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The internationalisation of Chinese firms: Implications for local firms in developing countries

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Abstract

This study examines the implications of market-seeking internationalisation of Chinese firms for industrial development in developing countries. It combines the global value chain approach with the theories of firm-level capabilities and product platforms to analyse the Vietnamese motorcycle industry in which exports and foreign direct investment (FDI) by Chinese firms gave rise to new value chains serving the low-end motorcycle market in Vietnam. While a new space was created for local firms to enter into vehicle assembly and distribution, the dominant positions achieved by Chinese component suppliers imposed structural constraints on the upgrading of firms in the chain. The analysis suggests that research on the internationalisation of firms needs to consider the distinctive characteristics of industrial organisation at home and the possibility that they could be adapted to meet the specific settings in the host country.

Keywords: internationalisation, exports, foreign direct investment, value chain, motorcycle industry, China, Vietnam

1 Introduction

Chinese manufacturing firms have become dominant players in not only the low and middle ends of the huge domestic market but also increasingly in the developing part of the world via exports and foreign direct investments (FDI). Given the high levels of price-based competitiveness, the primary target for these Chinese firms has been developing countries, which share demand characteristics similar to those at home. Chinese firms' attempts to infiltrate developing country markets started with exports, which in some cases brought about significant competitive impacts on the host economy but did not involve organised, long-term endeavours by Chinese firms to develop production and distribution channels in the host country (Tegegne 2009; Otsuka and

Sonobe 2010). However, recent empirical literature on Africa and Vietnam provides evidence that Chinese manufacturing firms have started to make sizeable investments in local production (Gu 2009; Kimura 2013; Kubny and Voss 2014).

These developments give rise to a major research question: What types of linkages do Chinese firms develop with local firms at the destination, and what are the developmental implications such linkages for industrial development of the host country? The emerging literature is largely pessimistic with regard to both the intensity of linkages created and their developmental implications. Gu's (2009)'s study of Chinese private investment in Africa found that the absence of local networks of specialised local suppliers with sufficient levels of competence has constrained the magnitude of linkages between Chinese and local firms. Kubny and Voss (2014) found that, while Chinese manufacturing firms investing in Vietnam tended to establish more extensive forward linkages than backward linkages with local firms relative to investors of other nationalities, they engaged in limited value-adding interactions with local firms, suggesting limited potential gains for local suppliers.

This study brings a new focus to analysing the consequences of internationalisation by Chinese firms for the host country: industrial organisation. It has been widely discussed that the Chinese industry serving the low and middle ends of the domestic market has exhibited distinctive industrial organisation with the following characteristics (Watanabe 2014a, 2014b). First, the extensive use of technology platforms promoted vertically disintegration of industries, i.e., division of industries into narrower domains, which are undertaken by separate firms. Second, vertical disintegration, combined with the emergence of specialised suppliers of technology platforms, has lowered the costs of entry for firms undertaking production and distribution of final products, resulting in active entry by a large number of firms into these activities. Third, firms along the chain tend to engage in arm's-length transactions. Instead of depending on networks of closely aligned suppliers, firms producing final products often engage in market-based relationships with multiple suppliers.

While the above characteristics of Chinese industries suggest that the patterns of industrial organisation that emerge at the destination as a result of internationalisation of Chinese firms may have significant implications for the host country, this has largely been overlooked in the literature. This will be the focus of this study. It distinguishes

between internationalisation of Chinese manufacturers of final products and intermediate inputs, asking whether the modes of entry and performance differs between these two groups of firms, and how the internationalisation by the two groups of firms shapes the space for local firms and the nature of knowledge flows to them. It will focus on the Vietnamese motorcycle industry in which exports and FDI by Chinese motorcycle assemblers and component suppliers resulted in the emergence of value chains catering to the low end of the growing motorcycle market in Vietnam, creating a new space for local firms. Analytically, this study combines the global value chain approach (Gereffi et al. 2005) with the theories of firm-level capabilities (Teece 2000) and product platform (Baldwin and Woodard 2009) to explain why the modes of entry and performance differed between motorcycle assemblers and component suppliers and discusses the implications of the emerging value chain structure for industrial development of the host country.

The remainder of the study is structured as follows. Section 2 discusses the key features of the Chinese motorcycle industry, which provides a background as to why Chinese firms sought to internationalise toward the end of the 1990s. Section 3 examines the evolution of Chinese motorcycle firms' exports and FDI in Vietnam. Section 4 analyses the structure of the motorcycle value chains that emerged in Vietnam as a result of exports and FDI by Chinese firms, highlighting the contrasting performance between Chinese motorcycle manufacturers and component suppliers, and discusses its implications for the development of local firms in the host country. Section 5 explains why the emerging value chain in Vietnam took the structure discussed in Section 4. The final section summarises the findings and discusses their implications for research on the internationalisation of firms.

2 Industrial organisation in the Chinese motorcycle industry

The distinctive characteristics of Chinese industries serving the middle and low ends of the domestic market discussed in the Introduction—vertical disintegration, active entry, and arm's-length transactions between firms along the value chain—have all been observed in the Chinese motorcycle industry since the 1990s. This contrasts sharply with the situation of the industry up till the 1980s when the industry consisted of a relatively small number of large state-owned enterprises (SOEs), which shifted their

production from military armaments to motorcycles with the introduction of Japanese technology under formalised licensing agreements (Fujita 2013a).

The key trigger for change came in the early 1990s when nearly a dozen motorcycle designs introduced into these state-owned motorcycle manufacturers came to be widely shared and replicated by many new entrants (Ohara 2006a: 52-53). Since motorcycles have an integral design architecture characterised by complex mapping from functional elements to physical components and tightly coupled interfaces among interacting physical components (Ulrich 1995; Baldwin and Clark 2000), motorcycle manufacturers need to engage in fine-tuning between the whole product and its component parts in order for the overall product performance to be maximised. However, sharing several highly popular designs as industry-wide de facto standards in China enabled components to be traded between motorcycle manufacturers and component suppliers without intense communication or coordination. Similar to industries producing products with modular architecture (Langlois and Robertson 1995), component designs, which often followed standardised designs incorporating minor modifications that did not interfere with the interface between the components and the rest of the product, could be executed largely independent of vehicle design.

