1. Introduction

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1.1 MARKET LEADERSHIP IN EMERGING ECONOMIES

The emerging economies are some of the fastest growing countries in the world. A precise definition of an emerging economy does not exist. However, there is fair amount of consensus that the concept refers to developing countries that have been experiencing extremely high rates of growth on a continuous year-on-year basis and that are increasingly integrated with the world economy through the movement of products and services, capital (for example, foreign direct investments), and persons (for example, cross-border migration). China, India and Brazil are among these countries. They are three of the largest economies in the world not only in terms of GDP, but also in terms of population and size of the domestic market. As the importance of these national economies has grown, so too has the role of these countries in international discussions concerning political, economic and social issues across the globe.

Economic growth in these countries has been accompanied by the emergence of several new domestic firms. These firms have become not only leaders in their own markets but also significant participants in the global economy in both medium and high technology sectors. Moreover, these firms have been able to establish positions of leadership in the face of competition from both established multinational corporations from the US and Europe and newer global players from Asia (for example, Korea, Taiwan). Explaining the sources of such leadership is the focus of this book.

The concept of firm leadership is multidimensional. Our focus is on firms whose competitive position is based either on new products, on advanced process technology, or on production and marketing skills. Like the groundbreaking work by Mowery and Nelson (1999) on the rise to 'industrial leadership', we are concerned with the commercial success of technological innovations rather than with the process of innovation itself.

Unlike the cases examined by Mowery and Nelson (1999), however, our cases focus on the sources of market leadership for specific firms.

We identify three dimensions that characterize market leadership:

Dimensions of market leadership

- Dominant position in the domestic market
- Global reach
- Innovativeness in products/processes

Firms that are market leaders hold dominant positions in their domestic market in terms of market share. This does not mean that they are necessarily the largest players in the domestic industry, but they should be *among* the largest. Given the size of the domestic market in all of the emerging economies under study here, it is clear that a dominant position at the domestic level offers significant advantages in terms of scale for further growth and competitiveness. But it is important to note that we do not consider large market share (even in such big markets) as sufficient to confer the title of 'market leader' to specific firms. High market share based on the successful imitation and/or commercialization of products developed by other firms does not denote a market leader.

To be considered market leaders, firms must have two additional characteristics. They must have what we term 'global reach'. This means that these firms are active not only in the domestic market, but also in international markets in one form or another. Their global reach may range from getting access to foreign knowledge through licenses, to R&D agreements with foreign firms and research organizations, to international joint-ventures in R&D, production or marketing, to exports, and to foreign direct investments abroad. Global reach therefore means that a market leader is able to open links at the international level and to become a player in the global arena.

Finally, market leaders are innovative. With the term 'innovation', we encompass a wide range of changes in products and processes, from adaptation to the local market, to original improvements and modifications, to incremental innovations, to radical changes in products, production processes and technologies. Thus, innovativeness means that a market leader is dynamic in terms of technologies, products and processes and is not simply involved in the replication or imitation of existing products.

1.2 WHAT THIS BOOK IS ABOUT

How do new firms in emerging countries rise to market leadership? What factors drive their innovation and growth? These are relevant questions for our understanding of the growth of new sectors, the expansion of the industrial base, and the rise to international competitiveness of domestic firms in emerging countries.

The extant literature on economic development focuses on the development of firm-level capabilities and strategies to explain the increasing competitiveness of firms from emerging economies (Lall, 1992; Bell and Pavitt, 1993; Nelson, 2008; Lee, 2013). The studies in this book take the argument further, to propose that the rise to market leadership by domestic firms in emerging economies results from a combination of both firm-level and system-level factors. System-level factors may be of two types: national and sectoral. National innovation systems concern country-level factors that may either favour or hamper learning and capability accumulation among firms (Freeman, 1987; Nelson, 1993; Lundvall, 1992). Sectoral systems, by contrast, are focused on industries and may be regional or cut across national boundaries and may affect both innovation and production activities at the firm level (Malerba, 2002; Malerba and Mani, 2009; Malerba and Adams, 2014).

This book examines the case of ten firms in three leading emerging economies: China, India and Brazil. The studies focus on the successful combination of learning and capability building by domestic firms and of system factors in three industries: auto and body parts, information and communications technology (ICT), and pharmaceuticals. This introductory chapter discusses the main concepts used in the book and outlines the countries, sectors and firms chosen for analysis. In Section 1.1 we define the concept of market leadership used in this book. Section 1.3 presents the broader conceptual framework at the base of this study and the firm-, country- and sectoral-level factors considered in each of the cases. Section 1.4 contains a short introduction to the cases (by country and sector). Finally, Section 1.5 provides an outline of the structure of the book.

