship, no evidence or mixed results between IPR protection and firms’ technological innovation in developing countries and their economic growth (Jeffe, 2000; Kumar, 2003; Lanjouw, 1998; Nogues, 1993; Sakakibara and Branstetter, 2001; Watal, 2001). This literature mainly argues that firms in developing countries hardly obtain knowledge sources from developed countries because knowledge is strictly protected. One way to conduct technological innovation is to access and learn the knowledge by reverse engineering in less protected countries such as the developing countries. Thus, there is no compelling reason to increase the IPR protection regime in developing and poor countries. Some empirical studies have shown the negative impact of increasing IPR protection regime on firms’ innovation activities and the countries’ economics welfare loss (Lanjouw, 1998; Nogues, 1993; Watal, 2001).

Recent studies reconsider theories and observe historical and demographic evidence under more sophisticated models because recent historical evidence shows a paradoxical trend in developed countries (Boldrin and Levine, 2013; Brüggemann et al., 2016; Wang, 2010; Williams, 2013). The trend called “puzzling results” shows that the total factor productivity and R&D expenditure have been reduced, while the level of IPR protection increased in developed countries (Boldrin and Levine, 2013; Wang, 2010). This implies that strong IPR protection lacks in supporting the development of firms’ and countries’ innovations. According to Lerner (2002) and Brüggemann et al. (2016), stronger IPR protection rather increases monopoly market power, and distorts market competition. Thus, firms with stronger IPR protection tend to lose incentives to innovation.

We examine recent trend and studies that have reconsidered theories and models attempting to explain the paradoxical phenomena mentioned earlier. What we have recognized as the possible factors that were missed in previous traditional and recent...
research might be a firm’s internationalization factors. Internationalization factors are important because a firm’s resources and capabilities adapted to international environment may determine the level of concentration for technological innovation activities under different levels of IPR protection regime (Cantwell, 1992, 1993; Castellani and Zanfei, 2007; Hagedoorn et al., 2005).

To investigate how a firm’s internationalization factors play a role in the relationship between IPR protection and its technological innovation, this study initially attempts to verify the negative relationship between IPR protection and firms’ technological innovation, which have drawn on the same line of recent studies. In addition to the direct relationship, we examine important contingent factors, i.e. internationalization factors, that may strengthen or weaken the direct relationship between IPR protection and firms’ technological innovation. Specifically, we consider multinationality, export-intensity and international knowledge stock, which are supposed to be core internationalization factors in internationalization theory.

We test the hypotheses with a sample of 204 US firms, which are listed in both Compustat and the USA Patent and Trademark Office (USPTO) between 2007 and 2010. The results of negative binomial empirical model provide a strong support for the negative impact of strong IPR protection on firm technological innovation, and positive moderating roles of multinationality and export-intensity. This paper contributes to theoretical studies, and has practical implications for policy makers and managers. This study embeds internationalization factors as an element that provides cost-efficient mechanism to the relationship between IPR protection regime and a firm’s cost structure models. Policymakers and managers should more focus on efficient and effective utilization of internationalization resources and capabilities to accelerate a firm’s technological development under the strong IPR protection era.

This paper is organized into six sections. In the second section, we review the literature about the effect of IPR protection on technological activities and development, and the theoretical perspective of internationalization on innovation. Next, we address our hypotheses with theoretical arguments in the third section. In the fourth and fifth sections, we describe research methods to examine the hypotheses and showcase our results. In the final section, we discuss conclusions and implications of this paper.