As a result, entry barriers for motorcycle assembly were significantly lowered. Chinese motorcycle manufacturers could purchase and assemble standard components that were readily available on the market. This meant that the minimum requirement was the capacity to assemble components. Likewise, suppliers no longer had to invest in equipment, human resources, or skills specific to individual customers; to operate as a motorcycle component supplier, simple reverse engineering capabilities in terms of reproducing existing components and routine manufacturing sufficed. As a result of the entry of a large number of companies into assembly and component production, the structure of the Chinese motorcycle industry became highly fragmented. The number of motorcycle manufacturers increased throughout the 1990s, reaching 140 in 1997 (Ohara 2001: 7).

Whereas large state-owned motorcycle manufacturers opted to develop supply networks of their own in the 1980s, motorcycle manufacturers and component suppliers grew increasingly independent of each other in the 1990s. Suppliers traded with many

customers while manufacturers normally maintained multiple—usually three or more—suppliers of each type of component (Ohara 2001: 18).

As a result of this active entry and expansion of production by new entrants, price-based competition intensified, and the Chinese motorcycle market started to show signs of saturation by the end of the 1990s. This stimulated Chinese motorcycle firms to internationalise via exports and FDI, and the first major destination was Vietnam.

3 The internationalisation of Chinese firms in the Vietnamese motorcycle industry

3.1 Typology of firm types and entry modes

This study analyses internationalisation of Chinese firms with a focus on the following two dimensions, both of which are critical in analysing the consequences for industrial development at the destination. The first is whether the Chinese firm in question is a manufacturer of vehicles or components. The second is the mode of entry. Exports and FDI were the dominant modes adopted by Chinese motorcycle and component manufacturers when they internationalised. Combinations of these two options results in four possibilities, each of which has different implications for the host country as shown in Table 1.

Table 1. Implications on firms' internationalisation for the host country

	Exports	FDI
Manufacturer of vehicles	No local production. Competitive effects on incumbent manufacturers of vehicles.	Local assembly of vehicles. Components may be produced in-house, sourced locally, or imported. Competitive effects on incumbent manufacturers of vehicles.
Manufacturer of components	No local production. Competitive effects on incumbent manufacturers of components while providing space for entry into assembly and distribution of vehicles.	Local production of components. Competitive effects on incumbent manufacturers of components while providing space for entry into assembly and distribution of vehicles.

Source: Prepared by the author.

The first option, in which a motorcycle manufacturer chooses to export, results in competitive effects on existing motorcycle manufacturers at the destination while creating space for entry into distribution. In the second option, the motorcycle

manufacturer engages in FDI for local assembly. The consequences of this option vary considerably depending on where the components are sourced from, i.e., whether they are produced in-house, sourced locally—which includes "follow sourcing" from closely aligned suppliers (Humphrey and Memedovic 2003) or sourcing from other foreign-invested or locally owned suppliers—or imported from home or elsewhere. The third and fourth options, exports and FDI by manufacturers of components, respectively, create competitive effects on existing input manufacturers while providing space for entry into assembly and distribution of motorcycles. The difference between these two options is that the latter results in local production of components while the former does not.

Two or more of the above options may be invoked simultaneously, which may or may not be a result of coordinated decisions of the internationalising firms. For instance, a vehicle manufacturer making FDI for local production at the destination may import components from the parent company at home (hence, inducing exports of components from the country of origin) or invite component suppliers at home to invest in local production at the destination—a practice commonly referred to as "follow sourcing" (Humphrey and Memedovic 2003). The remainder of this section examines how the internationalisation of Chinese motorcycle and component manufacturers to Vietnam evolved over time, focusing on the distinctions between the above-mentioned four patterns.

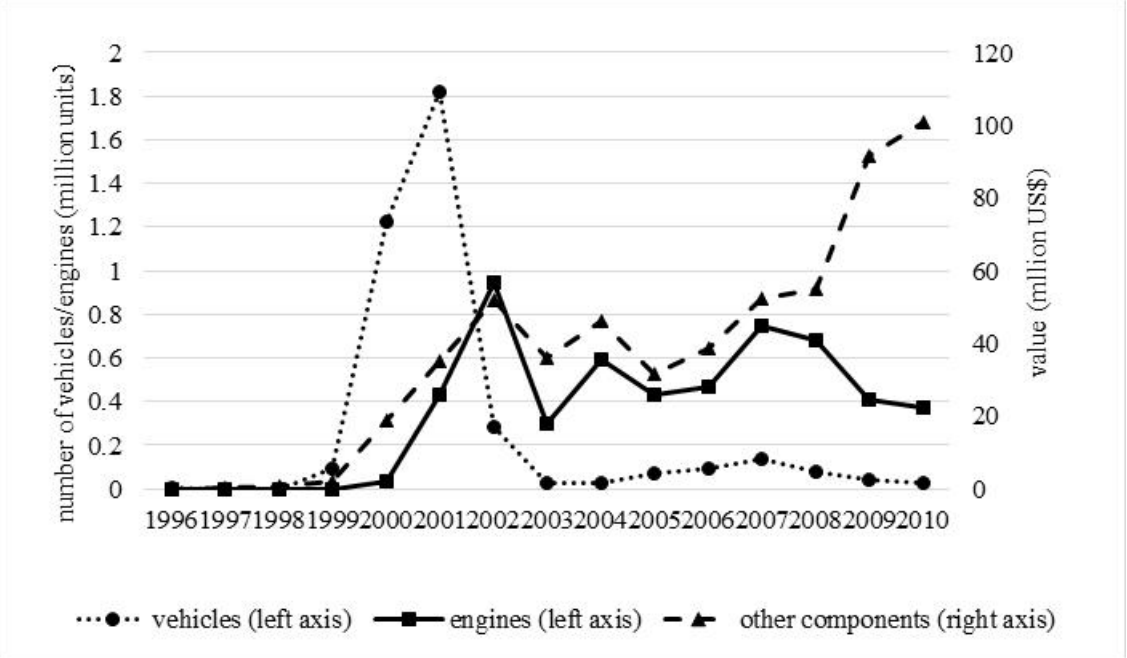
3.2 Exports of vehicles and components

While Vietnam became the first major target of internationalisation for Chinese motorcycle firms, the types of firms that entered Vietnam and the modes of entry they adopted changed over time. These changes were due to a variety of factors, particularly changes in the Vietnamese government's policies.

