Antecedents to Catching Up in Low-Tech Industries:

Group-level dynamics in the Chinese Hypermarket Industry 1992-2011

Abstract. This study seeks to widen our understanding of catching up processes beyond high-tech industries and beyond country- , industry- and firm-level analyses. Building on archival data and 49 interviews, we provide a historical account of the emergence of the retail industry in China from 1992 to 2011. We specifically focus on the hypermarket format and examine what factors (i.e. antecedents) helped a group of domestic followers to catch up with their foreign competitors which had literally 'exported' the hypermarket industry in mainland China. We identify four major factors that explain catching up processes: learning, managerial mobility, government intervention and local advantages. The extant literature, which we review extensively, suggests that technology-, policy- and market-related factors all influence catching up. Unlike existing research, but as expected in a low-tech industry, we find that technology-related factors did not play a role in the catching up processes, yet supply-chain management did. Consistent with the existing literature, we find that policy-related factors (government intervention) and market-related factors (learning) but also hardly mentioned additional market-related factors such as managerial mobility and local advantages played a major role. Finally, and beyond many empirical studies, we observe that the influence of these several antecedents varies across time, namely across the five periods that we identified: export of a new business; birth of an industry; shift in government policy; reform and upgrade; and convergence. Eventually, our findings contribute to international business and service research interested in group-level catching up process.

Keywords: Catching up; Low-Tech; Emerging markets / China; retailing; hypermarket.

INTRODUCTION

Economists and international business scholars have long stated the importance of catching up processes in the alleviation of people poverty and countries' developmental trajectories, and looked at country-level productivity increase, appreciation of GDP per capita or else upgrading of industry-specific competences (Abramovitz, 1986; Malerba and Nelson, 2011; Kumaraswamy, Mudambi, Saranga and Tripathy, 2012). The hypothesis behind catching-up theories and empirical studies asserts that "being backward in level of productivity carries a potential for rapid advance" (Abramovitz, 1986: 386). Previous scholars have studied the antecedents to catching up at three complementary levels, and primarily in hi-tech industries.

Whatever the levels of analyses, scholars have often concentrated their effort on hi-tech industries, with as examples the study of semiconductors in Korea and Taiwan (Cho et al., 1998), telecommunication equipment providers in China (Fan, 2006) and integrated circuits in Taiwan and China (Rasiah et al., 2010). As a consequence, we know very little about catching-up processes in low-tech industries, an empirical issue as wholesales and retailing industries count for large portions of countries' employment and GDP (for instance, they count for 9.7% of China's GDP in 2012, source : English.mofcom.gov.cn)

Catching up processes in emerging countries provide, from a theoretical perspective, interesting additional characteristics. Specifically, as leading firms engaged in foreign direct investments try their best to prevent knowledge spillovers (Wang, 2012), how domestic firms in host countries catch up with foreign leaders is understudied (Zander, 2011). Scholars have long pointed out to the importance of firms' nations of origin in competitive / cooperative game, (Hamel, 1991), and additional insights on factors that facilitate domestic firms to catch up with foreign entrants in emerging markets is likely to be fruitful.

Our research intends to fill part of the above-mentioned literature gaps, by widening the scope of our understanding of catching-up processes to group-level dynamics (domestic and foreign players) ; in an emerging country, China, where knowledge spillovers are an issue for many foreign investors ; in a low-tech industry in which technology-related factors are likely to be less salient; and in an industry – retailing – that despite its overall economic importance in proportion of GDP and employment, is under-represented in strategy and international business studies (for instance, in 2012, the total number of employees in retailing reached 61.340.000 in China (source: Ministry of Commerce of the People's Republic of China, 2013).

We provide a historical account of the emergence and growth of the hypermarket industry in China over the last two decades. This industry shows a clear pattern of catching up (Li and Wang, 2006: 347; Planet Retail, 2011), and provides an opportunity to separately analyze domestic and foreign firms' strategies and antecedents to catching up processes, hence to extend our understanding of catching up from the industry level (Kumaraswamy et al., 2012) to the level of nationality-based groups of firms.

Consistent with the existing literature, we find that policy-related factors (government intervention) and market-related factors (learning) but also hardly mentioned additional market-related factors such as managerial mobility and local advantages played a major role. We also observe that the influence of these several antecedents is not permanent but varies across time, namely across the five periods that we identified: export of a new business (1995-1997); birth of an industry (1997-2001); shift in government policy (2001-2005); reform and upgrade (2005-2009); and convergence (2009-2011). Eventually, our findings contribute to international business and service research interested in group-level catching up process.

ANTECEDENTS TO CATCHING UP

Existing research on antecedents to industry-level catching up suggests that three families of factors are influential: technology-, policy- and market-related factors. Technology related factors up include technological regime building (Lee and Lim, 2001), technology life cycles (Park and Lee, 2006), and technology capability building (Cho et al.,1998; Fan, 2006; Kim and Lee, 2008). Policy related factors include governmental efforts (Kim and Lee, 2008; Chu, 2011), funding (Rasiah et al., 2010), active interventions (Odagiri and Goto, 1993), and supportive policies (Malerba and Nelson, 2011). Finally, market related factors include technology trade markets (Mu and Lee, 2005), availability of external resources (Ipiranga et al., 2011), strong customer relationships with downstream firms (Kumaraswamy et al., 2012) and access to foreign knowledge (Malerba and Nelson, 2011).

Technology-related factors

Most empirical studies on antecedents to catch-up have underlined the importance of technology-related factors. Cho et al. (1998) investigate how late-comers compete successfully or even leapfrog early movers based on the in-depth case analyses of three Japanese and three

Korean semiconductor companies. Lee and Lim (2001) examined selected technology-based industries in Korea (D-RAM, automobile, mobile phone, consumer electronics, personal computer and machine tool industries) and identified the technological regimes of the industries as an important factor to facilitate catching up through technological capability. Fan (2006) examines the China's telecom-equipment industry with a focus on innovation capability development, and finds that innovation capability and self-developed technologies (in-house) have been the key to leading domestic firms' catching up with multinational corporations. Kim and Lee (2008) suggest that catching up is even more difficult in capital goods industries since they increasingly require the introduction and adoption of information or digital technologies.