2. Literature review

2.1 Intellectual property right protection and technological innovation
In economics and business studies, technological innovation has important contributions to economic growth and business improvement. As long as technology and innovation become more advanced in industries such as pharmaceutical, chemical, computer science and telecommunication, IPR protection issues will be on the rise due to the concerns of imitation and piracy. The empirical studies regarding IPR protection and innovation have shown mixed results. Traditionally, scholars argue the positive relationship between IPR protection and innovation (Chen and Puttitanun, 2005; Gould and Gruben, 1996; Kanwar and Evenson, 2003; Varsakelis, 2001; Kim et al., 2012). In their arguments, IPR protection allows more innovation in firms and in the economic growth of country. Gould and Gruben (1996) argue that the IPR protection, which is closely correlated with innovation, positively influences national economic growth. They also find that the linkage between IPR protection and innovation is positively related to the degree to which the markets are open and competitive. The finding explains that in more open and competitive markets, IPR protection leads to more innovations. Varsakelis (2001) analyzes the relationship between the level of protection and R&D investment in cross-country setting. The study shows that a
strong patent protection has a positive influence on R&D investments, and national culture is associated with the R&D investment. Another study by Kanwar and Evenson (2003) empirically analyzes that a stronger IPR protection significantly encourages technological changes in most developing and the developed countries. They use proxy measures as an index of patent rights and R&D investment expenditures for IPR protection and technological change respectively. They also find that a firm incentive structure positively relates to technological change. Chen and Puttitanun's (2005) theoretical and empirical study analyzes the positive relationship between the level of IPRs protection and domestic firm’s innovations in developing countries. They develop game strategic theoretical model to show that higher IPR protections increase the innovation in a developing country, and find that a country’s optical IPRs is non-monotonically (U-shaped) as related to its level of technological ability. Then, they empirically confirm the model with data evidence. Their final conclusion is opposed to scholars, who have a negative sense of IPR protection and innovation in developing countries, suggesting that developing countries should provide more incentives for domestic innovation. Kim et al. (2012) investigated how the role of patent protection is important in innovation and economic growth. They argue that the effects of patent protection can differ by the stage of economic development. The result shows that strong patent protection is positively associated with greater R&D intensity and that R&D intensity can provide positive effect on economic growth in developed countries, but not in developing countries. Instead, adopting a minor form of intellectual property rights, which is called utility models, is positively associated with innovation and growth in developing countries.

In contrast, another literature focuses on the negative impact of IPR protection on innovation and economic development. IPR protection can choke firms to not learn necessary technology and impedes the growth of developing countries (Kumar, 2003; Lanjouw, 1998; Nogues, 1993; Watal, 2001). Sakakibara and Branstetter (2001) find no evidence from a large number of Japanese firm data on the investigation about the expansion of IPR inducing additional innovative effort or output. Similarly, Jeffe (2000) shows in his survey and literature review that few studies find robust conclusions for the question about how technological innovation response by patent policy changes. What Jeffe doubts is that the increase in R&D expenditure over IPR reforms is not reflected in productivity statistics to conclude that the IPR protection significantly affects technological innovation. Also, Kortum and Lerner (1998) examine the relationship between the US institutional change and patenting. They find no evidence of causation. Rather, they find that the management of research changes increases US innovation. As a typical negative aspect view of IPR protection and innovation, Kumar (2003) shows that strengthening IPR protection adversely influences innovative activities in developing countries. He mainly asserts that as developing countries hardly have access to the knowledge sources from developed countries by higher IPR protection regime, the policy changes do not boost technological activities in the former. Moreover, some studies show that an increasing effect of patented product in developing countries worsens poor countries (Lanjouw, 1998; Watal, 2001), and some developing countries experience a large amount of welfare loss by the introduction of patent products and IPR protection (Nogues, 1993).

More recent studies provide a negative side of IPR protection. Some results show that the impact of IPR on innovation is negligible (Dosi et al., 2006; Lerner, 2009) and negative (Boldrin and Levine, 2013; Brüggemann et al., 2016; Stiglitz, 2008; Qian, 2007; Wang, 2010; Williams, 2013). IPR protection can create monopolies on innovations, and these situations, in turn, distort resource allocation and increase prices (Boldrin and Levine, 2013), so IPR protection can lead to innovations that are less frequent and less sophisticated
Williams (2013) examines the relationship between intellectual property rights and innovation with Celera firm’s IP. Celera is a private firm that holds IP on a human gene. The impact of Celera’s IP on subsequent research development is investigated. In the results, Celera’s IP leads to reductions in subsequent innovation. Wang (2010) investigates the determinants of R&D investment with 26 Organisation for Economic Co-operation and Development (OECD) countries. The impact of three factors, patent rights protection, foreign technology transfer and income growth, are considered. The empirical results verify that patent rights protection is not an effective way for R&D investment. In his arguments, patent rights protection policy is useful for protecting patents, but it does not provide a strong incentive for the R&D investment.

Furthermore, some studies emphasize IPR enforcement because incorporating IPR enforcement affects the overall national IPR systems (Maskus, 2012; Papageorgiadis and Sharma, 2016). As the IPR system is highly related to cost of innovation, strengthening the IPR system too much reduces the incentive to innovate, and vice versa (Park, 2008). Rather, strengthening “moderate” level IPR system development is preferable (Furukawa, 2010).

2.2 Internationalization and innovation

The term “internationalization” is defined as “expanding across country borders into geographic locations that are new to the firm” (Hitt et al., 1994, p.298).