The internationalisation of Chinese motorcycle companies to Vietnam started with massive exports of vehicles in the early 2000s. Figure 1 shows that China's exports of vehicles to Vietnam surged dramatically in the years 2000–2001. These years correspond to the period when China's exports expanded from almost nothing, from 213,593 units in 1999 to more than 1.8 million units in 2000. Vietnam was the first major export destination for Chinese motorcycle companies; indeed, Vietnam's share of

China's total motorcycle exports in 2000 and 2001 reached 65% and 74%, respectively. The top exporters in these years were some of China's leading motorcycle manufacturers. The three largest Chinese motorcycle exporters to Vietnam in 2001 were Loncin Motor Co., Ltd., Lifan Industry (Group) Co., Ltd., and Chongqing Yinxiang Industrial Group [1] (Ohara 2005a: 119). All of them were major motorcycle manufacturers based in Chongqing; they were ranked fifth, third, and 24th, respectively, in sales in China among 148 motorcycle manufacturers operating in the same year (China Automotive Technology Research Center 2002).

Figure 1. China's exports of motorcycles and components to Vietnam



Note: Motorcycles are limited to those with a cylinder capacity over 50cc but under 250cc (HS 871120), the types most commonly used in developing countries.

[1] Although the precise shares of these companies in China's total motorcycle exports to Vietnam are not known, the shares of the top two companies are likely to have been very high. Among 1,088 motorcycle models newly registered with the Vietnamese authority in 2000–2001for sale in Vietnam, those carrying Loncin and Lifan engines amounted to 231 and 248, respectively (the author's calculation based on data from Vietnam Register, retrieved from http://www.vr.org.vn). Loncin and Lifan were also among the three most commonly observed Chinese brand names displayed on engine covers of imported Chinese motorcycles sold in the Vietnamese market in 2002 (Fujita 2013b: 56).

Source: Data from *Global Trade Atlas.*

The exports of vehicles, however, declined remarkably in 2002 and remained at negligible levels after 2003. This sudden decline was due to the Vietnamese government's tightening of regulations. The Vietnamese government prohibited imports of assembled motorcycles and introduced local content rules in 1998, but these rules were circumvented by Vietnamese importers and assemblers. Beginning in 2002, the government increased its enforcement of these rules.

As Chinese exports of vehicles to Vietnam declined, exports of engines and other components increased. While the pace of increase was not as remarkable as the exports of vehicles in the early 2000s, the level of exports remained stable in the long run. Engine exports continued at around 400,000–800,000 units per year until 2009. Similarly, exports of components other than engines remained at around US$30–55 million per year during the same period.

3.3 FDI by vehicle manufacturers and component suppliers

After the Vietnamese government increased its enforcement of import controls and local content rules in 2002, many Chinese exporters simply left Vietnam and turned to other prospective markets in Africa, Asia, Latin America, and the Middle East.[2] While other Chinese companies sought to invest in local production in Vietnam, the Vietnamese government adopted restrictive policies regarding licensing FDI projects in motorcycle assembly with the apparent aim of allowing investment only by companies that had the capacity and intention to produce components in-house and expand local sourcing.[3] Despite such policies, Lifan—the second-largest Chinese motorcycle exporters to

[2] Data from *Global Trade Atlas* show that Nigeria emerged as the largest market for Chinese motorcycle exports from 2002 to 2011. Other major export destinations included Indonesia, Philippines, Myanmar, Argentina, Mexico, Brazil, Egypt, and Iran.

[3] Circular No.1536/UB-VP by the State Committee for Cooperation and Investment dated 11 August 1994 set out the guideline that Vietnam would not allow foreign companies to invest in motorcycle assembly by simple knock-down form, and would require them to manufacture components from the second year of production onwards.

Vietnam in 2001 mentioned above—established a joint venture with a Vietnamese company in 2002 for local production of motorcycles.

The Vietnamese government encouraged FDI in component production because it sought to promote the domestic component industry.[4] Data from the Ministry of Planning and Investment, the Vietnamese authority in charge of licensing FDI projects, show that 17 Chinese projects to produce motorcycle components were licensed between 1991 and the end of June 2004 (Table 2). Lifan contributed capital to six of these projects, five of which were licensed in 2002 and one of which was licensed in 2003.

Table 2. The number of Chinese FDI projects in motorcycle component production

Year in which the license was granted	Total number of projects licensed	of which: Lifan has capital participation
2001	6	0
2002	8	5
2003	2	1
2004*	1	0

Note: * Data in 2004 are only for the period up to the end of August.

Source: Data from the Ministry of Planning and Investment.

To sum up, internationalisation of Chinese motorcycle firms evolved in response to changes in the Vietnamese government's policies. This started with massive exports of vehicles, which, in response to the government's strengthening of import controls, were subsequently replaced by component exports and FDI in vehicle assembly and component production.

4 Emerging value chain in Vietnam: Space for local firms and knowledge flows

The internationalisation of Chinese motorcycle firms, as discussed in the previous section, had significant impacts on the Vietnamese motorcycle industry. Prior to the entry of Chinese firms, the industry consisted of a handful of Japanese- and Taiwanese-invested motorcycle manufacturers, which produced sophisticated yet expensive models

[4] Government decree 24/2000/ND-CP dated 31 July 2000 specified the production of motorcycle component as one of the sectors in which FDI was encouraged.

beyond the reach of majority of the country's population under heavy protection by the government (Fujita 2011). However, massive inflows of Chinese vehicle imports resulted in a loss of market share for the incumbent Japanese and Taiwanese companies. In particular, Honda's market share[5] declined sharply from 67.2% in 1998 to 11.9% in 2001 (Institute for Industry Policy and Strategy 2007: 38). Honda nevertheless responded by launching a new model priced nearly one-third of its previous products in 2002, which helped the company to recover its market shares in the subsequent period. In the meantime, the entry of Chinese firms, particularly after the entry mode shifted from vehicle exports to component exports and FDI by motorcycle and component manufacturers, gave rise to new value chains catering to the middle and low ends of the market, creating a new space for local companies. This will be the focus of discussion in this section.