Policy-related factors

Several scholars have focused on the contribution of policy related factors to catching up. Rasiah et al. (2010) examine the drivers of technological catching up in the integrated circuits (ICs) industry in Taiwan and China and use an inductive screening evolutionary framework. Critical factors for local firms' technological catching up include the role of the government through funding, research and development laboratories and the development of human capital. Inquiring whether the Chinese state has the capability to promote industries successfully, Chu (2011) suggests that the central state's policy of China may contribute to build a strong consensus on catching up as a central motivation to establish national industries. Other studies also discussed the importance of government policy to catching up, such as human capital and active government interventions (Odagiri and Goto, 1993; Malerba and Nelson, 2011)

Market-related factors

Compared to technology- and policy-related studies, empirical studies that focus on market-related factors are relatively less numerous. Mu and Lee (2005) examined the growth of technological capability in the telecommunication industry in China. The authors emphasize the importance of trading market for (i.e. against) technology in catching up processes. Ipiranga, Almeida and Queiroz (2011) examined catching up, defined as technological capability building, from a time and speed perspective, in the Brazilian goat husbandry productive chain, and focused on small companies. Their set up is interesting as it is more low-tech than many extant studies, not Asia-based, and focused on SMEs. The authors emphasize the role of external and institutional relations with the entire productive chain to improve the innovative competences of the companies. In an analysis of some agricultural crops and other technology-based industries, Malerba and Nelson (2011) also underlined the importance of access to foreign knowledge. Finally, Kumaraswamy et al. (2012) examine catching up in the Indian auto components industry and emphasize the importance of strong customer relationships with downstream firms and knowledge creation through value chain integration. This third group of studies shares a common theoretical perspective, namely learning as the underlying process leading to catching-up. Despite these empirical efforts, however, how domestic firms as followers close the gap with foreign entrants as leaders in emerging countries is a phenomenon that remains under-studied (Zander, 2011). And this is especially true in low-tech industries which are – with notable exceptions such as Ipiranga et al (2011) – hardly selected by scholars, and in which market-related factors are likely to play a relatively greater role as compared to more hi-tech sectors.

Empirically, we shall propose to examine how two sets of firms, grouped together based on their nationality, caught up in the hypermarket industry in China. The country-of-origin is often seen as a strong determinant of inter-firm cooperation and competition (see earlier arguments in the pioneering work by Reich and Mankin, 1986 on joint ventures, and Hamel, 1991 on strategic alliances). Zander (2011) argued that taking into account the country-of-origin dimension is challenging but necessary for further empirical investigations on antecedents to domestic firms catching up with foreign competitors in emerging countries. Initially, the amounts of knowledge and competence of the two groups – the domestic group and the foreign group composed of entrants from several nationalities - are significantly different in the country in question, China. This major gap meets the initial conditions for catching up to occur (Abramovitz, 1986; Zander, 2011). In short, the above-mentioned theoretical and empirical arguments lead us to formulate our research question: *What are the antecedents (i.e. factors) to domestic firms catching up with foreign entrants in low-technology industries (i.e. hypermarket industry) in emerging countries (i.e. China)*?

EMPIRICAL SETTING AND RESEARCH DESIGN

Empirical setting: (hypermarket) retail in China

We study the emergence and development of the Chinese hypermarket industry. This industry provides an ideal case to identify antecedents to catching-up, as there were clear groups of foreign mature players with more advanced knowledge and of domestic followers (Zander, 2011) and a strong initial gap (Planet Retail, 2010). After the openings of the first hypermarket stores in China by foreign firms in the mid-90s, domestic firms were inspired by this new business and followed. In parallel with shifting government policies regarding this new industry in China (Wang, Li, Wang and Zhang, 2007; Planet Retail, 2010), foreign entrants and domestic firms competed, drove the industry's evolution (Wang, 2012), and eventually progressively converged in terms of performance levels and kinds of knowledge and competences.

In 1992, the Chinese State Council allowed foreign retailers to enter 11 Chinese cities. In 1995, China further allowed foreign retailers to open chain stores in selected cities. These regulations attracted the interests of the first group of western retailers. In 1999, China introduced the 'Provisions on Pilot Foreign-Invested Commercial Ventures', opening up all provincial and regional capitals and a number of key other cities to retail development. Foreign retailers were allowed to set up chains of stores in even more cities. In March 2004, the Ministry of Commerce announced that China was to focus on boosting the competitiveness of 20 selected domestic retailers over the next five to eight years to fend off competition from global players. Following the country's agreement with the World Trade Organization in December 2004, foreign firms were allowed to own full equity without restrictions on store locations, numbers and size (Li and Wang, 2006: 347-352; Planet Retail, 2011).

China's central government usually treats foreign firms and domestic firms with differential policies (Li and Wang, 2006: 353-360). In China, the group of domestic retailers in general was - and still partly remains - small and retrograde, catering predominantly to domestic (provincial or national) markets and by no means as globally competitive as the group of foreign firms (Wang, 2012). Not surprisingly and aligned with its broad political line, the government chose to support domestic retailers with differential policies (Planet Retail, 2011). And though policies changed as the retailing industry evolved, the foreign and domestic groups continued to be treated differently (Planet Retail, 2010). Then, in addition to the differences in country-of-origin, the differentiating government policies provided us with an ideal research context to explore the evolution of the hypermarket industry from a group-level perspective.

The foreign group includes eight retailers: Carrefour, Walmart, RT-Mart, Lotus & Chia Tai, Jusco & Aeon, Trust-Mart, Auchan and Tesco. *The domestic group* includes seven retailers: Supermarket of Wushang Bulksale Chain Company, Wuhan Zhongbai Group, Yonghui, Renrenle, Lianhua & Bailian, Betterlife and Vanguard & China Resource Enterprise. Figure 1 presents the place and time of the first store openings of these firms (1195 to 2006) and indicates the total number of stores in China by 2011.