1.3 SOURCES OF MARKET LEADERSHIP: A CONCEPTUAL FRAMEWORK

This book draws on the evolutionary theory of economic change and on the concept of innovation systems to provide a framework for the analysis of the sources of market leadership in emerging economies. Evolutionary theory focuses on processes of learning, innovation and

economic transformation (Nelson and Winter, 1982). Boundedly rational agents act, learn and search in uncertain and changing environments. Agents know how to do different things and may do them in different ways. Thus, learning, capabilities and behaviour entail agent heterogeneity in experience and organization. Their different capabilities affect their persistently differential performance. A central place in the evolutionary approach is occupied by the processes of variety creation (in technologies, products, firms and organizations), replication including imitation (which affects continuity in the process of economic development), and selection (which reduces variety in the economic system and weeds out the inefficient or ineffective utilization of resources in the long run) (Nelson, 1995; Dosi, 1997; Metcalfe, 1998).

One key aspect of evolutionary theory is a focus on learning and capabilities as the main drivers of innovation and firm growth. Following this framework, empirical research has shown that in the process of economic development, much of the learning of firms in developing countries involves learning about what firms at the frontier are doing. But catching up and the rise to market leadership does not mean imitation. What domestic firms do invariably diverges in significant ways from practices followed by firms in the countries serving as models. This reflects modifications required to tailor practice to local environments. Moreover, the organizational, managerial and institutional aspects of leading productive practices are often difficult to replicate, and need to be adapted to indigenous conditions, norms and values (Nelson, 2011). Therefore, the rise to market leadership involves innovation in the 'Schumpeterian' sense: a break from traditional ways of doing things. In the process of catching up, the practices used are not necessarily new to the world. They are, however, new to the firms, and using them may require considerable risk and long processes of trial and error for learning to be effective (Katz, 1984; Amsden, 1989; Bell and Pavitt, 1993; Hobday, 1995; Kim, 1997; Malerba and Nelson, 2011).

Empirical research suggests that during the process of catching up and achieving market leadership, domestic firms in emerging economies develop different kinds of capabilities. Such capabilities involve more than what engineers generally mean when they talk about technology. While important aspects of these activities are indeed structured or embodied in machinery or other physical artifacts, they also involve modes of organizing, coordinating and managing activities. These latter capabilities often are more difficult to develop than engineering know-how. Yet they may be required in order to adopt, adapt and modify technologies developed elsewhere, or to introduce modifications and incremental innovations, or even to generate completely new products and processes (Malerba and Nelson, 2011).

Evolutionary theory argues that firms do not operate and innovate in isolation. The national or the sectoral context in which agents operate greatly affect their cognition, behaviour and performance and this context may differ significantly from country to country and from sector to sector. More specifically, evolutionary theory proposes that firms must be seen as operating in the context of innovation systems that include other kinds of economic actors that are involved in supporting and orienting economic activity and innovation: primary and secondary educational organizations, universities, public research systems, government programs, suppliers and users, financial systems, and labour markets.

This book proposes that the concepts of both national innovation systems and sectoral innovation systems are useful for identifying the sources of the rise to market leadership. Analyses of sectoral and national innovation systems share a perspective that multiple actors are involved in the innovation process and in the catching up of firms and countries. The national innovation system concept is particularly oriented to broad national characteristics (see Freeman, 1987; Lundvall, 1992; Nelson, 1993). The notion of a sectoral system, by contrast, adds to such analyses the concept that significant differences exist not only across countries, but also across industries in terms of the key actors, industrial structures and institutions that drive innovation (see Malerba, 2002; 2004; Malerba and Mani, 2009; Malerba and Adams, 2014).

In sum, the framework followed in this book argues that, in order to reach market leadership, firms need to be engaged in processes of continuous learning and capability building, and that these processes are highly affected by the innovation systems – national and sectoral – that surround them. For the sake of simplicity, we will consider industrial clusters and regional systems as part of sectoral systems, since clusters and regions are often specialized in specific industries and are, therefore, highly affected by sectoral variables. The analysis developed in this book thus consists of three levels: the firm, the country, and the sector. In the following pages we identify critical factors that may affect the development of market leadership at each level.