Researchers in the international business field have long been interested in internationalization. Vernon (1966) explains internationalization of productions, sales of new products and technology. In his argument of the product cycle theory, new technology and products are developed in home base of the firm, and they are diffused to foreign countries over time. Hymer (1976) and Caves (1971) propose the internationalization of firm explaining the transfer and exploitation of multinational corporations’ home-based knowledge from the home country to foreign countries through their foreign direct investment (FDI) activities. Uppsala School researchers argue the incremental pattern of a firm’s expansion into foreign markets by explaining how firms get involved international operations and resource commitments to foreign market (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975).

One of the research streams in internationalization focuses on impact of internationalization and innovation (Cantwell, 1992, 1993; Hitt et al., 1994; Kogut and Chang, 1991). Internationalization is beneficial to firm innovation as firms obtain new resources and knowledge. As firms expand their business into foreign countries, they can have more learning opportunities that can stimulate innovation activates (Bartlett and Ghoshal, 1989).

Internationalization can be conducive to generate necessary R&D resources, so multinational firms that are internationally diversified can improve their innovative capabilities (Kobrin, 1991; Kotabe, 1990). Moreover, innovation can be promoted by using the specific knowledge available in foreign countries (Hitt et al., 1997) and by establishing contacts and alliances with local suppliers, researchers and universities in foreign countries (Santos et al., 2004). In a similar vein, highly international firms can promote their innovative capabilities using technological knowledge and idea from several foreign countries and a larger pool of scientist (Kafouros, 2006). The strategically integrating complementary assets and technological knowledge across countries is one of the important reasons why multinational corporations can be more competitive (Cantwell, 1989; Zahra et al., 2000). Multinational corporations that have research subunits in foreign countries become more capable by combining technological specialization of the home country and different specialization from foreign locations (Asakawa and Som, 2008).
Exporting is one of prominent forms of internationalization. Salomon and Shaver (2005) propose “learning by exporting” and demonstrate that internalization through export can foster innovation of firms in the domestic market. Castellani and Zanfei (2007) analyze the relationship between exporting and innovation, and the results shows that internationalization allows firm to acquire knowledge for innovation. Damijan et al. (2010) find that there is positive relationship between exporting and process innovation, and Şeker (2012) demonstrates that trade-oriented firms can be superior in terms of introduction of new products and improvement of production process. Moreover, exporting firms are more likely to increase innovative capacity by investing in complementary R&D and training workers (Aw et al., 2007, 2011; Golovko and Valentini, 2011).

3. Theory and hypotheses
While internationalization factors and benefits strongly influence a firm's technological innovation, traditional literature and recent studies for the relationship between IPR and innovation have not considered internationalization factors that are critical to solve the problem of the mixed results. Therefore, we investigate the effect of internationalization factors as important contingent factors on the relationship between IPR protection and technological innovation. The core internationalization factors that we consider in this study are multinationality, export-intensity and international knowledge stock. These contingent factors determine how firms differ from each other in terms of organizational resources and capabilities in international business environment, and may weaken or strengthen the relationship between IPR protection and technological innovation.

3.1 Intellectual property rights protection and technological innovation
Recent studies reconsider theories and evidence of the effect of IPR protection on technological innovation. These questions arise because the historical and demographic evidences have not supported existing theories. Proponents of IPR protection in their theoretical arguments suggest that stronger IPR protection significantly encourages technological changes due to the incentive structure granted through patents or copyrights (Chen and Puttitanun, 2005; Kanwar and Evenson, 2003). The recent historical evidence paradoxically does not support the positive relationship between IPR protection and technological innovation. In the US economy, for example, the strength of legal IPR protection has increased almost four times between 1980 and 2010, while the total factor productivity and US research and development expenditure for the same period have shown downward and oscillating trends around 2.5 per cent of GDP, respectively (Boldrin and Levine, 2013).

Economists have examined the paradoxical trends and arrived at “puzzling results”, that is, the lack of positive impact of stronger IPR protection on technological innovation. The studies with longitudinal and multicountry data explained the theoretical mechanism that strengthening IPR protection does not increases the number of patents as well as the country’s FDI (Boldrin and Levine, 2008b; Lerner, 2009). FDI is not directly related to technological innovation. Rather, it is more related to the country’s infrastructure and foreign policy. The studies, however, have failed to find the close relationship between patents and technological innovation. Boldrin and Levine (2013) and Bessen and Maskin (2000) show the negative relationship between IPR protection and technological innovation by the general equilibrium and dynamic sequential equilibrium models. Lerner (2002) mentioned about competitions and first-mover incentives, which can influence monopoly power of patents more than technological innovation. This means that strengthening IPR protection provides higher monopoly power with existing patents, and the power
consequently distorts market competition by increasing costs and reducing the incentives to further downstream innovations (Brüggemann et al., 2016).