Research design: data sources and analyses

Our work combines a historical account of the evolution of the industry (Miles and Huberman, 1984), primarily based on rich archival data, written in both French, English and Chinese, but also on field observations and 49 semi-structured interviews, and a qualitative analysis of antecedents to catching-up, based on analytical coding à la Glaser and Strauss (1967). We selected the retailers based on their historical importance and economic prominence (Li and Wang, 2006; Planet Retail 2007-2013) and took a historical perspective to control for equity changes in companies and shifting political regulations at the state level.

We easily identified relevant potential interviewees in the selected firms – both domestic and foreign. Interviews developed in two stages. In the first stage, the goal was to confirm and characterize the five periods of industry evolution. We conducted a first round of 25 open-ended interviews with maximum diversity among the interviewees of the two groups of firms in July and August of 2011. In the second stage (September-November 2011), we became more narrowly interested in the catching-up processes and run a second round of semi-directed interviews. Using the first round of interviews as a basis for a snowball technique (Lincoln and Guba, 1985), we identified a second set of informants and conducted an additional 24 interviews to reach 49 interviews in total. All interviews were recorded and taped. Most of the interviews were conducted in Chinese, some in English. The coding process was conducted in Chinese, and then the most salient parts were translated.

Archival materials had provided some cues on how catching up emerged and develop. As a consequence, we tried to identify three profiles of interviewees : retail managers (such as store managers, purchasing managers, site research managers, business development managers, section managers, and department managers); managers of key suppliers (global and national suppliers); and industry experts (managers in consulting firms and investing banks focusing on hypermarkets, journalists at retail magazines and independent researchers). In the second stage, we specifically sought to interview people who could be knowledgeable about catching up processes and antecedents, which doesn't mean they would be aware about the concept. The interviews increased in focus and depth over the period due to the iterative and cumulative nature of the process. Finally, we also went out into the field to observe the hypermarkets of selected retailers in Xiamen, Hong Kong, Shenzhen, Guangzhou, Dongguan, Foshan, Wuhan, Enshi, and Shanghai. These observations provided many descriptive details on front-office operations, but obviously did not provide any interesting information on back-office and supply chain operations[1].

A two-stage analysis

In the first stage of analysis, we identified five periods in the two-decade-long evolution of the Chinese hypermarket industry: *export of a new business, birth of an industry, shift in government policy, reform and upgrade* and *convergence*.

These five periods provided the chronological frame to develop, *in a second stage of analysis*, our model of the antecedents to domestic firms' catching up in the Chinese hypermarket industry. We proceeded in two steps. First, we tried to identify antecedents to catching-up processes from our various sources of data. We identified four generic classes of antecedents that facilitate catching up in our empirical setting: *learning, managerial mobility, government intervention* and *local advantages.* In the second step, we tried to examine whether each of these antecedents was more or less salient during one or some of the above periods. By doing so, we intended to go beyond most existing empirical studies that assume that antecedents to catching-up processes are permanent, i.e. occur equally throughout the catching up process.

Analytically, we systematically compared the material that related to the two groups of firms. We aggregated data in a series of charts, breaking down antecedents to catching up by time periods. We coded each interview on the basis of phrases and terms used by the informants, based on categorization and theme analysis techniques and data aggregation was inspired by qualitative inductive analysis (Glaser and Strauss, 1967; Miles and Huberman, 1984). We shall present our findings in two stages: first, a short historical account supporting our periodization, and second, a description of the four classes of antecedents with supporting evidence and relations with tech specific periods.

[1] For the sake of brevity, and given the space constraints, we do not delve into more details. We shall be happy to provide additional information on sources of data, included time and place of interviews and profile of interviewees, a full list of secondary and archival data used, and time of field visits.

Table 1. Historical Evolution of the Hypermarket Industry in China

Timeline	Key events, decisions and actions	Sources and references
Period 1: Export of a new business (1992 to 1997)	Starting in 1995, China allows foreign retailers to open stores in a few selected first-tier cities Carrefour opened its first store in 1995 and Walmart opened its first store in 1996 Many leading foreign retailers see great potential in China's hypermarket sector Hypermarkets were brought to China by foreign retailers	*Li & Wang, 2006: 347-349* *Planet Retail, 2010* *Planet Retail, 2011* *Manager, foreign consulting firm*
Period 2: Birth of an industry (1997 to 2001)	Starting in 1997, domestic grocery retailers Wushang Bulksale, Wuhan Zhongbai Group, Yonghui and Lianhua open their first hypermarkets. China Resource Enterprise acquires Vanguard and restructures in order to launch a department store and hypermarket business. More foreigners open hypermarkets, including RT-Mart, Lotus, Jusco, Trust-Mart and Auchan In 1997 and 1998, domestic retailers launched their own hypermarket industry in full force. It was around 1997 when domestic hypermarkets really started to emerge	*Adopted from Planet Retail, 2010 and corporate websites* *Purchaser (foreign retailer)* *Manager of site search (foreign retailer).*
Period 3: Shift in government policy (2001 to 2005)	Over the course of the next three years, starting in November 2001, a series of reforms gradually eases restrictions in the sector, as the country begins its transformation into a market-based economy and sought membership the WTO. Starting in 2001, foreign retailers accelerate to develop in China The Chinese government helps to select domestic national retailers to integrate sales and also supports domestic regional retailers Foreign retailers cooperate with government-supported domestic partners to lay the foundation for rapid expansion in China	*Planet Retail, 2011* *Li & Wang, 2006:350-351* *Member of advisory board (domestic retailer*). *Manager, foreign consulting firm*
Period 4: Reform and upgrade (2005 to 2009)	Beginning 11 December 2004, foreign retailers are able to own 100% equity and expand geographically without limitations. Starting in 2005, all foreign retailers purchase their ownership back to fully control From 2005 until the recent two years, all retailers in China understand that it is the last chance for them to develop. In 2007, the government introduces a standard tax rate of 25% for both foreign and domestic retailers.	*Planet Retail, 2010* S*tore manager (foreign retailer*) *Purchasing manager (foreign retailer).* *Planet Retail, 2011*
Period 5: Convergence (2009 to 2011)	Hypermarket competition grows fierce and domestic hypermarkets enjoy no preferential treatment over foreign-owned hypermarkets. In the last two years, domestic retailers developed very quickly and their competence enhanced a lot. Most retailers switched to benchmarking the key components of different retailers. Starting in 2009, the rise of prime stores is a growing niche and upgraded high-status stores are a new trend that all retailers are following 2009 is a key threshold year for the hypermarket industry in China. All hypermarkets, regardless of retailer, start to become quite similar	*Member of advisory board (domestic retailer*). *Manager of strategic office (domestic retailer)* *Manager (foreign consulting firm)* *Purchasing manager (foreign retailer).*