1.3.1 Firm-Level Factors

Drawing on the work of Schumpeter and on evolutionary theory, we identify two broad groups of firm-level factors to explore in order to understand the rise to market leadership in emerging economies: entrepreneurship; and learning, capabilities and strategic orientation.

The first factor refers to entrepreneurship as identified by Schumpeter in his pioneering work in 1934 (Schumpeter, 1934). Entrepreneurs start up

new firms, take risks, and innovate. New companies thus emerge because an entrepreneur has the ability, courage and vision to launch a new venture in the face of uncertainty. The presence of entrepreneurs is thus a critical firm-level factor for innovation and firm growth.

The second factor relates to learning, capabilities and strategies. In order to be successful, new companies need to trigger processes of continuous learning and capability building. Such processes are cumulative and take time to produce results (Katz, 1984; Bell and Pavitt, 1993). For indigenous firms this implies the development of capabilities to identify, absorb and adapt new technologies, to generate innovations, and to enter new market segments (Bell, 1984; Lall, 1992; 2000; Amsden and Chu, 2003). Moreover, the types of capabilities required for innovation and growth may change as new firms evolve over time. Kim (1997), in fact, identifies different stages of capability development, from duplicative imitation to creative imitation to innovation. Similarly, Lee (2005) describes the passage from the creation of absorptive capabilities to the development of complementary assets for innovation.

In terms of strategies followed by domestic companies in the rise to market leadership, a detailed discussion of all potential strategies is outside the scope of this book. It is possible, however, to identify a few common characteristics of the strategies followed by market leaders during the process of growth and catching up. They include the decision to purchase technology from abroad in order to access foreign knowledge, the opening of joint ventures and production, R&D and marketing agreements in order to gain relevant knowledge and capabilities, the establishment of networks of cooperation at the national or international level, and mergers, acquisitions and joint ventures related to the internationalization process (Amsden and Chu, 2003; Lee, 2013). In terms of production and marketing strategies, firms in emerging economies often follow a strategic path from original equipment manufacturer (OEM) to original design manufacturer (ODM) to original brand manufacturer (OBM) (Mathews, 2002; Lee, 2005), and climb the ladder in global value chains (Gereffi, 2014). Finally, with respect to technology in dynamic environments, three basic strategies may be identified: path-following, stage-skipping, or path-creation strategies (Lee and Lim, 2001).

1.3.2 Country-Level Factors

The process of learning and capability accumulation is influenced by the characteristics of the country in which a firm operates. In broad terms, the level of development and the type of national institutions actively engaged in economic development may affect firm-level processes. At a

more specific level regarding innovation, the features of the national innovation system play a key role in such processes. National innovation systems are characterized by different elements. A first element is the actors that provide relevant knowledge, skills and support to the innovation, growth and international performance of domestic firms: the government and public agencies, universities and public research centers, the education system, financial organizations (Nelson, 1993; Edquist, 1997). A second element is the institutional setting, in terms of policies, standards and regulations, that may play a significant role in either stimulating or hampering innovation and technology diffusion (Freeman, 1987; Nelson, 1993). A third element is the formal and informal relationships that exist between the various actors of the system (Lundvall, 1992). Finally, national systems may be characterized by their effectiveness in generating, diffusing and using knowledge within an economy and in balancing the indigenous creation and diffusion of knowledge with the need to access foreign sources of knowledge and technology (Lundvall, 2007). As each of these dimensions may affect innovation across multiple sectors and multiple firms, it is necessary to examine the strength of each element in each national context.

1.3.3 Sector-Level Factors

We propose that in order to understand the sources of market leadership in emerging economies, it is also necessary to understand the specific sectoral contexts in which new leaders operate. In this book we use the sectoral system framework, which considers sectors as systems and the sectoral environment as a collection of elements that interact and feed back to one another (rather than as single elements working independently). This framework focuses on three main building blocks that characterize a sector: (a) the technology and the knowledge required for innovative activities, (b) the actors involved in innovation, production and commercialization and the networks of relationships and knowledge exchange among such actors, and (c) the institutions that characterize a sector in terms of standards, regulations and other policies (Malerba, 2002; Malerba and Adams, 2014).