We first investigate the relationship between IPR protection and technological innovation again as a main effect before investigating the contingency effect of internationalization factors on the relationship. In line with previous studies, such as economic theoretic models and empirical evidence mentioned above, we hypothesize the following:

**H1.** Strengthening IPR protection will reduce technological innovation.

### 3.2 Multinationality

Multinational corporations (MNCs) have operating facilities in more than one country for developing technologies and producing and selling their products to several countries over the world. Although MNCs have headquarters as a key source, many scholars conceptualize the MNCs as a “differentiated network” or a social community of affiliated companies (Ghoshal and Nohria, 1989; Kogut and Zander, 1992, 1993). MNCs, thus, develop the resources and capabilities through not only their headquarters but also network mechanisms. The multinational network allows the MNCs to use better technologies, human resources and continuous information flow to catch up global customers’ needs and requirements (Kafouros, 2006).

In the presence of stronger IPR protection, general domestic-based firms tend to limit technological innovations due to higher monopoly power with existing patents and distorted market competition by increasing costs (Brüggemann et al., 2016). MNCs, however, have more incentives to develop their technological innovation activities based on internationalization advantages such as their location and firm-specific benefits and technological capabilities (Chang, 1995; Rugman, 1981).

MNCs can expect the synergy effect, which control internal and external networks. Nobel and Birkintshaw (1998) studies the patterns of international R&D units, and show that different types of R&D units play important roles such as communication, and control each other to improve innovative activities. Frost et al. (2002) define and show the importance of a “center of excellence” as a core value creation unit in MNCs. They find that a center of excellence is formed in accordance of the subsidiaries’ environment. Most of all, a parent firm’s investment and subsidiaries’ internal and external organization relationships play an important role. Furthermore, Phene and Almeida (2008) show that external knowledge linkage and knowledge utilization in host environments significantly associated with MNC innovation. Thus, MNCs can combine knowledge resources, or develop knowledge capabilities among internal and external networks with relatively lower costs than domestic-based firms with stronger IPR protection.

In addition, MNCs relatively have more competitive technologies than domestic-based companies. These MNCs have greater motivation than domestic firms in stronger IPR protection because the existing technologies and further downstream innovations can be protected better in stronger IPR protection policy. Taken together, firms with higher multinationality may reap higher technological innovation than domestic-based firms in stronger IPR protection. We thus propose the following:

**H2.** A firm’s multinationality positively moderates the relationship between IPR protection and technological innovation, such that the negative effect of IPR protection on technological innovation becomes weaker as the multinationality increases.

### 3.3 Export-intensity

The study of “export-oriented firm” began with the theoretical models and empirical evidence on export decision by the firms. Some theoretical models suggest that the firm’s
sunk cost, which was spent to enter the export market, may influence export decision (Dixit, 1989a, 1989b; Krugman, 1989). Bernard and Jensen (2004) empirically test the hypothetical factors that affect the firm’s export decision and find the evidence that the sunk cost is significant, as the previous models suggest. Moreover, Bernard and Jensen (1999) compare the firm characteristics between exporters and non-exporters US firms and find that export-oriented firms have higher technology intensity than non-exporters.

As exporting is considered a prominent form of internationalization theory, export-oriented firms that have learned by exporting are likely to develop innovative capabilities through internationalization (Salomon and Shaver, 2005). In general, the export-oriented firms tend to be technically more efficient. Krueger (1980) explains that the export-oriented firms are technically more competitive than import-oriented firms because the goods, which export-oriented firms export, tend to be involved in more competition in the world market. Another reason is that internalization allows the export-oriented firms to acquire technological knowledge for innovation (Castellani and Zanfei, 2007). According to previous empirical researches, export-oriented firms are superior because of the new product and process innovation (Damijan et al., 2010; Şeker, 2012).

In the presence of stronger IPR protection, although technological innovation of firms is demotivated, the effect of IPR protection can be different on the export- and domestic-oriented firms because of different statuses in markets and connectedness to foreign countries. As the export-oriented firms tend to be positioned in higher competition ground than the domestic-based firms, their competitiveness in exporting markets can be reduced and ruined without sustainable innovative supports. Thus, technological activities and developments should be continued even under the strong IPR protection. In addition, as similar as MNCs, the export-oriented firms also have greater international connectedness than domestic-based firms.