FINDINGS

Periodization of the evolution of the Chinese hypermarket industry

Carrefour opened the very first hypermarket in China in 1995 - in Beijing, and Walmart soon followed in 1996 in Shenzhen. In this initial period (1992 to 1997), foreign specialists *exported a business that existed and was well developed elsewhere in a country (China) where it did not exist*. Many other foreign retailers also examined the big market opportunity in China and prepared their entry. Until 1997, domestic retailers observed the movement but did not enter as they didn't *understand* the new concept of hypermarket (Wang, 2012).

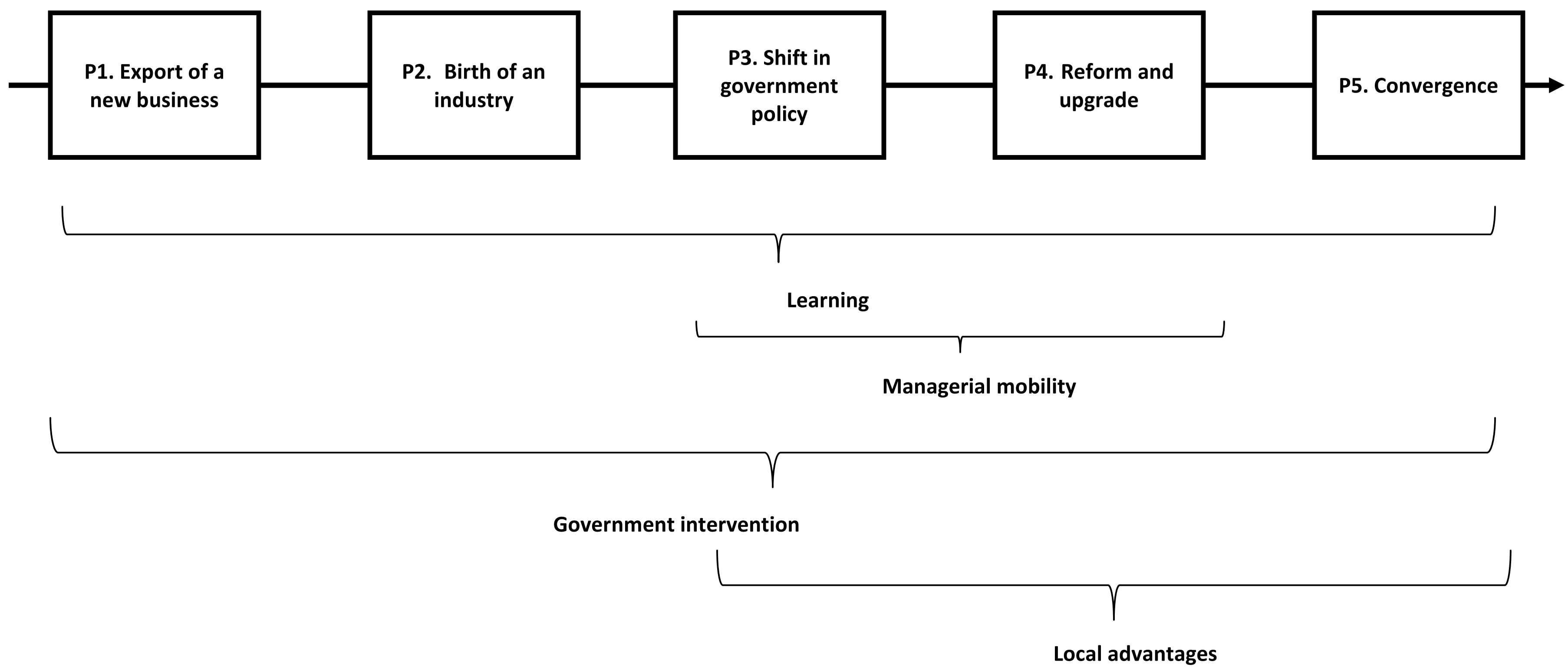
In period 2, *birth of an industry* (from 1997 to 2001), some domestic pioneering retailers opened their first hypermarket stores, primarily based on the benchmark of visible front-desk operations, such as store design and product display. Meanwhile, more foreign retailers entered China and opened their first stores (Planet Retail, 2010). Beyond mere export of a new business, the entry of domestic players in 1997 meant that a new industry was emerging in China. In 2001, China joined the WTO and the central government committed to opening the retailing market within 3 years (Wang, 2009).

During this 3rd period labeled *shift in government policy* (2001 to 2004), domestic retailers accelerated their development with strong governmental endorsement. Meanwhile, they put efforts to learn both front-desk operations such as promotion skills and back-desk operations such as purchasing and supply chain management.

The 4th period (2005-2008) was a period of *reform and upgrade*. It can be said that domestic retailers internalized a larger set of back-office competences and continued to benefit from differential government support to compete with foreign retailers (Wang, 2009; Wang, 2012). Increasingly facing the fierce competition of foreign retailers, the most ambitious domestic retailers started to expand beyond their provincial region and reached a nation-wide presence, while other domestic retailers consolidated their regional leadership (Planet Retail, 2010). One their side, since the Chinese central government had fully opened the retailing market to foreign retailers (Planet Retail, 2011), foreign retailers became free to operate their own fully controlled hypermarket stores in all regions of China.