In analysing the emerging value chain structure in the Vietnamese motorcycle industry, one must be cautious about the timing of analyses because the Vietnamese government's policies—which in the early 2000s were highly interventionist, were often not enforced uniformly, and changed frequently—heavily influenced the ways in which motorcycle and component suppliers operated. The following analysis will focus on the situation around the year 2007 when many of the interventionist policies were dismantled and the industry set out on a market-led development path.

4.1 Value chain structure

Motorcycle assemblers

Exports and FDI by Chinese firms, discussed in Section 3, gave rise to two different groups of motorcycle assemblers in Vietnam catering to the middle- and low-end markets in Vietnam. The first is Chinese-invested firms. Of the two Chinese motorcycle manufacturers that obtained investment licenses, only Lifan is known to have launched local production of motorcycles under its own brand name.[6] The other group is

[5] This includes both motorcycles produced by Honda Vietnam and imported Honda-brand motorcycles, primarily from Thailand. The market share here does not equal

[6] According to Ohara (2005a: 119), Loncin, the largest motorcycle exporter to Vietnam in 2001, subsequently shifted to exporting motorcycles to new markets such as Nigeria and Iran, and Yinxiang, the third-largest exporter, also adopted a similar strategy.

Vietnamese motorcycle assemblers. Many of these companies, which amounted to more than 50 in 2001, started as importers of Chinese motorcycles in the early 2000s. They invested in assembly and production of components beginning in 2002, when the Vietnamese government implemented a series of interventionist policies with the aim of encouraging these companies to develop into fully fledged motorcycle companies. These policies included strengthening the enforcement of import controls and local content rules and requiring motorcycle assemblers to invest in the in-house production of key components (Fujita 2011).

How did these two groups of firms compete in the Vietnamese market? The Chinese-invested motorcycle assembler Lifan never managed to obtain a substantial market share. The combined share of Lifan and two other assemblers in the country's total motorcycle registration was 2.5% at most (Table 3), which means that Lifan's share was even smaller. A study conducted by a group of Japanese and Vietnamese researchers in 2006–2007 noted that Lifan reduced completed motorcycle production and strengthened the production of engines to serve the local market instead (Institute of Industry Strategy and Policy 2007: 39).

Table 3. New registration of motorcycles and shares by assemblers

	2001	2002	2003	2004	2005	2006
Number of newly registered motorcycles (Unit: 1,000 vehicles)	2,486	1,819	1,790	2,139	2,188	2,554
Foreign-invested assemblers	12.9%	42.4%	47.6%	51.7%	53.6%	54.5%
Honda Vietnam	6.8%	21.0%	23.7%	23.9%	28.6%	31.6%
Yamaha Vietnam	0.9%	3.8%	6.8%	9.8%	11.7%	13.7%
Vietnam Suzuki	1.0%	2.3%	2.9%	3.6%	3.9%	1.7%
VMEP *	3.2%	13.6%	11.8%	12.0%	7.8%	5.9%
Others **	1.0%	1.7%	2.5%	2.5%	1.6%	1.7%
Local assemblers (categorised by scale)	87.1%	57.6%	52.4%	48.3%	46.5%	45.5%
More than 40,000 units/year (6 firms in 2005)	8.1%	10.2%	12.6%	19.4%	22.4%	27.1%
20,000-40,000 units/year (10 firms in 2005)	40.5%	31.1%	30.6%	24.6%	13.4%	7.4%
10,000-20,000 units/year (14 firms in 2005)	21.1%	10.0%	9.2%	4.2%	8.8%	5.5%
Less than 10,000 units/year	17.4%	6.3%	0.0%	0.2%	1.8%	5.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: * Vietnam Manufacture and Export Processing Co., Ltd. (VMEP) is a motorcycle manufacturer wholly invested by Chinfon Group of Taiwan.

** Others include Lifan Vietnam (China), Vina Siam (Taiwan), and GMN Joint Venture Co., Ltd. (Thailand and Laos).

Source: Institute for Industry Policy and Strategy (2007:37).

It was the Vietnamese motorcycle assemblers that dominated the low-end market since 2001 (Table 3). Despite Honda's entry into the middle-end motorcycle market in 2002, with a new model priced at roughly one-third of its previous models, these local assemblers maintained a combined share of 45% even in 2006 by catering primarily to the demand of low-income consumers mainly in rural areas. While as many as 43 Vietnamese assemblers continued to operate as of 2005,[7] this segment of the industry showed signs of consolidation. The market share of local assemblers producing more than 40,000 units per year increased consistently, while those producing less than 10,000 units per year continued to survive (Table 3).

The question that follows is what types of Vietnamese assemblers eventually expanded sales? The author's fieldwork-based research in 2008–2009[8] showed that two groups of Vietnamese assemblers had emerged by 2007: one focused on producing a larger variety of models carrying imitated designs at low costs, and the other opted for the improvement of product quality, developing own product designs and/or brand names, even if this should be at the expense of higher prices. The former group grew rapidly, while the latter stagnated. Two companies belonging to the former group recorded sales of 300,000 units and 95,000 units, respectively, in 2007 (Fujita 2013b: 60), which was equivalent to 36.2% and 11.5%, respectively, of the total number of motorcycles sold by local assemblers in the same year.

Component suppliers

The above analysis shows that Vietnamese assemblers collectively outperformed the Chinese-invested assembler in vehicle assembly and distribution in the low-end segment of the Vietnamese motorcycle market. Chinese firms, in contrast, established dominant positions as suppliers of components.