While early studies on sectoral systems focused on advanced economies (Mowery and Nelson, 1999; Malerba, 2004), more recent analyses have applied the framework to emerging economies (Gu et al., 2009; Malerba and Mani, 2009). This research shows that major differences exist in the features, structure and evolution of sectoral systems and that new and leading firms from emerging countries are affected by the strengths and weaknesses of the sectoral system in which they operate. These studies point to factors such as the characteristics of domestic demand, supplier

networks, user–producer interactions, university-level research, specialized human capital, and public policy.

The sectoral system framework has also been used to explain the catching up of firms and countries in specific sectors (Malerba and Nelson, 2011; 2012). Such analyses have also been extended to examine the effects of changes in the specific elements of a sectoral system – technology and the knowledge base, demand, and public policy and institutions – on catching up cycles over the longer term evolution of an industry. This work shows that new leaders from emerging countries that supplant established firms often end up being supplanted themselves by other new leaders as sectoral systems change and evolve over time (Lee and Malerba, 2017).

It is important to note that the relationship between sectoral systems and national systems (national institutions, national policy, and national non-firm organizations such as finance or universities) is not unidirectional, running from the national to the sectoral level. Rather, it is a two-way relationship that evolves over time (Mowery and Nelson, 1999; Malerba and Nelson, 2011). National systems and national institutional frameworks may positively affect the development and growth of sectors with certain characteristics. But the features of some components that prove effective in one sectoral system may also be replicated or diffused in other sectors of a country (Dodgson et al., 2008; Gu et al., 2009).

1.4 THE CASE STUDIES

1.4.1 The Countries: China, India and Brazil

In order to examine the sources of market leadership, we have chosen firms from three of the world's largest emerging economies: China, India and Brazil. Each of these economies has shown considerable economic growth over past decades to become major players in the global economy. While differences across these countries exist in terms of government policies and the characteristics of their national markets, their national systems were all able to support the emergence of domestic market leaders in diverse sectors.

1.4.1.1 China

China was an extremely closed economy until 1979. Being deeply wedded to a socialist system meant that private business enterprises were virtually absent. However, there was a strong focus on both primary and secondary education, particularly in technical fields such as science and engineering. The turning point came in 1979 when the country embraced a form of

market socialism. Since then, the national strategy has been more clearly articulated in terms of a country wanting to be an important player in selected manufacturing industries based primarily on high technology such as telecommunications. During the post-1979 phase, the state has also fostered the growth of private entrepreneurship in a variety of ways including the provision of low-interest bank loans. As a consequence, the number of business enterprises experienced phenomenal growth. In fact, Gu and Lundvall (2006) note that, from almost nothing, business enterprises came to occupy almost two-thirds of the R&D performed in the country by the late 1990s. In addition, China adopted a very open attitude towards foreign direct investments. These investments produced relevant effects in terms of the technological knowledge gained by Chinese firms. An example of this effect is present in the telecommunications equipment industry where Chinese enterprises (for example, Huawei and ZTE) gained early access to foreign technology and have since grown to become global market leaders (Yu et al., 2017). After 1979, the Chinese educational system was also reformed. Not only was education extended to a broader section of the population, but significant investments were also made to increase the quality of education. In fact, several Chinese universities jumped to the top in many international rankings (for example, Tsinghua and Beijing Universities). Overall investments in gross expenditures in R&D also increased to almost 2 per cent of GDP. In conclusion, these three characteristics of an emerging Chinese economy – a clearly articulated national strategy, support for private business enterprises at the sectoral level, and improvements in both the quality and quantity of human resources (Gu et al. 2009) – make China an appropriate context to study the rise to market leadership of domestic firms.

1.4.1.2 India

As an emerging economy, India has undergone significant changes in policy over the past decades. Similar to China, India followed a policy of dirigisme between 1947 and 1991. But unlike China, public policies for strategic sectors were not clearly articulated. Rather, they slowly evolved alongside firm strategies. Where Indian firms had clear strategies for becoming important players in a specific industry, the state supported their efforts by removing unnecessary regulations and, in some cases, by providing them with tax incentives and guaranteed markets through public procurement. Only after 2002, in fact, did public policy begin to move away from a 'one size fits all' model towards sector-specific policies. The role that such policy played in supporting Indian firms in high and medium technology industries, however, is much less significant than that played by the Chinese government. In terms of entrepreneurship, on the other hand,