The export-oriented firms can use foreign external networks and distribution channels’ knowledge resources to develop knowledge capabilities. Unlike domestic-oriented firms that have limitations for using and sourcing foreign resources, the export-oriented firms can access foreign resources more directly. The knowledge spillover and synergy effect from foreign sources reduce start-up and opportunity costs for research and development. Thus, the export-oriented firms can develop the existing technologies and further downstream innovations even in stronger IPR protection policy. Taken together, the export-oriented firms may reap higher technological innovation than domestic firms in stronger IPR protection. We thus suggest the following:

$H3$. A firm’s export-intensity positively moderates the relationship between IPR protection and technological innovation, such that the negative effect of IPR protection on technological innovation becomes weaker as the export-intensity increases.

3.4 International knowledge stock

More than two decades of resource-based view (RBV) studies have sought a series of resources for firms in general, and MNCs, in particular, to obtain sustainable competitive advantages, and thus achieve greater firm growth and survival (Barney, 1991; Grant, 1996; Penrose, 1959; Porter, 1990; Wernerfelt, 1995). Recent follow-up studies based on RBV have focused on “knowledge”, “knowledge assets” and “knowledge-based view (KBV)”, whose ideas can be found in earlier work of Hymer (1976) and Caves (1971). The studies emphasize that knowledge is a crucial source that develops organizations’ technological capabilities (Grant, 1996). Knowledge assets, such as tacit knowledge built in the organizations, cannot
be easily tradable nor imitable (Teece, 1998). In addition, the dynamic capability (DC) theory explains that a firm's knowledge, which is originally considered KBV, is a capacity to purposefully create newer knowledge, extend or modify its knowledge resource (Teece et al., 1997). Some studies support that some firms use the knowledge resources to combine or refine an existing knowledge (Rosenkopf and Almeida, 2003), while other firms try to seek sourcing new or combination knowledge from a distance (Gavetti and Levinthal, 2000).

Furthermore, previous studies in the internationalization literature focusing on firm innovation has emphasized upon the benefits of internationalization to obtain new resources and knowledge (Hitt et al., 1997; Kobrin, 1991; Kotabe, 1990; Santos et al., 2004).

During the past 40 years that the IPR protection internationally diverged among many countries, many MNCs and local companies have developed knowledge, especially with companies from less developed IPR protection regime (Hagedoorn et al., 2005). Firms that have more international knowledge stock and new technologies tend to be more efficient than firms with fewer experiences due to the experience curve effect. In the presence of a strong IPR protection, the higher cost-efficient R&D structure increases a firm's motivation to develop more knowledge stocks. The reason is that as a firm may have a greater R&D cost pressure when other firms' knowledge stocks are already protected by stronger IPR protection condition, the higher cost-efficiency outweighs the cost pressure.

In addition to the cost benefit, international knowledge stock gives a firm greater collaborating opportunities with other partners. One of the effects of stronger IPR protection to firms in different countries with different level of IPR regimes is that there could be unanticipated risks of substantial moral hazard such as knowledge leakage (Hagedoorn et al., 2005). Although this potential risk under stronger IPR protection reduces R&D partnership and collaborating probabilities, a firm with more international knowledge stock exposes greater collaborating possibility and thus, R&D productivity, which is technological innovation than a less experienced firm. Therefore, we propose the following:

\[ H4. \quad \text{A firm's knowledge stock in foreign countries positively moderates the relationship between IPR protection and technological innovation, such that the negative effect of IPR protection on technological innovation becomes weaker as the knowledge stock in foreign countries increases.} \]

4. Research methods

4.1 Data source and sample
The data for this study consist of listed US firms in Compustat and the USPTO. First, we obtained the names of the listed US firms in Compustat from 2007 to 2010. Next, we matched the firms in Compustat with listed firms that applied for patents between 2007 and 2010 in the USPTO. From these firms, we excluded firms for which some financial information was not available. After removing those firms, we obtained a sample of 204 firms. We also obtained the data for firm internationalization factors from Compustat (multinationality and export intensity) and USPTO (international knowledge stock) from 2007 to 2010. The information of IPR protection was collected from the annual reports of IPR index published by Property Rights Alliance for the same period.

4.2 Measures

4.2.1 Dependent variable. Technological innovation. Patent data can be appropriate measures of a firm’s innovative success and technological strength (Narin et al., 1987), and many studies have used patents as a proxy for firm’s technological knowledge stock, innovative activities and capabilities (Almeida and Phene, 2004; Cantwell and Piscitello, 2013; Chung
and Yeaple, 2008; Song and Shin, 2008). In line with previous studies, the measure of a firm’s technological innovation used in this study is the number of patents invented by US firms in the USA. After collecting all the patents granted in the USPTO by US firms, we counted each firm’s total number of patent applications for the period from 2007 to 2010.