The 5th period (2009-2011) is characterized by a growing *convergence* between the two groups of firms. Domestic retailers enhance their skills and competence base (Wang 2012), enhance their nation-wide operating capabilities (Planet Retail, 2010), and develop new retail

Figure 1. Antecedents to domestic firms' catching up in the Chinese hypermarket industry



formats such as premium hypermarkets in cities like Shanghai and Shenzhen (Planet Retail, 2010). Foreign retailers increasingly benchmark some selected domestic retailers such as China Resources Vanguard, in order to also develop premium hypermarket stores in China. In addition, foreign retailers also increasingly pay attention to some strong regional retailers. For instance, foreign retailers start to replicate the approach towards fresh products by the regional retailer Yonghui. Eventually, by 2011, the domestic group is close to have totally caught up and closed the gap with the foreign group (Wang, 2009; Planet Retail, 2011), and the five periods reflect the two-decade long step-by-step process. Were some of the antecedents to this catching-up process: *learning, managerial mobility, government intervention* and *local advantages*, specifically relevant at some periods?

Antecedents to catching up

Learning. Many informants, both retailers' and suppliers' managers, insisted that domestic firms put a lot of efforts to learn from foreign retailers. Data suggest that domestic retailers gradually learn some of foreign retailers' competence. Domestic retailers learned front-office skills (i.e. skills related to marketing) in the very beginning (in period 1 and 2), followed by back-office skills (i.e. skills related to purchasing) after they accumulated some understanding of hypermarket operations (in period 3 to 5). A former department manager of a domestic retailer describes how they managed to learn from their foreign competitors when foreign entrants started to operate the hypermarket stores in China as:

> "We went to visit the first hypermarket store opened in Shenzhen. We found that it was different from our supermarkets. Here we learned to build the *two-floor structure* to provide the one-stop shopping concept in our hypermarkets."

After domestic retailers had understood front-office operations, they tried to learn more implicit knowledge from foreign retailers. A business manager of a domestic retailer noted:

> "We did not know the category management before foreign retailers opened their stores. We worked hard to learn this from the largest international retailers. It is a scientific way to analyze the items sold in hypermarkets. We found that *the concept of category killer was a golden rule but it was difficult to identify*. "

In the late periods (3 to 5), domestic retailers started to enjoy the benefits of learning when competing with foreign entrants. A regional manager of a domestic retailer shared his experience:

> "When foreign retailers announced they would enter our region, we were in a panic mode. In the first few years of their operation in our region, we did our best to learn from them. We learned almost everything step by step, from store environment to the branded items on shelves, to private label products. After this process, we did not fear the foreign retailers anymore. Now, when I shop in the foreign shops, I cannot see that they are more advanced than us in product management."

Eventually, domestic retailers offered a demonstration of how deliberate learning had really occurred when they successfully launched innovative retail formats in China, and when foreign firms emulated them.

Provisional summary. In the earlier periods, domestic retailers observed a lot but had difficulties to learn, especially beyond front-office visible operations, and kept using a trial-and-error learning process (Wang, 2012). The focus of learning evolved from earlier periods to later stages. Domestic retailers gradually learned explicit skills of front-desk operations, then some implicit skills of back-desk operations. Gradually, domestic retailers closed the gap and managerial mobility was very influential in this closing process.

Managerial mobility. During the 1st and 2nd periods, domestic retailers faced challenges related to insufficient human capital – both quantitatively and qualitatively. On their side, foreign retailers had accumulated experience, both in their home countries and some overseas countries. Interestingly, some foreign retailers, such as Carrefour, had operated hypermarket stores in Taiwan (first store opening 1989) and Hong Kong before they open stores in China mainland. These foreign retailers relocated their managers who could speak Chinese mandarin to China mainland as their managerial avant-garde, aside a few national expatriates (see especially part B of the case study *Carrefour in Asia, part A and B*, by Lasserre and Courbon, INSEAD Euro-Asia Centre, 1994). By doing so, foreign retailers trained by anticipation and on their own systems the pioneering groups of professionals who would then conquer a country (Wang, 2012). Domestic retailers worked very hard to recruit experienced managers from foreign retailers to internalize back-office competences. A foreign retail's manager in charge of real estate (site search) mentioned managerial mobility across groups:

> "A domestic retailer hired a lot of talents from a leading foreign company. Our former operations director was hired by a domestic retailer. Domestic retailers were willing to pay more and went straight to the foreign retailers to hire the people they wanted. These people brought our skills to the domestic retailers, such as how to choose the best locations to open new stores."

When the central government released the constraints on foreign retailers after November 2004, both foreign retailers and domestic retailers needed more professionals to develop in more regions (Planet Retail, 2010). Foreign retailers aimed at increasing their market share and the number of stores in more cities, and some relied on external growth, such as merger & acquisition. For instance, Carrefour acquired Baolongcang in 2006 (a regional retailer based in Hebei province) and Walmart acquired Trust-Mart in 2007 (a Taiwan retailer which had entered China in 1998). After these acquisitions, many acquired managers left the acquiring company and joined other domestic retailers, a finding that is fully aligned with extant theory on executive turnover following M&As (Very, Lubatkin, Calori and Veiga, 1997). A business manager of a *regional* domestic retailer explained how newly recruited Taiwanese managers helped his firm:

> "After a major merger in 2007, many Taiwanese managers left. [...] Some of them joined domestic *regional* retailers. The experience that these Taiwanese managers brought helped regional retailers to improve the supply chain operations significantly. In particular, these people helped the regional retailers to optimize the management of regional distribution centers [warehouses]."

With the numerical growth of people moving from foreign to domestic retailers, foreign retailers progressively realized the contributions of these retail professionals to domestic retailers. Importantly, those managers helped the domestic retailers to make sense of what they had seen and learned but not completely digested, i.e. internalized in the past years (in period 1 and 2). Not surprisingly, it is during the 3rd and 4th periods that foreign retailers started to feel the competition of domestic retailers with enhanced capability. A store manager of a foreign retailer recalled his own observations on how his former colleagues contributed to their new domestic employer:

> "We saw the competence of domestic retailers increasing gradually. One very important contribution is the talents they obtained from foreign retailers. Since early 2000, managers had started to leave our company to join domestic retailers. The number of *this kind of managers* kept increasing until peaking in 2007. When I compare stores of domestic firms before and after 2008, I find huge improvements of the domestic retailers. Before, we had the advantage of international purchasing platforms while domestic

> retailers did not. Now these managers helped domestic retailers to get access to the same level of international suppliers we cooperate with. ”

This kind of managers whom the store manager refers to is essentially middle management positions such as purchasing managers, section heads and department heads. Maybe even more than in hi-tech industries, middle managers in low-tech service industries (rather than scientists or engineers) are the real dynamos of organizations (Floyd and Wooldridge, 1994), and, we observed, the conduits through which learning happened.