the Indian state moved to promote private entrepreneurship with the 'New Industrial Policy Statement' of 1991. An important manifestation of the new support for private entrepreneurship was the removal of the industrial licensing policy, which was the main barrier to entry for private entrepreneurship. This change also enabled existing Indian companies to grow and achieve economies of scale without being restricted by government regulations. Other important policy changes that occurred over these decades concerned the broad banning of the licensing regime and the development of the patenting regime. Patenting laws, in fact, were instrumental in building up internal technological capability in the pharmaceutical and agrochemical industries (Chaudhuri, 2005). Following the policy shift in 1991, moreover, the government also adopted an active policy towards the privatization of state-owned enterprises, mostly through divestitures. Industries that were exclusively reserved for the public sector were deregulated and opened up to investments from the private sector. As a result, in India as in China, business enterprises began to emerge as the core of the production and innovation system: the share of business enterprises in the performance of R&D in India increased from about 10 per cent of gross expenditure on R&D (GERD) in 1970 to about 36 per cent in 2012. Finally, Indian higher education favoured science-based education, and the state encouraged technical education in general and engineering education in particular. Like China, therefore, India offers a rich context in which to study the rise to market leadership of domestic firms.

1.4.1.3 Brazil

Compared to the other two countries considered in this book, Brazil is different in the sense that it adopted an open policy stance with respect to foreign direct investments early on in its development cycle. As a consequence, a number of industries were traditionally dominated by multinational corporations by 1990, when the country liberalized its economy and became integrated into the global economy. A second difference of the Brazilian case is that the country tried, from very early periods in its development, to develop domestic technological capability in a range of high technology industries such as aircraft, computers and telecommunications. Despite such efforts, however, the country has only been successful in aircraft: the Brazilian firm, Embraer, is the current world leader in regional transport aircraft manufacturing (Vertesy, 2017). Brazil has also been less successful than the other two countries in unleashing domestic private entrepreneurship. Although Brazil was one of the first emerging economies to establish a public laboratory devoted to the development of digital switching systems in telecommunications, for example, the last Brazilian firm in the telecom switching industry was taken over by a

multinational corporation in the early 1990s and Brazil remains without a domestic telecommunications firm. This absence of private entrepreneurship has reduced the number of enterprises which could have emerged as potential market leaders.[1] Despite these conditions, however, the country has been able to grow a number of world-class companies through state entrepreneurship (for example, Petrobas in the oil and gas industry and Embrapa in agricultural products). As far as the education system is concerned, the Brazilian higher education system has a number of well-known technological universities (for example, the University of Campinas). The National Council for Scientific and Technological Development (CNP) has also created the National Institutes of Science and Technology (INCT) which functions as a national science and technology network. Despite these advances, however, there is still an insufficient number of qualified technical personnel, a limited interest in science and technology among university students, and a relatively low level of engagement between industry and universities. Given these characteristics, Brazil also represents an interesting context in which to study the rise of market leaders.

1.4.2 The Sectors: Auto and Auto Parts, ICT and Pharmaceuticals

The three industries chosen for study in this book are: the automotive industry (consisting of vehicle manufacturers and auto parts), pharmaceuticals, and the information and communications technology (ICT) industry, including both hardware and software suppliers. These three industries have driven growth in several emerging economies over past decades (for example, South Korea and Taiwan). It is important to note, however, that the sectoral systems of these three industries differ in significant ways. We briefly explore some of these differences in the following paragraphs.

1.4.2.1 Auto

In terms of knowledge base, new technologies related to ICT, environmental technologies and new materials have broadened the knowledge base of the automobile industry. In fact traditional mechanical technologies have been complemented by new technologies related to alternative fuels and engines, energy efficiency, safety, electronics and electronic controls, infotainment, and new materials. Engineering knowledge and engineering skills have become increasingly important in this industry, while pure science has become less relevant. In terms of actors and networks, auto firms are usually large in scale, and international in orientation. Scale is critical for both manufacturing and innovation. Extensive vertical links are present in the industry: supplier networks for parts and components, systems developers (such as for front-end cars), small engineering firms

and software suppliers are quite relevant for both production and innovation processes. In fact, the modularization of both manufacturing and R&D has allowed the creation of networks of specialized actors. Finally, car producers have close relationships with machine tool producers. The manufacturing technologies for cars have become very highly automated with increasing use of robots and other autonomous systems not just for painting and welding but also for stamping and assembly operations (Mokyr et al., 2015).