4.2.2 Independent variable. IPR protection. Several intellectual property indices have been developed by Rapp and Rozek (1990), Ginarte and Park (1997) and Ostergard (2000). One of the most frequently used indices for measuring national patent protection strength is the GP indices, which have been reported by Ginarte and Park (1997) and updated by Park (2008). Although it is widely used in many studies, it has become outdated, and the yearly index, which is necessary for our study, is not available. Thus, we obtain the IPR indicator from the IPR Index which is available from 2007. The IPR Index published by Property Rights Alliance provides three indicators that reflect the degree of intellectual and physical property rights for more than 110 countries. The three indicators are:

1. legal and political environment;
2. physical property rights; and
3. intellectual property rights.

The third indicator, intellectual property rights, includes four aspects of intellectual property, which are:

1. protection of intellectual property rights;
2. patent strategy;
3. copyright piracy; and
4. trademark protection.

IPR indicator incorporates the protection of intellectual property, a country’s policies and its effectiveness in terms of patents, copyrights and trademarks. Thus, we use the IPR indicator to measure the IPR protection in this study.

4.2.3 Moderating variables
4.2.3.1 Multinationality. In previous research, the concept of multinationality has been operationalized in several ways. Some researchers have used the number of foreign countries where a firm operates (Reuer and Leiblein, 2000; Tallman and Li, 1996), and the number of foreign subsidiaries (Stopford and Wells, 1972). The Compustat database does not provide information on these measures for our sample. In other studies, multinationality has been measured as the percentage of foreign sales (Capar and Kotabe, 2003; Grant, 1987; Habib and Victor, 1991), the percentage of foreign assets (Daniels and Bracker, 1989; Ramaswamy, 1995) and the ratio of foreign income to total income (Kotabe et al., 2002). On the basis of the availability of appropriate data and measurements in previous studies, in this study, we adopt the ratio of foreign income to total assets for measuring multinationality.

4.2.3.2 Export-oriented corporation. To identify exported-oriented corporation and domestic market-oriented corporation, we collect the firms’ annual total sales and export sales between 2007 and 2010. Export sales are divided by total sales and multiplied by 100 at the time $t$ to calculate the proportion of export; the values take the number between 0 and 100.

4.2.3.3 International knowledge stock. Knowledge stock in foreign countries can be measured as the number of patents developed by subsidiaries in foreign countries.
Thus, we calculate all patents developed by a firm’s subunits in foreign countries each year between 2007 and 2010.

4.2.4 Control variables

4.2.4.1 Firm size. We include firm size as a control variable because size can be associated with a firm’s technological innovation (Pavitt et al., 1987). Firm size indicates the natural logarithm of the total number of firm employees, one of the most common measurements.

4.2.4.2 Year dummy and firm dummy. There was a global financial crisis that began from the subprime mortgage market in the USA during 2007 to 2008. As our study and samples cover this period, there might be some differences between the two years and other years.

Moreover, the US firms in our sample have heterogeneity that can influence firm’s technological innovation. To minimize the effect of firm heterogeneity, we include year and firm dummies as control variables.

4.3 Methods

Our sample is composed of 816 observations associated with firms’ innovative activities from the 204 US firms after excluding firms that have missing information. Using Stata 15 program, we used a negative binomial regression to investigate the main effect of IPR on the level of technological innovation and the moderating effects of internationalization factors on technological innovation. The negative binomial regression model under the existence of over dispersion or Poisson distribution model, which is a special case of the negative binomial, should be considered because the dependent variable in our study is in count formation. In Stata 15 program, the negative binomial regression is safer than Poisson regression model because the results will be exactly the same as the ones of Poisson regression if there is no existence of over dispersion. To check the over-dispersion, we run both Poisson and negative binomial regression and detected a significant over-dispersion problem. The results show that over-dispersion parameter (alpha = 0 in Stata) is statistically significant. Also, the results of the Poisson model and negative binomial are different. These confirm that there is a significant over-dispersion problem in our data, and negative binomial regressions should be used instead of Poisson regression for this study.