Provisional summary. We established earlier that domestic retailers learned step-by-step from leading foreign retailers to develop their skills. Managerial mobility, notably at middle management level, was instrumental in this learning process, especially from period 3 onwards. Domestic firms put a lot of efforts to recruit experienced professional managers from foreign retailers in China. This hiring policy helped them understand practices and activities such as supply chain integration in back-office operations which could not be easily accessed to.

Government interventions. Following the 2001 agreement with the WTO, the central government of China promised to fully open the retailing market by 2004. Before 2004, foreign retailers were constrained to operate their hypermarket business through joint ventures with a domestic partner (Planet Retail, 2010). Then, *by construction*, during these first two periods, domestic and foreign retailers were 'tied' together for the better and for the worst, and many domestic retailers had the opportunity to learn within the joint ventures (Wang, 2009). Although foreign retailers tried to prevent knowledge spillovers, domestic retailers successfully benchmarked at least part of their partners' skills and competences. A business manager of a domestic retailer recalled about the early periods:

> "Some domestic retailers cooperated with foreign retailers and launched joint ventures. *The central government asked domestic retailers to provide foreign retailers with the local knowledge about the market*. In return, the government *expected* foreign retailers to train our domestic retailers. Due to these agreements, some pioneering domestic retailers implemented logistics systems such as trucks with Global Positioning Systems (GPS) to improve distribution efficiency as foreign retailers did in their home countries."

After 2004, foreign retailers could take full control of their operations. Some started to run newly opened stores without domestic partners, though most foreign retailers still chose to cooperate with domestic retailers as they still needed to further understand the Chinese market

(Planet Retail, 2010), especially when they entered in new provinces. The government continued to support domestic retailers, albeit with other means, such as providing administrative authorizations to domestic retailers to acquire small regional retailers in order to develop across regions (Planet Retail, 2011). In another domain: sourcing, some regional retailers were able to develop strong and long-standing relationship with local suppliers, with the support of local governments, before the arrival of international players (Planet Retail, 2010), and these strong relations would constitute a local advantage. Local governments helped regional retailers with preferential policies when these retailers competed with foreign retailers in their regions. A manager of a domestic retailer mentioned these inter-province reciprocal supporting policies:

> "In our province, we enjoyed the benefits of rental and legal supports when we chose locations to open new stores. When we became the regional leader, our provincial government introduced us to another province. Then we entered this province and enjoyed similar benefits. In return, our provincial government provided similar support to a regional retailer coming from the province that we entered."

Meanwhile, foreign retailers did similarly benefit from such tax exemptions or privileged access to sites for new openings. Some protective policies even hindered the development of foreign retailers in areas without strong regional or national domestic retailers. From the 3rd period onwards, some domestic retailers grew faster by acquisitions. Meanwhile, foreign retailers also looked for such growth opportunities but often failed, hence grew less rapidly. A purchasing manager of a foreign retailer explains why some leading foreign retailers failed to acquire domestic retailers in China after the WTO stage:

> "We see some domestic retailers become bigger and stronger by acquisition. We also consider such opportunities of acquiring good domestic retailers. However, the central government of China does not allow us to do so. Then we turn to good regional retailers. But most of the local governments prevent these regional retailers from being acquired by us. The only available domestic targets are those retailers with very few stores. But we cannot acquire them as their quality is too low for us."

Stated otherwise, they could financially acquire but the targets would not provide the expected qualitative local market knowledge.

Provisional summary. City, Province and State-level policies played a key role in helping or protecting domestic retailers. The central government chose a few big domestic retailers to set up joint venture with leading foreign retailers before the WTO stage. Meanwhile, domestic retailers enjoyed beneficial access to space (site, rentals) and received tax privileges. When the central government released the constraints on foreign retailers after 2004, the regional and local governments took over its protective role, albeit in a decentralized and heterogeneous manner, and continued to support regional retailers. This evolution brought additional complexities for foreign firms as they had to understand various and changing policies from one area to another. Some regional governments partnered and helped their respective regional retailers to develop across regions, aiming at developing national retailers.

Local advantages. As mentioned above in the "learning" section, domestic retailers were short of experience and human capital. However, domestic retailers had the local understanding of the Chinese consumers and local policies (Planet Retail, 2010). For instance, domestic retailers knew how to purchase and sell fresh products in their regions. Foreign retailers had to entirely revisit the earlier competences and skills regarding purchasing and selling fresh products that they had accumulated in other countries of smaller geographical size, with more developed infrastructures and standardized procedures along the value chain (usage of palettes, etc.). Then, domestic retailers were able to rapidly develop some locally-bound advantages that they mobilized to compete with foreign retailers. A regional manager of a domestic retailer told us how domestic retailers developed advantages in purchasing fresh goods [Remember that, in the earlier periods and until now, the agro-business and food-processing industry are less developed in China than in developed countries]:

> "It was primarily required to pay cash when purchasing fresh goods from [individual; small; scattered] farmers in many places of China. Foreign retailers strictly required formal invoices from sellers, subject to a tax rate of 17%. Domestic regional retailers all arranged to purchase their fresh goods from small scale taxpayers with a 3% tax rate. Foreign entrants could not use the same way of purchasing fresh goods in China as it contradicts with their accounting systems and practices."

Some domestic retailers understood the importance of investments in advanced equipment and facilities, both in hypermarket stores and in warehouses, as implemented by foreign retailers. However, these domestic retailers also realized that this might not yet be the right time for such investments: they knew better when the Chinese consumers would need this or that advanced equipment and/or facility. Moreover, some domestic retailers purposefully avoided to compete with foreign retailers in advanced equipment or (inter)-national purchasing platforms. Rather, these domestic retailers implemented activities based on their understanding of local consumers in order to avoid facilities-related disadvantages. One typical practice implemented by domestic retailer was to communicate and promote its efforts on food rather than on equipment. A domestic retailer manager mentioned how domestic retailers achieved cross-regional expansion by leveraging their competence in understanding Chinese food(s) from several regions:

> "In recent years, a domestic regional retailer developed well to expand across regions [...[This retailer had its own attractive characteristics, specializing in fresh goods. Because the Chinese people consider freshness in food as most important, it was trusted by customers and received government support provided it increased employment in areas it expanded in. The result is that the hot skills of selling fresh goods on shelves at regional stores attract more visitors than the well-packaged fresh products in the expensive frozen equipment of foreign stores."

