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THE VALUE CO-CREATION AND INNOVATION ACTIVITIES OF KNOWLEDGE-INTENSIVE BUSINESS SERVICES PARTNERSHIPS - EVIDENCE FROM TAIWAN-BASED MANUFACTURING FIRMS

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Abstract

The aim of this study is to verify the role of knowledge-intensive business services (KIBS) for multinationals in value co-creation and innovation activities. We take advantage of the longitudinal dataset of Taiwan-based firms compiled by Taiwan's Ministry of Economic Affairs (MOEA) for 2008- 2016 and panel GMM approach in mitigating potential endogeneity. Our results confirm that: (1) KIBS partnerships in host countries are significantly associated with better value co-creation on the part of the multinationals; (2) they also need multinationals to upgrade their absorptive capacity in accessing external technological capabilities and markets from KIBS partnerships; and (3) the significant effects are only observed in the hi-tech industry. Our research suggests that multinationals should focus greater attention on the resources that KIBS partnerships in the host countries can explore the potential to engage diverse stakeholders and provide opportunities for more extensive value co-creation.

Keywords: KIBS Partnerships, Absorptive Capacity, MNEs and Value Co-Creation

Introduction

A firm's commitment to foreign markets has received considerable attention from scholars over the last few decades. The burgeoning literature suggests that such a strategy plays an important role in terms of reducing production cost, leveraging activities worldwide, and responding to global market change, thereby enhancing firm productivity. In particular, China has been a very attractive and highly preferred FDI destination for multinational firms. Innovation networks and the services industry in China have also grown over time (Lin, 2010; Liu et al., 2012; Jacobs et al., 2014; Dai et al., 2020). At the same time, the share of the services sector accounted for by knowledge- intensive business services (KIBS) has also grown rapidly, jumping from 13.4% in 2006 to around 23.9% in 2016.

KIBS refer to the value-added service activities which consist of the accumulation, creation or dissemination of knowledge for a customized service or product solution to satisfy the client's needs and create value co-creation (Melitz,2003; Nachum and Zaheer, 2005; Rezaei-Zadeh and Darwish, 2016). In particular, value co-creation is the type of collaboration advantages that is considered to be the benefit of innovative and interactive process among multiple resource-integrating actors through service exchange (Bogers et al., 2010; Aarikka-Stenroos and Jaakkola, 2012; Lusch and Vargo, 2014; Hsieh and Hsieh, 2015). The positive value co-creation of KIBS collaboration have been identified as the provision of intermediate inputs to other businesses (Miles, 2005). Compared to industry-university interactions, KIBS partnerships provided by private technology consultants, technology institutes and research organizations are more widely used as collaborative partners for innovation (Tether et al., 2012; Doloreux et al., 2019). Therefore, the purpose of this article is to examine the question of whether multinationals benefit more from this benefit in host countries. More importantly, we further develop an analysis to examine whether the value co-creation is higher for multinationals with more absorptive capacity in host country.

Although existing studies have shown that superior performance by multinationals compared to domestic firms (Melitz,2003; Zhao et al., 2019) and the development of KIBS partnerships result in better performance (Miles, 2005; Liu et al., 2019), relatively little attention has been paid to understanding how KIBS partnerships in the host country create the value co-creation for multinationals. By accessing micro-level datasets, this article contributes to filling such a research gap in the existing literature by providing further empirical evidence.

Theoretical Framework And Hypothesis Development

With the increasing complexity of the technological environment, firms are becoming more and more unable to cope with the challenges that they face by using their own resources. As a consequence, they have to largely rely on the use of external knowledge networks to reduce the cost of acquiring professional knowledge internally. At the same time, the rising importance of business services, especially those involved in the generation, absorption

and diffusion of new knowledge, is an integral part of knowledge-based economies (Barone and Cingano, 2011; Chesbrough, 2010; Rodríguez et al., 2017). The knowledge- intensive business services (KIBS) are of special interest at the center of the knowledge-based economy, being regarded as crucial nodes within innovation systems (Miles, et al., 1995; Probert et al., 2013). They not only engage in innovation activities in the service of the manufacturing sector, but also help manufacturing firms capture the overall value-added from the global supply chain (Yam et al., 2011). Aarikka-Stenroos and Jaakkola (2012) find that they contribute more than 30% of the total value-added in the United States and the United Kingdom.