5. Results

Table I shows descriptive statistics for all variables included in the model. The correlation matrix of all the variables is shown in Table II. Although there is no exact criterion for interpreting the size of a correlation coefficient, a rule of thumb is that if absolute value of the correlation coefficient is less than 0.5, it is generally accepted that there is a low correlation. In Table II, there are no variables higher than 0.5. Thus, it can be assumed that multicollinearity problem does not occur in this case.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
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<td>9.30</td>
<td>1.00</td>
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<td>0.30</td>
<td>7.90</td>
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<td>78.48</td>
</tr>
<tr>
<td>Export-intensity</td>
<td>42.52</td>
<td>10.35</td>
<td>6.44</td>
<td>71.80</td>
</tr>
<tr>
<td>International knowledge stock</td>
<td>0.70</td>
<td>2.62</td>
<td>0.00</td>
<td>21.00</td>
</tr>
<tr>
<td>Firm size (log)</td>
<td>7.30</td>
<td>1.75</td>
<td>2.99</td>
<td>12.38</td>
</tr>
</tbody>
</table>

Table I. Descriptive statistics
Table III presents the results of negative binomial regression models that the dependent variable is a firm's technological innovation. Model 1 in the Table III includes control variables and the main effects of firm internationalization factors: multinationality, export intensity and international knowledge stock. IPR protection variable is included in Model 2, as we propose a hypothesis that there are negative relations between IPR protection and firm's technological innovation. Model 3 tests the interaction effects of the IPR protection with multinationality. Model 4 includes the interaction between IPR and export intensity. In Model 5, we examine the interaction effects of IPR with international knowledge stock. Model 6 includes all three interaction terms as a full model.

In Model 1, showing the main effect of the firm internationalization factors, the coefficient estimate for the multinationality is positive and significant. The coefficient on export intensity and international knowledge stock are also highly significant and positive. The coefficient on IPR in Model 2 is negative and significant. In line with recent trend and studies, this suggests that IPR has negative impact on firms' technological development, providing support to $H_1$. Model 3 examines $H_2$, which predicts that multinationality weakens the negative relationship between IPR protection and firm's technological development. The coefficient estimates for interaction between IPR protection and multinationality is positive and significant (Model 3: $\beta = 0.002, p < 0.05$). This result suggests that the more multinationality a firm has, the less negative effects of IPR protection on technological development the firm receives, supporting $H_2$. Model 4 tests $H_3$, which suppose the moderating effect of export intensity on the relationship between IPR protection and technological development. The coefficient on interaction between IPR protection and export intensity is positive and significant (Model 4: $\beta = 0.009, p < 0.001$), providing support to $H_3$. This shows that export-oriented firms are more likely to engage in technological development than domestic market-oriented firms even under the negative effects of IPR protection. In Model 5, results for the interaction effects of the IPR protection with international knowledge stock are presented. The moderating effect of international knowledge stock on the relationship between IPR protection and technological development does not show significant result (Model 5: $\beta = 0.044, p = 0.12$). Thus, $H_4$ is not supported. All three interaction terms in Model 6 present the consistent results with those that included the interaction terms individually.

6. Conclusion
The existing studies attempt to investigate the effect of firms' internationalization on the relationship between IPR protection and firms' technological innovation in which the literature have shown conflicting empirical results. While recent studies reconsider the previous theories and models and explain the paradoxical phenomena, they mainly focus on

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tr>
<td>1.00</td>
<td>0.27</td>
<td>0.10</td>
<td>0.24</td>
<td>0.38</td>
<td>0.45</td>
<td></td>
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<tr>
<td></td>
<td>1.00</td>
<td>0.03</td>
<td>0.02</td>
<td>0.34</td>
<td>0.27</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1.00</td>
<td>-0.04</td>
<td>0.37</td>
<td>-0.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>0.37</td>
<td>0.27</td>
<td></td>
</tr>
</tbody>
</table>

Note: N = 816

Table II. Correlations

Intellectual property rights protection

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### Table III.
Negative binomial regression models of technological invention (patent)