[7] Institute of Industry Strategy and Policy (2007: 36), citing Vietnam Register data, mentions that there were 51 motorcycle manufacturers and assemblers. If we exclude foreign-invested companies (three Japanese, two Taiwanese, one Chinese, and two Thai), there were 43 Vietnamese companies.

[8] For details, see Fujita (2013b).

The data presented in the previous section showed that China continued to export significant amounts of engines and other components after 2002 (Figure 1) and that 17 Chinese FDI projects in component production were licensed between 2001 and the middle of 2004 (Table 2). However, not all the licensed projects went into operation, and even fewer continued to do so in the long run. Data from the General Statistics Office of Vietnam[9] indicate that 15 Chinese component manufacturers were operating in 2006. Of the 15 component manufacturers, only eight appear in the list of licensed projects as of 2004, while the remaining seven companies do not. While it is possible that these seven companies received investment licenses between the latter half of 2004 and 2006, there is no information on when these seven companies were established.

To assess the performance of Chinese-invested component suppliers, Table 4 compares their performance indicators with those of two other categories of foreign-invested motorcycle component manufacturers: Japanese companies and non-Japanese/Chinese companies, which include Taiwanese, Korean, and Malaysian companies. Of the 125 foreign-invested component suppliers operating in Vietnam as of 2006, the best performance was recorded by Japanese companies. These companies were much larger in terms of revenue and employment as compared to the average for all foreign-invested motorcycle component manufacturers because they grew by serving Japanese motorcycle manufacturers including Honda, which rapidly recovered its market share after launching the low-priced model in 2002. However, the performance of Chinese-invested companies is equally striking. Although the number of companies was small, their average revenue and employment is larger than the average for non-Japanese/Chinese companies, many of which served Japanese motorcycle manufacturers. In particular, the performance of the largest Chinese company is remarkable. This company had two factories registered as independent companies, which in 2006 ranked as 6th and 38th respectively in terms of turnover of all operational motorcycle component manufacturers in Vietnam, including the largest Japanese suppliers that served 100% of Honda Vietnam's growing orders.

[9] Data from the annual Enterprise Survey conducted by the General Statistical Office.

Table 4. Performance of foreign-invested motorcycle component manufacturers by nationality in 2006

		Chinese-invested firms	Japanese-invested firms	Foreign-invested firms excluding Japanese- and Chinese-invested ones
Number of firms		15	22	88
	Average	215	534	172
	Maximum	1,320	2,559	1,377
	Minimum	11	25	1
	Average	82,100	397,890	54,404
	Maximum	620,467	1,584,564	460,671
	Minimum	4,347	448	201

Source: Data from the General Statistics Office.

While the above data suggest that Chinese exports of components and FDI in component production remained important after 2007, the relative roles played by exports and FDI differed considerably by the types of components. With regard to engines, exports have been more important. Vietnam's engine imports from China remained at above 400,000 units per year between 2004 and 2007 and reached 750,691 units in 2007 (Figure 1). Given that Japanese- and Taiwanese-invested assemblers did not import engines (at least in large quantities) in these years,[10] Chinese-imported engines are likely to have been used by Vietnamese and Chinese assemblers. The number of Chinese-imported engines in 2007 is equivalent to 82.7% of the number of motorcycles sold by these assemblers in the same year. While two Chinese-invested companies are known to have produced motorcycle engines for local assemblers, one of them, Company A, sold only around 100,000 units of engines to local assemblers in 2007 (Author's interview in 2007), equivalent to 11.0% of the number of motorcycles sold by Vietnamese and Chinese assemblers.

FDI, in contrast, played key roles in supplying components other than engines, particularly two types of components. The first includes components that require

[10] The Taiwanese-invested manufacturer, VMEP, achieved a local content ratio of 70% for engines and exported engines in 2004, which means that they assemble engines in their factory in Vietnam (The Motorcycle Joint Working Group 2007: 20). According to the survey of Japanese assemblers, only 0.9% of engines were imported from countries other than Japan, Thailand, Malaysia, and Taiwan in 2007 (ibid.: 21).

technologically sophisticated production processes and are, therefore, produced by few local suppliers. Clutches and electric components are typical examples of such components. The author's fieldwork-based research found Chinese-invested suppliers specialised in these types of components traded with a large number of Vietnamese assemblers, including the two very large Vietnamese assemblers discussed in Section 4.1 (Fujita 2013b). However, these types of components were also imported in large quantities from China, as we observed in Figure 1. In the meantime, much greater success was achieved by Chinese-invested suppliers producing the second type of components, which became increasingly important for product differentiation, namely, frames, plastic covers, and lamps. While these are not technologically difficult to produce, local assemblers came to attach increasing importance to these components for differentiating their products because they determine the external appearance of the vehicle and/or are directly visible to the consumers. Chinese Company A achieved a very high market share by supplying these components to the low-end Vietnamese market; in 2007, this supplier sold over 860,000 units of plastic covers and frames, which accounts for the total number of motorcycles produced by local assemblers in that year, to 43 local assemblers, which is also close to the total number of local assemblers operating in the year.

This company rapidly expanded sales to local assemblers by providing the above-mentioned three types of components as complete, fine-tuned component modules that were most critical to the assemblers, incorporating minor cosmetic modifications, and processing them to reasonable quality, prompt delivery, and low-cost standards. Although the supplier initially produced a large variety of motorcycle components, including engines and engine components, it began focusing on these three types of components. Each year, Company A launched an average of four designs incorporating minor modifications to these necessary modules; this enabled local assemblers to renew their product designs regularly to meet changing consumer preferences. The three types of components that comprised the modules were fine-tuned with each other in order to maximise the performance of the module as a whole (Fujita 2013b: 73).

As Chinese imports and Chinese-invested firms dominated the supply of engines and components requiring minor modifications, the space for local suppliers was limited to the supply of simple components, such as metal-stamped components. Since these components generally did not require specific product- or production-related expertise,

entry barriers were low. The author's research in 2008–2009 revealed that local suppliers of such components were losing out in the competition against imported components and foreign-invested suppliers in Vietnam (Fujita 2013b). They were shifting away from supplying local assemblers and seeking opportunities to serve other customers, such as first-tier suppliers to Japanese motorcycle manufacturers (i.e., as second-tier suppliers) or customers in industries other than the motorcycle industry.