KIBS are characterized by their provision of knowledge-intensive inputs to the business processes of other organizations (Choi and Choi, 2021; Savic et al., 2020). KIBS contribute to providing tailored services in response to their clients' search for knowledge and also interpret tacit knowledge (Meliciani and Savona, 2015; Rodríguez et al., 2017). The work that results from their use is collaborative in nature, being typically regarded as the co- creation of knowledge (Miles, et al., 1995; Growe, 2019). Jacobs et al. (2014) also describe KIBS as facilitators, carriers and sources of innovation for their clients. Value co-creation refers to the value formation process, from the actions taken by the organization to support value achievement for its stakeholders to the joint collaborative processes among the organization and other stakeholders (Aarikka-Stenroos and Jaakkola, 2012; Hsieh and Hsieh, 2015). In addition, Morikawa (2011) and Mas-Verdú et al. (2011) find that imposing strong regulations on knowledge-intensive business services negatively affects the productivity and growth of manufacturing industry in the OECD.

KIBS also have a strong positive role on a multinational's value co-creation. The collaborative relationships shape their productivity when they face an insufficient liability of foreignness (or smallness) in the host country. Better collaborative relationships can help them not only to improve the efficiency of existing capabilities, but also to enhance the effectiveness of new capabilities and resources, which in turn raise value co-creation (Hsieh and Hsieh, 2015; Roza et al., 2011). Likewise, transactions involving KIBS are usually collaborative (Consoli and Elche-Hortelano, 2010; Valminen and Toivonen, 2012). Through intensive and cognitive interaction, mutual learning means that they can identify what specific knowledge is to be used in the local environment, assimilate and access external knowledge on local market and manufacturing conditions, and acquire new specialized knowledge in their technological specialization. In other words, actively engaging in collaborative KIBS partnerships in the host country will positively enhance a multinational's value co-creation. Given the above viewpoints, our first hypothesis is as follows:

H1: Engaging in KIBS partnerships has a positive relationship with a multinational's productivity.

Learning is a fundamental concept when it comes to materializing knowledge to gain a competitive advantage from the knowledge-based

view (KBV). The performance - increasing effects of absorptive capacity are more effectively characterized by an organizational capacity based on external knowledge (Cohen and Levinthal, 1990; Bertrand and Mol, 2013; Crescenzi and Gagliardi, 2018). Four dimensions of absorptive capacity have been identified in the context of open innovation strategies: acquisition, assimilation, transformation, and exploitation (Cohen and Levinthal, 1990; Zahra and George, 2002). The first two dimensions are regarded as the potential absorptive capacity, while the last two are viewed as realized absorptive capacity.

Previous studies have found that the effects of absorptive capacity are mainly the function of the active participation and support of collaborative relationships. On the one hand, firms with more mutual knowledge flows often have many opportunities to improve their acquiring ability due to their alliance partners (Volberda et al., 2010). They can also raise their ability to assimilate to understand the external knowledge (Fosfuri and Tribó, 2008; Volberda et al., 2010). The active participation in collaborative relationships thus increases the expected gains from the effectiveness of potential absorptive capacity (Musolesi and Huiban, 2010; Rezaei-Zadeh and Darwish, 2016). On the other hand, absorptive capacity encompasses the internal capabilities to combine knowledge gained from external sources and to apply them to the new knowledge that often needs to be introduced to a firm's routines and processes (Von Briel et al., 2019; Ramayah et al., 2020). The collaborative partnerships can provide support for the efficiency of knowledge internalization from realized absorptive capacity in transforming and redesigning the firm's operations, thereby enabling it to achieve its organizational objectives (Akhtar et al., 2019; Liu et al., 2019).