<table>
<thead>
<tr>
<th>DV: Technological innovation</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multinationality</td>
<td>0.009 (0.004)*</td>
<td>0.008 (0.004)*</td>
<td>0.016 (0.006)**</td>
<td>0.009 (0.003)**</td>
<td>0.008 (0.004)*</td>
<td>0.016 (0.004)***</td>
</tr>
<tr>
<td>Export-intensity</td>
<td>0.019 (0.006)**</td>
<td>0.019 (0.006)**</td>
<td>0.016 (0.006)**</td>
<td>-0.042 (0.007)***</td>
<td>0.019 (0.006)**</td>
<td>-0.043 (0.007)***</td>
</tr>
<tr>
<td>International knowledge stock</td>
<td>0.251 (0.013)***</td>
<td>0.247 (0.013)***</td>
<td>0.241 (0.013)***</td>
<td>0.164 (0.010)***</td>
<td>-0.113 (0.228)</td>
<td>-0.034 (0.155)</td>
</tr>
<tr>
<td>IPR</td>
<td>-0.258 (0.117)*</td>
<td>-0.258 (0.116)*</td>
<td>-0.492 (0.106)***</td>
<td>-0.345 (0.128)***</td>
<td>-0.572 (0.123)***</td>
<td></td>
</tr>
<tr>
<td>IPR × Multinationality</td>
<td>0.002 (0.001)*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.002 (0.001)*</td>
<td>-</td>
</tr>
<tr>
<td>IPR × Export-intensity</td>
<td>0.009 (0.001)***</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.009 (0.001)***</td>
</tr>
<tr>
<td>IPR × International knowledge stock</td>
<td>0.044 (0.028)</td>
<td>0.023 (0.019)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Firm size (log)</td>
<td>0.020 (0.030)</td>
<td>0.023 (0.030)</td>
<td>0.046 (0.032)</td>
<td>0.066 (0.027)*</td>
<td>0.021 (0.030)</td>
<td>0.087 (0.028)**</td>
</tr>
<tr>
<td>Year dummy included</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Firm dummy included</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>816</td>
<td>816</td>
<td>816</td>
<td>816</td>
<td>816</td>
<td>816</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-794.26</td>
<td>-791.82</td>
<td>-789.71</td>
<td>-720.40</td>
<td>-790.57</td>
<td>-717.01</td>
</tr>
</tbody>
</table>

Notes: †p < 0.10, *p < 0.05; **p < 0.01; ***p < 0.001
external environmental effects, not considering a firm’s internal factors. Although previous studies investigate the relationship between IPR and innovation activities, they overlook the effects of firm’s internationalization factors that are critical to internal factors on the relationship between IPR protection and technological innovation. By considering firm’s internationalization factors, the gap between the conflicting views in previous studies can be filled.

To do so, we investigate several internationalization factors that are beneficial to technological innovation under the effect of IPR protection. We find that there is a more positive effect of firms with higher multinationality on the relationship between IPR protection and their technological innovation. In addition, we demonstrate that highly export-oriented firms are more conducive than domestic market-oriented ones to technological innovation under a strong IPR protection. These results imply that internationalization of firms can be an important characteristic for a firm’s technological innovation under the effect of a strong IPR protection. When a firm conducts more international business activities, it becomes more beneficial under a strong IPR protection, and facilitates more technological innovation. We also predict that a firm’s international knowledge stock with the IPR protection might be an influential factor for developing technology. However, this prediction is not statistically supported. When knowledge stock in foreign countries is high, some firms may want to develop their technology continuously in the foreign locations rather than in the home country to avoid the costs from the strong IPR protection.

6.1 Contributions and implications
This paper has important theoretical contributions and practical implications for policymakers and managers. While many previous literature explained the relationship by various theoretical perspectives such as transaction cost, game theoretical approaches and mostly empirical models, this study emphasizes on internationalization, which provides a cost-efficient mechanism to the relationship between an IPR protection regime and a firm’s cost structure. This mechanism allows a firm to weaken the theoretical negative relationship between IPR protection and technological innovation. In an era of the globalization, the internationalization becomes more meaningful. Therefore, examining the effect of internationalization factors enriches the literature about the effect of IPR protection on a firm’s technological innovation. Moreover, our study demonstrates that there is no one right answer to the questions of whether the protection always provides positive or negative impact to firms’ innovations. Our findings emphasize the importance of considering a firm’s internationalization with the IPR protection to answer the questions.

IPR is a protection that applies to all firms in a country and it becomes more prevalent. If so, how does one use this effectively and what does one do? This study has some practical implications for policy makers. Firms’ innovativeness is a critical component for national innovation. Our results suggest that policymakers should induce domestic firms to transform into MNCs or export-oriented firms through diverse policies and supports along with IPR protection because MNCs and export-oriented firms are more innovative under the circumstance of strong IPR protection. This study also has important suggestions for firm managers. Domestic market-oriented firms cannot avoid fierce competitions from foreign firms even in their home country. Technological development is one of the key factors for firm successes. In this respect, internationalization of firm can be a good strategy to accelerate a firm’s technological development. Managers should keep in mind that if the firms do not follow the speed of internationalization, they can fall behind in the competition, especially during a strong IPR protection era.
6.2 Limitations and future research

This study has several limitations. First, although we focus on a single country to control country level variations, it may have a problem when generalizing our results across other countries. Further study, with more generalized data, might be beneficial. Second, data limitations prevent us from including R&D intensity as a control variable, which might affect technological innovation. Another data limitation is that the periods of our data are limited from 2007 to 2010 in combination of the IPR and patent data. Finally, future study should investigate other important factors such as a firm’s position in the market (leader or follower) and ownership (private or public), which might have significant impacts on innovation under the IPR protection.

References


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