4.2 Inter-firm relationships and knowledge flows

In examining the developmental implications of the emergent value chain, the nature of inter-firm relationships, particularly the magnitude and nature of knowledge flows along the value chain, is crucial. Research by the author (Fujita 2013b) has shown that Vietnamese motorcycle assemblers engaged in arm's-length transactions in which the flow of knowledge was extremely limited. In the early 2000s, they adopted a trial-and-error approach to component sourcing, switching suppliers whenever they found quality, prices, or other terms of transactions satisfactory. Orders were placed on an ad hoc basis and by either providing a sample for replication or very simple component specifications (e.g. type of component, type of base model, and/or colour). Due to the limited capability of the assemblers to monitor supplier performance, quality problems were often left unaddressed. While repeated duplicative imitation of components using different measuring methods with varying degrees of precision and often incorporating minor adaptations often gave rise to components that were not compatible with each other, assemblers addressed such problems in an ad hoc manner by asking suppliers to make ex post adjustments that make the components "assemblable."

This situation changed by 2007 as competition with Honda's low-cost model and consumers' demands for quality exerted pressure on local assemblers to improve product quality and increase design variety. However, the suppliers—not the local assemblers—drove the change. Company A, as discussed in Section 4.1, took the lead in addressing the coordination needs that were previously left unattended. This supplier spearheaded the initiation of knowledge flows with its customers, including (1) incorporating customer preferences when making minor adaptations to the designs of popular Japanese models and (2) promptly assisting customers in the event of problems after delivery, including occasions when components were not compatible with the rest

of the vehicle.[11] While these knowledge flows were not intense and had limited impact on the acquisition of capabilities on the part of the local assemblers, they were crucial in addressing the requirements of local assemblers to respond to consumer demands for product variety and improved quality. The emerging supplier-led coordination made local assemblers highly dependent on Company A as well as several other Chinese-invested and local suppliers. The result was that these suppliers formed a "shared supply base" (Sturgeon and Lee 2005) for the local motorcycle assemblers as a whole in which a large number of assemblers and a limited number of suppliers engaged in frequent transactions without being locked into specific relationships.

4.3 Prospects for upgrading

As Chinese companies emerged as dominant suppliers of components, the space for local firms came to be limited to vehicle assembly and distribution and the production of simple components.

These chains proved to be remarkably resilient in serving the bottom end of the market. After 2009, Japanese-invested motorcycle manufacturers grew increasingly dominant, especially Honda, which accounted for approximately 70% of the motorcycle sales by 2010. It seemed as if local assemblers had nearly disappeared from the Vietnamese market. Since around 2014, however, local assemblers have begun exploring a new market niche that the Japanese have not entered: 50cc motorcycles and electric two-wheelers. Both of them do not require drivers' licenses, and the latter in particular became a popular means of transport for high school students. A survey conducted by the author in collaboration with Hanoi University of Science and Technology in 2016[12] found: (1) seven Vietnamese companies continued to assemble motorcycles, mostly 50cc types, largely by exploiting the types of linkages discussed above, and that four of them that provided data sold more than 60,000 units of motorcycles in 2015; and (2) nearly 50 Vietnamese companies, many of which were established by companies or people had previously been engaged in motorcycle assembly or trading, assembled electric two-wheelers using components imported from China and sourced locally.

[11] The author's interview with Company A on 2 March 2009.

[12] The survey was conducted under a project commissioned by the Institute of Developing Economies to Hanoi University of Science and Technology.

Despite the resilience of these chains, the prospects for upgrading of local firms—at least in the motorcycle value chains—appear dim. To the extent that assemblers lack product- and production-related knowledge, the possibility for improving product designs or quality comes primarily from efforts on the part of the suppliers. This is exactly what we have observed in the analysis in this section. However, supplier-led coordination to improve product designs and quality discussed above has serious constraints. Because motorcycles have an integral product architecture, coordination needs to extend to the whole product for the overall product performance to be maximised. Thus, attempts made by Company A were, at best, partial because they did not cover the most critical components that affect the functional performance of the product. Although these value chains proved remarkably resilient, they are subject to fundamental constraints with regard to upgrading.

Such limitations seem to be well recognised in China, where motorcycle manufacturers are taking the lead in product and production R&D. While consolidation in terms of industry concentration has only made modest progress,[13] leading manufacturers maintained their positions for a decade since the early 2000s. All of the top ten companies in 2003 remained within top 15 in 2013 (China Automotive Technology Research Center, 2004, 2014). These companies have invested in in-house R&D for development of motorcycle models and production of engines.[14] Some leading manufacturers have also started to engage in closer relationships with their suppliers (Ohara 2006b). The implications of the different development paths in China and Vietnam and the issue of whether the ongoing developments in China would spill over to Vietnam will be discussed in the subsequent section.

[13] Three- and five-firm concentration ratios increased only slightly from 20.2% and 31.4% in 2003 to 22.6% and 34.6% in 2013 (China Automotive Technology Research Center, 2004, 2014).

[14] Haojue Holdings Co. Ltd. under Grand River Group Co., Ltd., for instance, has invested in R&D Center for designing new models for Chinese and overseas market, in-house production of engines, and the Total Quality Management systems (http://www.haojue.com/).

5 Explaining the emerging value chain structure

The analysis of the emergent value chains serving the bottom end of the Vietnamese motorcycle market, presented in the previous section, demonstrated diverging performances between Chinese motorcycle manufacturers and component suppliers, creating new space for local firms to enter vehicle assembly while opportunities for component suppliers were limited to peripheral components. How can these outcomes be explained?

For Chinese firms, the motivation behind exports and FDI was exploring local market opportunities. Vietnam became the first major target primarily because of the country's large market potential, particularly substantial untapped demand at the middle and low ends of the market where the incumbent Japanese and Taiwanese manufacturers only catered to high-income consumers. The attraction was likely to have been reinforced by the geographical proximity and close economic and business relationships between the two countries.