It is important to recognize that multinationals are heterogeneous agents, and thus the extent to which they benefit from external sources depends on the effects of the KIBS partnerships on absorptive capacity. By collaborating or interacting with KIBS partnerships in the local market, multinationals can enhance the effectiveness of their potential absorptive capacity by identifying profitable applications and facilitating the identification of specific knowledge. Moreover, they can also improve the efficiency of their realized absorptive capacity in their technology transfer process to successfully transform and apply their knowledge. Given the above viewpoints, our second hypothesis is as follows:

H2: The positive value co-creation of engaging in KIBS partnerships is higher for multinationals with more absorptive capacity.

Methodology

In this section, we present our datasets and show the descriptive evidence on the firm characteristics of Taiwan-based multinationals as well as the variables selected.

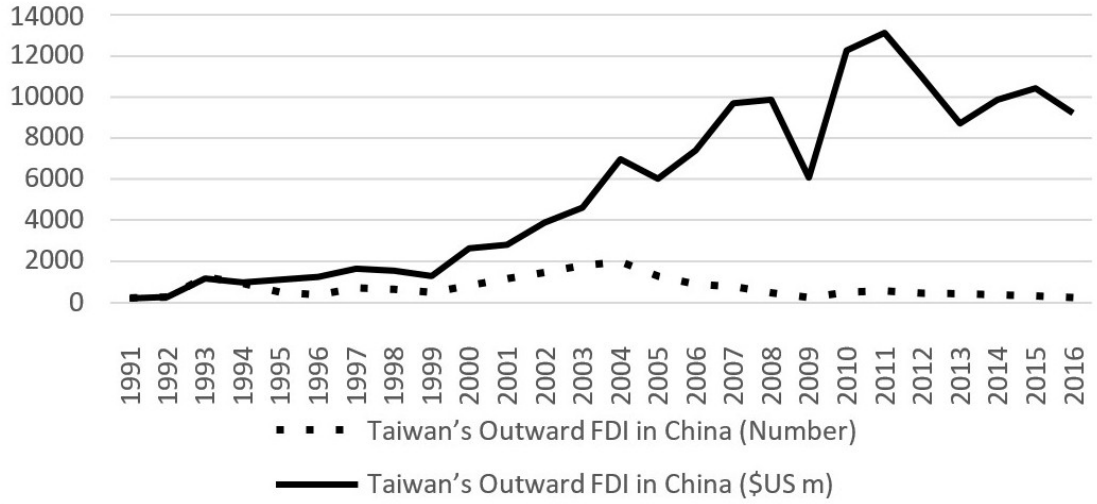
Data and Sample

A database has been built covering the multinational-level data from the Report on the Foreign Investment Strategies of Manufacturers compiled by the Department of Statistics of the Ministry of Economic Affairs (MOEA),

Taiwan for the 2008-2016 period to provide information on the basic characteristics of Taiwanese manufacturing firms with operations in China.

Figure 1 plots the growth of Taiwan's outward FDI in China. Since 1991, Taiwan-based multinationals have moved their production lines to China to benefit from its cheap labor, land and the same culture and language. As a result of the deregulation on investing in China and its becoming a member of the World Trade Organization (WTO) in 2001, the amount of FDI in China rose to 6.72 billion US dollars, and increased by nearly 4 billion US dollars, with the share of total FDI also rising from 39% to 67%. In 2008, the amount of FDI in China even exceeded 10 billion US dollars, and the total amount of foreign investment reached 15.16 billion US dollars. Due to the financial crisis in 2009, the total amount of outward FDI fell to 10.15 billion US dollars and the amount of FDI in China also decreased to 7.14 billion US dollars. After that, the overall amount reached its highest level. This indicates that China has become an important FDI destination for Taiwan-based firms, having significantly outweighed the domestic production since 2002.

Figure 1: Taiwan's Outward investment in China



Source: Calculated by the study, based on the Ministry of Economic Affairs, Survey Data

Three distinct waves can be identified: the late 1980s, the 1990s, and the year 2000 onwards. During the late 1980s, Shenzhen, Zhuhai, Xiamen, and Shantou (Pearl River Delta) was the initial base for China's opening-up policy. This wave was driven mainly by asset- seeking and efficiency-seeking objectives. Taiwan's manufacturing FDI was directed mostly towards labor-intensive sectors and clustered, especially that FDI characterized by a smaller geographical, cultural, ethnic and institutional distance.