Of course, foreign retailers understood the sources of domestic retailers' competitiveness, i.e. local advantages. Therefore, foreign retailers also recruited many local managers, in particular middle managers, especially from periods 3 and 4 onwards. Meanwhile, domestic retailers knew that foreign retailers would – with time – tap into local knowledge with the help of Chinese talents. As a result, domestic retailers competed with foreign retailers on a regional basis, taking advantages of size, efficiency and costs in different regions [remember that a region / province in China is an average country in Europe or a dozen average states in the USA). A department manager of a foreign retailer mentioned how his former domestic employer leveraged on local advantages when competing with leading foreign retailers:

> "Retailers always compete for good locations to open new stores. In China, most foreign retailers are less efficient in decision making when they need communicate with their home-country headquarters. Fully localized foreign retailers [i.e. which have full decision-making authority on all matters] are very few in China. Therefore, domestic retailers have a time advantage and can open many stores in very short periods, once sites [spaces] are available. This is also the reason why that leading British retailer developed quite slowly in China. On the contrary, my former employer expanded a lot with higher efficiency."

Provisional summary. Starting from the 3rd period, domestic retailers tried to compensate their lack of competence in industry-specific knowledge and hardware (such as equipment and facilities) by turning their understanding of the Chinese market(s) and Chinese customers into local advantages. While foreign entrants built on their early mover advantage, past experience and state-of-the-art equipment to open more stores and warehouses, domestic retailers built on their distinctive market knowledge and were able to mitigate their initial disadvantages.

DISCUSSION AND CONCLUSION

As stated in the front-end of this paper, catching up processes are of the utmost importance in the alleviation of people poverty and countries' developmental trajectories (Malerba and Nelson, 2011; Kumaraswamy, Mudambi, Saranga and Tripathy, 2012). Not surprisingly, this phenomenon has attracted attention of economists and management scholars alike, and the later have conducted many empirical and convergent studies regarding antecedents to catching-up processes, primarily at three – complementary - levels, namely the country, industry and firm levels. Based on the review of 20 major empirical contributions in the field, we observed some consensus in the field on three classes of antecedents to catching-up processes: technology-, policy- and market-related factors, a meta-theoretical result in itself.

Our purpose was to expand the scope of our understanding of catching-up processes in three directions: (1) in a low-tech industry in which technology-related factors are likely to be less salient, specifically in an industry – retailing – that despite its overall economic importance in GDP and, is under-studied in strategy and international business studies; (2) at a group-level, i.e. with the purpose of analyzing relations between homogeneous groups of domestic and foreign players. (3) Finally, we also attempted to examine whether antecedents to catching-up processes are permanently relevant, or more or less salient during the two-decade long catching-up period. Below we sketch our contributions along these lines.

Scope condition # 1: catching up in low-tech industries. Whatever the levels of analyses, scholars have often concentrated their effort on hi-tech industries, with as examples semiconductors in Korea and Taiwan (Cho et al., 1998), telecommunication equipment in China (Fan, 2006; Mu and Lee, 2005), integrated circuits in Taiwan and China (Rasiah et al., 2010), the car industry in China (Chu, 2011) or India (Kumaraswamy et al. 2012), or else electronics (Joo and Lee, 2010). The extant literature suggests that technology-, policy- and market-related factors all influence catching up. Given the low-tech nature of retailing, we expected technology-related factors to be less salient and did not make predictions or hypotheses on other types of antecedents, but adopted an inductive posture. We found four major factors that explain catching up processes: *learning, managerial mobility, government intervention* and *local advantages.*

Consistent with the existing literature on policy-related factors (i.e. Cho et al., 1998; Fan, 2006; Kim and Lee, 2008) we find that shifting central and provincial regulations and interventions played a significant role throughout the 20 year long period. And also consistent with the existing literature on market-related factors (for instance Malerba and Nelson, 2011; Kumaraswamy et al., 2012), we find that learning plays a critical role[2]. However, our study revealed two less frequent antecedents, namely managerial mobility and local advantages.

Managerial mobility was a salient feature from the 3rd period onwards, and it appeared that mobility primarily concerned middle to upper middle managers, who have been called the dynamos of organizations (Floyd and Wooldridge, 1994). As leading foreign entrants did their best to prevent the knowledge spillover (Zander, 2011), domestic firms faced difficulty to master advanced knowledge from leading foreign entrants during the first periods. With the shifting Chinese regulations and the growing number of M&As with subsequent expected turnover of acquired executives (Very et al., 1996), *a new labor market emerged*, a market for experienced, Chinese-speaking middle managers in the retail industry. We believe that *the emergence of a labor market for technology-free competences in a labor intensive industry* (retailing is labor intensive and not capital / R&D intensive, Deloitte, 2011), is a boundary condition to extant theory and consensus. In a way, managerial mobility can be categorized within the market-related class of factors, as it relates to a market, not for good or capital though but for specialized people. Moreover, unlike hi-tech industries like electronics, ICs, ICTs or car manufacturing that tend to be global (Porter, 1986), hence a managerial mobility of scientists and engineers on a cross-border scale, retailing, like many service businesses, remains multidomestic (Corstjens and Lal, 2012), hence the importance of national labor markets.

Local advantages also played a role, and also from period 3 onwards. Foreign entrants focused on their firm-specific assets: investments in state-of-the-art equipment in stores and warehouses, supply management as they would elsewhere, with formal procedures, etc., though these assets might not be relevant in multidomestic industries (Porter, 1986). Indeed, in such industries, and unlike in global ones, firm-specific assets that are transferred are not necessarily sources of competitive advantages. After two early periods of observation, national policy barriers and differences in the local culture(s) of the host country (Subramanian and Lawrence,

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[2] Given the confirmatory nature of these findings, we do not develop much on these two factors.