While the host country policies clearly influenced the types of firms that entered Vietnam as well as the mode of entry they selected, two factors have been crucial: alignment of firm-level capabilities and technological characteristics of products and components,

Capabilities are bundles of routines, skills, and complementary assets specific to firms. They provide firms with competitive advantages and generate rents over their competitors only if they matter in the marketplace and are difficult for competitors to replicate or emulate (Teece and Pisano 1994: 549; Teece 2000: 117). As discussed in Section 2, the types of capabilities accumulated by Chinese motorcycle firms have been influenced not only by the level of the country's economic development but also by the distinctive industrial organisation that emerged in China. Particularly up to the early 2000s, when the consumer demand was not sophisticated,[15] capabilities to manage external component purchases and simple assembly activities and to distribute the

[15] Ohara (2005b: 67) notes that most motorcycle users in China were those in middle- and small-size cities with relatively low income levels, and that the majority of them do not care as long as motorcycles run and they carry goods.

products sufficed. The capability to produce decent-quality products at low prices while meeting the changing preferences of local consumers enabled Chinese firms to dominate the huge domestic market vis-à-vis leading manufacturers from Japan.

These capabilities possessed by Chinese firms, however, did not necessarily match the types of capabilities required to operate in Vietnam. For assemblers, knowledge of the local demand characteristics, which not only differed remarkably from those in China but also changed rapidly, was crucial in mixing and combining externally sourced components. In the absence of a well-developed distribution system, the capacity to manage relationships with small-scale dealers scattered throughout the country was also crucial, particularly as low-priced motorcycles produced by Vietnamese and Chinese assemblers catered primarily to demand in rural and mountainous provinces. With income levels even lower than in China and competition with Honda's low-priced model, achieving and maintaining low prices was extremely important. As a result, production-related capability held less importance. Requirements were limited to the capacity to inspect the quality of components sourced externally and to assemble the products, which was often managed through simple manual processes.

This explains why Lifan, one of the leading motorcycle assemblers in China, failed to expand sales while technologically incompetent local assemblers collectively dominated the low-end market. For Lifan, limited knowledge about local consumer characteristics, low levels of brand recognition in Vietnam, and difficulties in establishing a nationwide distribution system are likely to have posed major challenges. In contrast, many of the Many of the Vietnamese motorcycle assemblers were established by people who had engaged in motorcycle trading for many years.[16] Despite the limited product- and production-related technology they possessed, their understanding of local consumer characteristics and control over the local distribution channel are likely to have been important advantages to them.

[16] Among the five local assemblers that the author surveyed and provided information on the previous business background, three were established by people who had previously engaged in motorcycle trading, while the remaining two were established by those engaged in trading of products other than motorcycles (Fujita 2013b: 60).

Capabilities possessed by Chinese suppliers, however, were in high demand in Vietnam. Production-related capabilities were crucial to produce decent-quality components at low costs. Here, Chinese firms had an advantage over Vietnamese firms, which explains why Vietnamese suppliers were limited to the production of peripheral components requiring simple production processes, while Chinese firms came to dominate the production of core components.

Capability requirements and alignment account for the different performance of Chinese firms in assembly and component production, but they do not explain the divergent modes of entry for different types of component suppliers. This requires another factor: technological characteristics of products and components.

Product and production technology requirements vary considerably among functions along the value chain. They reflect not only characteristics intrinsic to the product, such as design architecture, but also the specific types of products being produced. Section 2 discussed Chinese firms engaged in duplicative imitation of nearly a dozen popular models incorporating minor modifications to functional and/or cosmetic components, which effectively eliminated intense coordination between motorcycle manufacturers and suppliers even though the integral design architecture of motorcycles remained unchanged. While the Vietnamese motorcycle industry essentially followed this approach, there were two significant differences. First, the number of focal models being imitated was much smaller in Vietnam—just two—compared to a dozen in China. While hundreds of new models were introduced by local assemblers for sale in the domestic market and this number increased after a decline in the years 2002–4 (Table 5), the bulk of these models adopted copies of four-stroke 100cc and 110cc engines adopted in Honda's most popular models in Southeast Asia, called C100 and C110, respectively.[17] While the table does not indicate the types of engines, it nevertheless shows that engines within limited displacement ranges were used by local assemblers to launch large numbers of different models. Second, the scope of modifications made to standard component designs was limited. In Vietnam, modifications focused primarily on cosmetic changes to external components (Fujita 2013b), while changes to functional components such as engines, observed commonly in China, were rarely observed.

[17] This was confirmed by the author's interview with Company A on 2 March 2009. C100 and C110 engines are adopted in Honda's Dream and Wave motorcycles, respectively.

Table 5. The number of new models registered by local assemblers by the year of registration and engine displacement

	2001	2002	2003	2004	2005	2006	2007	2008	Total
97-97.2cc	248	141	90	141	280	265	311	88	1,565
107-110cc	274	115	52	143	311	448	526	196	2,065
Others	81	205	60	46	47	55	59	60	617
Total	603	461	202	330	638	768	896	344	4,247

Note: The figures show the number of models registered with Vietnam Register, the authority in charge of registering vehicles, for production for sale in the domestic market. C100 engines are included under the 97-97.2cc category, and C110 under the 107-110cc category.

Source: Prepared by the author using the data from Vietnam Register (http://www.vr.org.vn).

The concept of platforms (Baldwin and Woodard 2009) best captures the characteristics of products that prevailed in Vietnam. Engines served as the product platform in motorcycles produced by firms in this segment. Not only did they comprise the core of the motorcycles in the sense that they influenced the functional performance and basic quality of the whole product in important ways but were also characterized by low variety and high reusability; that is, a few popular types of engines were used in a large variety of motorcycle models, as discussed above. These are indeed key characteristics of the platform (Baldwin and Woodard 2009). While the remaining components can be broadly grouped into what Baldwin and Woodard (2009) referred to as “complements”, which are characterised by high variety and low reusability, in the Vietnamese context, efforts to increase variety mainly focused on a small number of components that required frequent adaptations for the purpose of product differentiation: frames, plastic covers, and lamps. Therefore, this study categorises these three components as “complements” and the remaining components as “peripherals.”