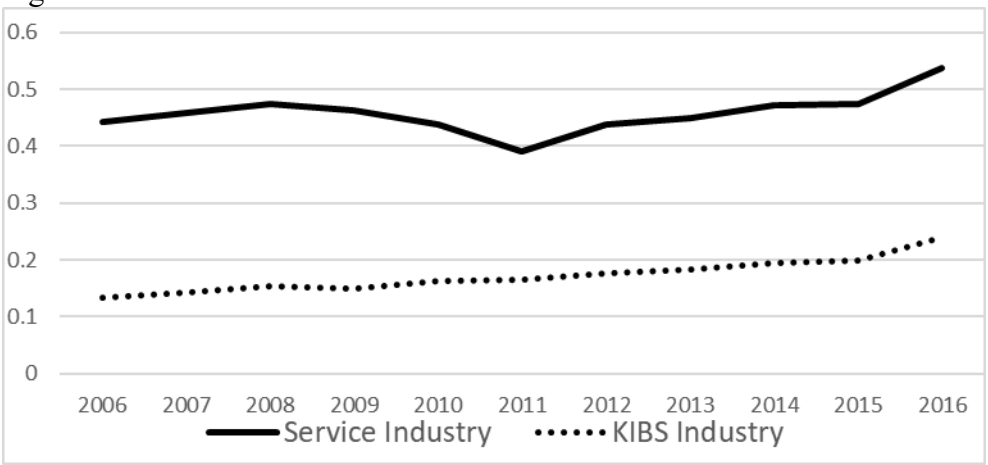
During the second wave of investments in the late 1990s, the motivation became strategically-oriented. Shanghai and the cities along the river (Yangtze River Delta) were superior in terms of knowledge creation and in sharing and facilitating knowledge ap-

plication and exploitation. The Yangtze River Delta gradually formed comprehensive manufacturing production systems, ranging from labor-intensive sectors to high-tech industries (Chen, 2004; Lin, 2010). The most active firms were often those in the electronics industry, the medical equipment and precision instruments industries, as well as the automotive industry, which also had much to do with the strong local science base.

Since the early 2000s, the features have been distinct compared to earlier waves of investments. The motivation underlying investments is to acquire technology, brands, marketing and R&D capabilities, distribution networks and organizational competencies. A firm's competence with technology-augmentation can be attributed to its collaboration experiences (Liu and Chen, 2012). More specifically, the collaborating partners in China are also changing, to some extent, shifting from their clients, suppliers, and production networking partners towards local technology consultants, technology institutes, and higher education institutes (Liu et al., 2012; Liu and Chen, 2012). Taiwan-based manufacturing multinationals can be mainly characterized by the collaboration of their activities in China. This statistic shows whether they benefit more from the KIBS partnerships in China.

Figure 2 plots the growth of the services and KIBS sectors in China over the 2008-2016 period. The solid line shows that the services sector in China is found to exhibit an increasing trend with a share of around 45% of value-added in GDP. The share in 2016 (53.7%) is even higher than that for the manufacturing industry (41.6%).

Figure 2: The Growth of the Services Sector and KIBS Industries in China



Source: 1. Calculated by this study, based on the China Statistical Yearbook and China Statistical Yearbook on Science and Technology. 2. Five 2-digit business service industries are included: software services, data processing and information services; financial intermediation; real estate; leasing and business services; and scientific research and technology services.

The importance of the service industry can be seen to have grown considerably. In this study, attention is focused on one particular part of the service industry: knowledge-intensive business services (KIBS). The share of KIBS, the dashed line, is quite similar to that for the services sector in China. An increasing trend can also be observed, jumping from 13.4% in 2006 to around 23.9% in 2016. This result largely confirms the important role played by KIBS in China. It is worth providing insights into the issue to examine the influence of KIBS partnerships in China when Taiwan-based firms engage in an FDI strategy to enhance their productivity. Table 1 compares the statistics for non-FDI and FDI firms. We label an observation as a firm if it has engaged in FDI in China at least once and as a non-FDI one if it has not implemented such a strategy in China. There are a total of 1,908 observations for the period 2008-2016, of which 1,496 observations (78.5%) relate to firms that have implemented an FDI strategy in China. The above statistics indicate that China has been an important FDI destination for Taiwan's multinationals. They also indicate that multinationals engaging in FDI in China are on average characterized by superior productivity, larger firm size, and greater R&D and capital intensity relative to non-FDI ones. The statistics confirm the finding by Melitz on self-selection effects that only the most productive firms can overcome the liabilities in international markets.