1999) provided local retailers with opportunities to develop locally-bound advantages. The ability of domestic firms to understand local markets, combined with the specificities of the host country, China, and the further profound differences among Chinese provinces, allowed them to keep foreign retailer at a relative disadvantage (Buckley, Clegg, Forsans and Reilly, 2001). This finding is fully consistent with the results reported by Ma (2010, in Chinese), according to whom activities such as customer loyalty programs are perceived as very important for Chinese retailers to enhance the overall competence. As Kumaraswamy et al. (2012) notice, knowledge creation processes are important steps to catch up, and indeed domestic retailers were able to create knowledge to catch up with the leading foreign entrants (Wang, 2012).

In a way, like managerial mobility, *the creation of local advantages can be categorized within the market-related class of factors*, as it relates to the exploitation of market opportunities, namely customers' differentiated tastes and preferences. In sum, and not surprisingly in a low-tech service industry, technology-related factors are neither salient nor significant in our analysis, but market-related factors are, and take more facets than usually mentioned. In our case, a local market for specialized but technology-free middle to upper middle managers and the creation of market-based local advantages played a very important role in the catching-up dynamics.

Scope condition # 2: a group approach to catching-up, based on country-of-origin. As mentioned, catching-up has been examined from a country, industry or firm level. We proceeded differently, and empirically observed the existence of two distinct and homogeneous groups regarding either the country-of-origin or the past experience in the industry. The domestic group is homogeneous in terms of country-of-origin, but heterogeneous in terms of past experience in retail – though none of the seven sampled domestic firms had experience in the hypermarket segment. The foreign group is heterogeneous in terms of country-of-origin, but homogeneous in terms of experience in the hypermarket industry, including for most of them a significant experience of foreign operations.

We argue that the relevance of a group-based approach to catching-up studies can be established both empirically and theoretically. Empirically, the Chinese government policies "divide" the industry into two groups, treating each group differently (Li and Wang, 2006). China's central government has been usually treating foreign firms and domestic firms with differential policies (Li and Wang, 2006: 353-360). And in all his work, Wang (notably 2012) has thought of the Chinese retailing industry in terms of differentiated groups, with the group of domestic retailers remaining small and retrograde and catering predominantly to domestic (provincial or national) markets, being by no means as globally competitive as the group of foreign firms. Theoretically, the country-of-origin is often seen as a strong determinant of inter-firm cooperation and competition (see earlier arguments in the pioneering work by Reich and Mankind, 1986 and Hamel, 1991 on strategic alliances), and there is no reason to think that catching up dynamics would not share similarities with coopetitive processes between firms, and Zander (2011) has recently argued that taking into account the country-of-origin dimension is challenging but might be necessary for further empirical investigations on antecedents to domestic firms catching up with foreign competitors in emerging countries. Our findings suggest that a group-based approach to catching up provides an interesting and workable methodological device and can yield to interesting results under two conditions: groups are not ad-hoc artificial constructions but share strategic similarities (for instance experience in the industry) and are differently affected by industry forces (for instance, shifting Chinese regulations); and, at least in an inductive research, respondents and interviewees easily and naturally make sense of the two groups for analytical purposes. We wish to caution that we have not gone as far as to theorize that our groups are *strategic groups* as defined by classical strategic management literature (Porter, 1985), and it is an avenue for further research. We have not done so because the similarities and differences across groups at the origin were not sufficient to establish the existence of strategic groups, and because the dynamics of strategic groups (creation or disappearance of groups, firms' mobility from one group to another) are beyond the purpose of this article (Dess and Davis, 1984).

Scope condition # 3: a time-sensitive approach to catching-up. As mentioned, many existing empirical studies have assumed that antecedents to catching-up processes are permanent, i.e. occur equally throughout the catching up process. We have observed that the influence of these four major antecedents varies across time, namely across the five periods that we identified: export of a new business; birth of an industry; shift in government policy; reform and upgrade; and convergence. While learning and the influence of government interventions occurred throughout the five periods, managerial mobility and local advantages have both emerged as important factors in the 3rd period. And it seems that managerial mobility has become less important in the catching up process during the 5th period – at least it is less salient in the interviewees' discourses and available secondary data. Oppositely, local advantages continue to be a strong driving antecedent to catching-up. This third contribution to a more detailed definition of scope conditions deserves further analyses. Available data offer the opportunity to examine more in detail the interactions between classes of antecedents period by period, and given the two-decade-long phenomenon, it could yield interesting nuances and subtleties in the catching up dynamics.

Limitations and perspectives. This study is not without limitations and one is admitted important. Methodologically, interviewees, whatever the caution with which one conducts open or semi-directed interviews, are prone to retrospective biases and their accounts on earlier periods are prone to selective memory and recall effects (Golden, 1997). Despite attention to triangulation, evidence on the earliest periods could require more evidence. Generalizability is less of an issue. Some features of the Chinese retailing (hypermarket) industry, such as government policies that systematically differentiate foreign and domestic players are not rare (see examples in Malerba and Nelson, 2011). And important antecedents to catching up such as the development of market labor for special skills and locally-bound advantages built from local market knowledge should be expected in other multidomestic, low-tech and labor intensive industries. Opportunities for replication studies exist, first to examine early stages of possibly similar evolutionary patterns in India where recent regulatory changes to the retailing industry (for instance *Forbes*, 2013) may lead to similar catching up processes, and second in Russia which joined the World Trade Organization of late (for instance, *The Economist*, 2011), hence a possible influence on the dynamics of the hypermarket industry there as well. Last but not the least, the question of how managers at different levels of the organizations, such as middle managers, contribute to the catching up would also be an interesting research topic.

Finally, a most intriguing emergent facet of this research was the role of middle to upper-middle managers in catching-up. It is essentially the claim that, in labor intensive industries, unlike hi-tech industries, research and development facilities, technological regimes, property rights and scientists and engineers are not the motors of catching up: more ‘mundane ‘ people are. Then, we speculate that middle management (as pioneered by Floyd and Wooldridge, 1992; 1997) and catching-up literature have much to be combined to broaden the scope condition of a theory of catching up.

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