Strictly speaking, motorcycles in Vietnam did not fulfill one important requirement of a platform system, i.e., modularity, because the design architecture of motorcycles remained integral. However, the use of two dominant designs as focal models for duplicative imitation gave rise to industrial organisation similar to the modular system under which firms traded without explicit coordination (Langlois and Robertson 1995). As discussed in the previous section, occasional incidences of component incompatibility were addressed in an ad hoc manner by ex post adjustments that made the components “assemblable” but fell short of ensuring full component compatibility.

In fact, the application of the platform system has been observed across a wide range of industries in China, particularly those producing products with modular architectures.[18] However, Chinese motorcycle manufacturers, which are apparently aware of the limitations of applying the platform system to motorcycles, have taken an upgrading path in response to the sophistication of motorcycle demand since the early 2000s;[19] that is, although the types of product innovations were still limited to marginal changes to existing product designs, motorcycle manufacturers took a lead in product R&D, developing detailed drawings for important parts and particularly engines and engaging in closer cooperation and communication with suppliers (Ohara 2006b). The motorcycle value chain catering to the low end of the Vietnamese market took a different course, which was primarily a result of actions of individual suppliers—particularly those of platforms and complements—trying to adapt to the prevailing business conditions in Vietnam. Their adaptations can be explained as follows.

While engines were supplied by several Chinese-invested companies in Vietnam and imports from China, the latter came to dominate over time because importing engines from China was more efficient than producing them in Vietnam for the following reasons. First, although the engines used in Vietnam were different from those since produced for the Chinese market, the engine designs remained stable with limited requirements for modification. Therefore, the manufacturers did not require knowledge about local markets or coordination with their customers; thus, production could remain in China. Second, engines require many sub-components produced using production processes that are more capital intensive than those required for other types of motorcycle components. Since the minimum scale for efficient production was much larger for engine components than for other components,[20] engines could be produced

[18] Examples include mobile phones, bicycles, and consumer electronics. See Watanabe (2014a).

[19] Despite the fact that motorcycles were prohibited in large Chinese cities, consumers came to pay increasing attention to the product quality as the demand in rural areas came to be dominated by replacement purchases. The strengthening of intellectual property, licensing, and environmental regulations by the government also contributed to change in demand characteristics (Ohara 2006b: 171-2).

[20] One million units per year is the level generally recognised by Japanese manufacturers of motorcycle components as the minimum scale needed for efficient production of components requiring capital-intensive production processes such as forging. Crankshafts, a sub-component

more efficiently in China where a very large number of companies had invested in equipment for producing engines and components; in comparison, such factories are scarce in Vietnam.

In contrast, the supply of complements, i.e., frames, plastic covers, and lamps, came to be dominated by a Chinese-invested company in Vietnam. Unlike engines, these components required frequent alterations in accordance with the launching of new models by leading Japanese assemblers and to meet the changing consumer preferences in Vietnam, which meant that a location close to end users and communicating with direct customers was important for obtaining first-hand information about the market. The supplier also had to frequently work with their customers, many of whom lacked basic product- and production-related capabilities, to address the coordination needs arising from repeated duplicative imitation of de facto standard models. Company A's design competency, using moulds manufacturers in China, and generic large-scale manufacturing capacity to produce decent-quality components at competitive prices enabled the company to expand its sales to many customers. This was sufficient for achieving scale economies for these components whose minimum-scale requirements for efficient production were substantially smaller than engines.

The question that follows is if the upgrading of the Chinese motorcycle industry, discussed in the previous section, would spill over to the low-end segment of the Vietnamese motorcycle industry. This seems an unlikely scenario for the following reasons. First, Lifan, the only Chinese motorcycle manufacturer with sizeable investments in Vietnam, has only captured minimal market shares in Vietnam, while Japanese motorcycle manufacturers have dominated the middle and upper ends of the market. Second, the ongoing industrial upgrading in China may result in improved quality of components imported from China, but this will have limited impact on technological capabilities of firms in Vietnam. Third, Chinese-invested firms that have expanded production in Vietnam, such as Company A, are unlikely to be influenced substantially by the upgrading of the Chinese industries as they operate largely independently of their parent companies, with the exception of the provision of moulds for plastic covers and components for engines.

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of engines, are an example of such components. For other types of components, the minimum efficient scale is 300,000 units per year (Mishima 2007).

6 Conclusions

This study has brought new focus to the analysis of the consequences of the internationalisation of Chinese firms for the host country: the distinction between manufacturers of final products and those of intermediate inputs. The analysis of the Vietnamese motorcycle industry found that the dominance of Chinese firms as suppliers of key components resulted in a distinctive value chain structure in which the space for local firms was limited to assembly and distribution and to the production of peripheral components. The emerging value chain structure could be explained by requirements and alignment of firm-level capabilities and technological characteristics of the products and components produced in the host country, which were best captured with the concept of platforms and scale economies.

The overall consequences for industrial development in the host country were not encouraging. The space for local firms was limited to assembly and distribution as well as the production of peripheral components. While the Chinese supplier of complements initiated knowledge flows to its customers, i.e., local assemblers, they were not intense and had a limited impact on the acquisition of capabilities on part of the customers.

The wider implication of this study is that research on the internationalisation of firms needs to consider both the distinctive characteristics of industrial organisation at home and the possibility that they could be adapted to meet the specific settings in the host country. In the Chinese motorcycle industry, distinguishing the internationalisation of vehicle manufacturers and component suppliers turned out to be highly significant. The supplier-driven internationalisation of the Chinese motorcycle industry into Vietnam stemmed from the vertically disintegrated organisation in China under which suppliers were not tied to particular customers. Chinese suppliers, however, adapted their products over time in an attempt to develop the most efficient mode of business under the conditions prevailing in Vietnam. The result was a value chain structure that proved resilient in serving the bottom-end market in the country but posed inherent constraints on upgrading of firms in the chain.

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