To obtain more insightful analyses into understanding the value co-creation that from KIBS collaborations, Table 2 summarizes the average basic characteristics for Taiwan-based multinationals in China. An observation is considered to belong to the KIBS group when the firm in question has experience of benefiting from KIBS partnerships in host country, while those multinationals, which have not implemented the KIBS strategy there, are non-KIBS firms.

Table 1. Summary Statistics for Taiwan-based Non-FDI and FDI Firms

	Non-FDI	FDI	Overall Sample
Firm Productivity	3.515	4.742	4.478
Log(Total Factor Productivity)	(0.28)	(0.45)	(0.67)
Firm Size	5.773	6.299	6.186
Log (Firm sale)	(0.58)	(0.47)	(0.51)
R&D Intensity	3.351	3.778	3.744
Log (Firm R&D / Firm labor)	(1.49)	(1.54)	(1.53)
Capital Intensity	1.355	1.391	1.382
Log(Capital/ Labor)	(0.43)	(0.49)	(0.47)
No. of Obs (%)	412 (21.5)	1,496 (78.5)	1,908

Source: Calculated by the study, based on the databank of the Investment Commission, 2008-2016, MOEA. If a firm has experience of offshoring its activities to China then the firm is considered to be an FDI one, otherwise it is considered to be a Non-FDI one. The numbers in parentheses are the mean values and the standard deviations are in the parentheses.

Multinationals that have benefited from KIBS partnerships on average have higher firm productivity. The statistics indicate that the important role played by KIBS partnerships in host country is to enhance the multinationals' productivity. Most of them on average experience smaller firm size, less overseas experience, lower capital-intensity, and higher market localization. Interestingly, lower subsidiary R&D is observed among KIBS firms. The statistics lead us to again conclude that multinationals often utilize KIBS collaborations to overcome an insufficiency of resources and more liability of foreignness (or smallness) in host country, which in turn enhances their productivity.

Econometric Method

A linear econometric model is constructed to assess the impacts of KIBS collaborations as follows:

$$TFP_i = \beta_0 + \beta_1 KIBS_i + \beta_2 FDI_i + \beta_3 KIBS * FDI + z_i'\gamma + \varepsilon_i$$

where TFP is total factor productivity related to firm performance which measure the value co- creation. Along with FDI and KIBS, the interaction terms (KIBS*FDI) are used to examine whether the gain from a KIBS partnership in host country is dependent on the absorptive capacity of the foreign subsidiary. Zi denotes the vector of other control variables, β_i, i = 1,2,3 and γ are the estimated parameters, and ε is the error term. In addition, the endogeneity problem caused by omitted variables and their simultaneously determined may be a concern, as it is present in almost every aspect of empirical studies. Here we took potential endogeneity into account and complete our analysis by using panel GMM approach in mitigating the effect.

Measures

Dependent variable.

The dependent variable is firm performance which is measured by total factor productivity (TFP) in logarithmic form to measure the value co-creation from KIBS partnerships.

Independent variable.

KIBS is defined as a binary variable, which has a value of 1 when the multinational has experience of developing KIBS partnerships in China, and of 0 otherwise. We expect that the KIBS is positively associated with firm performance. FDI is

also defined as a dummy variable that indicates whether firm *i* engages in FDI in

China. We expect that the FDI variable is positively associated with firm performance. The interaction terms (KIBS*FDI) are used to examine our hypotheses in this empirical analysis.

Table 2. Summary Statistics for Non-KIBS and KIBS Firms

	Non-KIBS Strategy	KIBS Strategy
Firm Productivity (TFP)	4.607	4.929
Log(Total Factor Productivity)	(0.45)	(0.37)
Firm Size (Size)	6.302	6.264
Log (Firm sale)	(0.47)	(0.47)
RD Intensity (RD)	3.786	3.769
Log (Firm R&D / Firm labor)	(1.52)	(1.54)
Capital Intensity (KL)	1.391	1.338
Log(Capital/ Labor)	(0.49)	(0.48)
Experience	21.089	20.663
Years of overseas operation	(11.74)	(11.30)
Absorptive Capacity (AC)	0.597	0.559
Log (Sub R&D / Sub Sale)	(0.22)	(0.22)
Market Localization (ML)	0.613	0.621
(Sub Sale/ Firm Sale)	(0.23)	(0.22)
No. of Obs (%)	869 (58.1)	627 (41.9)

Source: Calculated by the study, based on the databank of the Investment Commission, 2008-2016, MOEA. If a firm has experience of carrying out a KIBS strategy in China then the firm is considered to be a KIBS firm, otherwise it is considered to be a Non-KIBS one. The numbers not in parentheses are the mean values and the standard deviations are in the parentheses.

Table 3. Correlation Matrices of Main Variables

Variables								VIF
Firm Size	1.00							7.02
R&D Intensity	-0.17**	1.00						5.14
Capital Intensity	0.306**	0.237**	1.00					3.76
Experience	0.217**	0.021	0.116**	1.00				4.01
Absorptive Capacity	-0.014	0.366**	0.078*	0.003	1.00			3.41
Market Localization	0.136**	0.071*	0.021	-0.071*	0.227**	1.00		2.62
KIBS Partnership	0.007	0.202**	0.051*	-0.007	-0.041	0.53*	1.00	3.94

Source: 1. Calculated by the study. 2.** and * denote significance at the 5%, and 10% levels, respectively.

Table 4. Regression Results of Panel GMM Model over the Period 2008-2016

Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5) High-Tech Industry	Model (6) Other Manufacturing Industry
Size	0.079*** (2.95)	0.076*** (3.02)	0.080** (2.55)	0.082** (2.53)	0.064*** (4.42)	0.071*** (2.86)
RD	0.035** (2.01)	0.031** (1.98)	0.030** (2.20)	0.033** (2.06)	0.041*** (3.91)	0.031* (1.87)
KL	0.066 (1.61)	0.074* (1.65)	0.069 (1.38)	0.068 (1.32)	0.091** (1.97)	0.074 (1.20)
Experience	0.005 (1.42)	0.005 (1.30)	0.005 (1.23)	0.006 (1.29)	0.010 (1.45)	0.006* (1.67)
ML	-0.052** (-1.99)	-0.048* (-1.82)	-0.050* (-1.67)	-0.113** (-1.98)	0.081** (2.01)	-0.077* (1.70)
AC	4.763*** (6.96)	4.614*** (8.33)	4.874*** (8.16)	5.231*** (10.21)	5.712*** (8.13)	5.115*** (3.08)
FDI	-	1.17*** (17.43)	0.967*** (10.98)	-	-	-
KIBS	-	0.347*** (6.72)	-0.033 (-0.30)	0.419*** (3.81)	0.315*** (2.65)	0.479** (2.34)
KIBS*FDI	-	-	0.492*** (3.74)	-	-	-
KIBS*AC	-	-	-	0.220** (2.29)	0.237* (1.88)	0.218 (1.31)
Industry Dummies	Yes	Yes	Yes	Yes	-	-
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	2.121*** (3.12)	2.077*** (3.12)	2.088*** (2.87)	2.074** (1.99)	3.019* (1.69)	2.210* (2.22)
Hansen J Test	0.12	0.10	0.08	0.06	0.10	0.90
R-squared	0.52	0.59	0.62	0.65	0.45	0.42
Numbers of Obs		1,908		1,496	438	1,058

Notes: 1. The dependent variable is total firm productivity (TFP). 2. The numbers in the parentheses are t statistics.3. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Control Variables.

Two other types of explanatory variables are employed as the control variables in the empirical analysis. The first one comprises the firm-specific factors that include firm size, overseas experience, R&D intensity, and capital intensity. The second one consists of the subsidiary characteristics, which include absorptive capacity and market localization. Finally, the industry and time dummies are also included in the empirical analysis. The basic statistics, definitions, and measurements of the main variables are explained based on the KIBS strategy in Table 2. To check for multi-collinearity, Table 3 reports the correlation matrix and variance inflation factors (VIFs). The highest individual VIF score among all the variables is 7.02, and the lowest VIF score is 2.62. The existence of multi-collinearity among variables thus does not pose a problem.

Analysis And Results

Given the above methodology and dataset as well as the selection of variables, Table 4 lists the empirical results. Columns (1) - (3) evaluate the role of KIBS by using the full sample. Columns (4) to (6) provide the empirical results to test the complementary relationships between the KIBS part-

nership and absorptive capacity. The empirical results for the control variables in columns (1) to (6) are consistent with those of previous empirical studies. In terms of the firm- specific factors, the positive and significant estimated coefficients of firm size are viewed in line with predictions by Antràs and Helpman (2004), which indicate that it is advantageous for larger firms to have more resources for managing and learning knowledge and obtaining technology sources than smaller ones, which is positively correlated with firm productivity. R&D has positive effects on a firm's performance indicating that R&D investments at home are viewed as having firm-specific advantages in overseas markets. Finally, the insignificant estimated coefficients of capital intensity and experience provide evidence that there are no direct effects on firm productivity.

Turning to the subsidiary-specific factors, the empirical results of market localization are both negative and significant, which indicates that subsidiaries which are larger in size in host country may experience some form of inertia in learning effects, thereby reducing productivity (Lusch and Vargo, 2014). However, the absorptive capacity (AC), which is measured as subsidiary R&D intensity due to the proximity to knowledge, is positively and significantly correlated with total factor productivities that indeed helps multinationals to access desired technological capabilities and markets, which in turn will provide a significantly positive contribution to their productivity.

The main concern in this empirical analysis is to assess whether multinationals benefit from KIBS partnerships in host country. First, the empirical results in column (2) indicate that firms engaging in an FDI strategy are found to increase their productivity. The positive and significant estimated coefficient in column (3) also indicates that multinationals can benefit more from KIBS collaborations than domestic ones. These empirical results support our hypothesis: KIBS collaborations in host country can bring about a strong positive impact on their value co-creation.

To verify the firm heterogeneity and the complementary relationships between KIBS partnerships and absorptive capacity based on the open innovation views, the interaction term KIBS* AC, in which AC is a proxy for absorptive capacity, is also included in column (4). The positive and significant estimated coefficient confirms the other hypothesis that there is a complementary relationship between the KIBS partnerships and absorptive capacity. Multinationals with higher absorptive capacity benefit from higher overall productivity from the contribution of KIBS partnerships. KIBS partnerships are required for the efficiency of knowledge internalization from realized absorptive capacity and the effectiveness of potential absorptive capacity in the technology transfer process. The results once again emphasize the importance of firm-specific characteristics in terms of influencing KIBS collaboration in creating value co-creation and thereby increasing the productivity of multinationals.

Finally, it is interesting to examine whether the contributions of KIBS partnerships differ in different industries. To this end, we further classify

the sample into hi-tech firms and other manufacturing firms and empirical estimations are implemented for each sub-group in obtaining columns (5) and (6) of Table 4, respectively. The significant estimated coefficients indicate that the positive value co-creation of KIBS collaborations are found to result from the direct effects of knowledge-intensive inputs, while the complementary effects are only observed in the hi-tech industry.

Robustness Checks

We employed several tests to verify that our results are robust. First, we use the natural logarithm for valued added as an alternative measure for firm productivity and independent variables for absorptive capacity, it equals 1 if the multinationals conduct innovation collaboration in China, and 0 otherwise. The unreported regressions result show that our results remain stable based on the alternative definitions. Next, endogeneity of KIBS behavior may be a concern, it is quite possible that KIBS behavior and firm performance are all simultaneously determined. We carried out the Hausman endogeneity tests to check the problem of endogeneity. As a result, our results do not suffer from serious problems of endogeneity. In summary, our results remain stable when conducting our analyses based on the alternative definitions and additional tests.

To sum up, these empirical results reveal some interesting findings in that KIBS partnerships in host country indeed significantly reinforce the positive effect of the collaborative advantages, which in turn help multinationals to raise their productivity.

Discussion And Conclusions

This study provides an empirical analysis to test theoretical considerations suggesting that multinationals can benefit more from KIBS partnerships in host country. It has long been shown in the international business literature that a multinational's performance depends not only on firm-specific advantages, but also on the knowledge it can gather from beyond its own boundaries. While the literature has provided ample evidence of the advantages of pooling knowledge and resources through an FDI strategy, we use a dataset of Taiwan-based firms operating in China compiled by Taiwan's Ministry of Economic Affairs (MOEA) for 2008- 2016 to provide evidence that the value co-creation by which a multinational seeks external knowledge through KIBS partnerships matter.

Do all multinationals have identical productivity gains from KIBS partnerships in host country? This study has found that multinationals with higher absorptive capacity seem to benefit considerably more than those with lower absorptive capacity based on the contribution of KIBS partnerships. Along with the direct effects of knowledge-intensive inputs, we also find that the gain from KIBS partnerships is also highly dependent on the complementary effects of the absorptive capacity in the foreign subsidiary. With network integration in changing global value chain activities having moved up to increasingly complex original design/brand manufacturing arrangements, the knowledge and information obtained from external technology sources needs to be internalized and recombined in positively driving

firm productivity. The positive value co-creation of KIBS partnerships needs multinationals to upgrade their absorptive capacity in their foreign subsidiaries. Moreover, the complementary effects are more significant in the hi-tech industry. More guidance should thus be given to develop KIBS partnerships with foreign subsidiaries in responding to the changing network integration.

Theoretical and Managerial Implications

Our findings conceptualize and empirically validate the importance of KIBS collaboration in creating value co-creation and provide strategic insights into how to enhance the value co- creation. When multinationals engage in an FDI strategy, the liability of foreignness and barriers such as coordination efforts and the cost of disclosure can be counteracted by the benefits from engaging in KIBS partnerships in host country. The challenge that innovation managers and entrepreneurs face is to determine the right KIBS partnerships. The results challenge the optimistic view of openness through KIBS partnerships as a key component for creating value co-creation. The benefits from KIBS collaborations may increase but at a diminishing rate, which requires the adoption of sophisticated mechanisms for the dissemination and integration of both explicit and tacit knowledge (Ambos and Ambos, 2009). These insights draw attention to the role of the absorptive capacity by adjusting collaboration strategies accordingly. Our study extends the existing theory by introducing firm heterogeneity in the contributions of KIBS partnerships to firm productivity. We further quantify and emphasize that the expected value co-creation may be influenced by their own absorptive capacity (R&D activities) in their foreign subsidiaries. From an open innovation view, establishing more subsidiary R&D in enhancing the absorptive capacity will grant them access to more experiential knowledge and technical resources from KIBS partnerships that will raise value co-creation. Insights from this study therefore contribute to the understanding of the influence of KIBS partnerships on the multinationals' performance. In particular, the extent to which beneficial effects can be realized is determined by both a targeted policy design and adherence to certain collaboration conditions by the participating multinationals.

Limitations and Future Research

The empirical analysis in this study has some limitations that call for future research. First, the KIBS measure is rather broad and does not specifically consider the heterogeneity in the types and contractual arrangements. Different types of KIBS partnerships can indeed have different effects on multinational performance, which may lead to different calibrations of external partnerships that are beneficial to the firms. Second, although the sample in this study is derived from a longitudinal dataset (2008-2016), we have not considered the dynamic relationships between multinationals and their KIBS counterparts that occur as they repeatedly engage in collaborative projects. It should be interesting in future research to analyze whether the long- run productivity gains of KIBS partnerships change as they become more experienced. Finally, knowing more about the costs and benefits of KIBS collaboration over the life cycle of a multina-

tional would be highly desirable, and would thereby help to provide better insights. This limitation should be considered in future research. Despite there being some limitations, this study still offers some interesting contributions that should be of value in the field of international business with local counterparts in the host countries.

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