1.4.2.2 ICT – Software and Computers

ICT does not represent a single sectoral system, but a variety of closely related and interconnected sectors in terms of products, technologies, firms and markets. These different systems have undergone a process of convergence over the past twenty years. *Computer hardware* is composed of large producers of personal computers and computer networks. These producers work with the suppliers of semiconductor components that represent critical partners for innovation and production processes: semiconductors, in fact, represent one of the distinguishing components of many hardware products. Government and public policy has not played a significant role in the hardware sectoral system (Bresnahan and Malerba, 1999; Bresnahan, 2007). *Software* represents a different sectoral system. In software, a highly differentiated knowledge base and a variety of applications have driven innovative specialization in different types of products and applications. This industry is characterized by advanced human capital mobility and clusters of small firms. Users – both individuals and organizations – have played a major role in innovation processes, and extensive co-invention characterizes the sector. Finally, although IPR (intellectual property rights) once played an important role in the industry, its relevance has decreased as both the imitation and modification of products has become diffused (Steinmueller, 2004).

1.4.2.3 Pharmaceuticals

The actors in pharmaceuticals include both large and small pharmaceutical companies, new biotechnology firms, universities and research organizations, financial organizations (for example, venture capital), regulatory agencies, the medical profession, and consumers. In terms of the knowledge base and technology, the sector has witnessed a period of constant transformation and growth over the past four decades. Scientific advances in physiology, pharmacology, enzymology and cell biology were followed by discoveries in molecular genetics and recombinant DNA technology and, subsequently, in genomics, gene sequencing, transgenic animal creation, molecular biology and chemistry. These advances were accompanied by the

introduction of a host of new techniques and equipment for drug design and testing, all of which led to major changes in the processes used to develop new drugs (from 'random search' to 'guided discovery' to biological hypotheses and platform technologies) (Henderson et al., 1999). In terms of the institutional framework in pharmaceuticals, three main elements may be highlighted. The first is the impact of public policy on innovative activities. The approval process for new drugs, the organizational structure of, and the policies adopted by, the national health systems, and the politics of cost containment in the health sector have all influenced the path of innovation in pharmaceuticals. The second is the importance of patent legislation and intellectual property rights in the sector. Closely linked to this element are the norms and behaviours that have defined the role of financial organizations, especially venture capitalists, in pharmaceuticals (McKelvey et al., 2004). The institutional and technological changes that characterized pharmaceuticals over this period resulted in the creation of both horizontal and vertical networks between firms and redefined the boundaries between markets and hierarchies in the system. Such dynamics resulted in a division of labour between large, established drug companies and new entrants that were able to offer specialized knowledge and innovations from a host of different scientific fields. Alongside these networks, a process of vertical integration also took place through a sequence of mergers and acquisitions starting in the 1980s (Pisano, 1991; Gambardella, 1995). The learning regimes and selection processes that characterized this sector, therefore, impacted not only the intensity of the relationships among the actors in the sector (both firms and organizations), but also the emergence of new actors and networks from an expanding knowledge base.

1.4.3 The Firms

Ten firms from these three sectors have been selected for detailed analysis in this book (see Table 1.1). In all cases, they are privately owned firms.

All of the firms selected for study meet our criteria for market leadership (see Table 1.2 for a brief profile of each firm). While in one case (Tata) the

Table 1.1 Selected countries, sectors and market leaders

Country\Sector	Automotive and auto parts	Pharmaceuticals	Information technology
China	Geely	Sinovac; WuXi; BGI	–
India	Tata Motors	Cipla	HCL
Brazil	Marcopolo	–	Totvs; Positivo

Table 1.2 Profile of the selected market leaders from emerging countries (in order of appearance in book)

Firm	Country – industry	Market share	Internationalization and innovativeness
1. Geely (est. 1986) (Chapter 2)	China – cars and motorcycles	● One of the largest car-makers in China ● In 2010 took over Volvo of Sweden	● Highly internationalized with joint ventures or affiliates in Indonesia, Malaysia, Sri Lanka, Russia and Ukraine
2. Sinovac (est. 2001, parent 1993) (Chapter 3)	China – vaccine manufacturer	● Largest vaccine manufacturer in China accounting for 37 per cent of the market	● Internationalized through exports
3. WuXi Pharmatech (est. 2000) (Chapter 3)	China – Contract Research Organization in pharmaceuticals (CRO)	● One of the largest CROs in the world ● Contract researcher for most of the world's largest pharmaceutical, biotech and medical device companies. As of April 2013, the company had more than 1600 customers	● Internationalized with research facilities in the USA
4. BGI (est. 1999) (Chapter 3)	China – genomics research company	● High market share	● Internationalized with operations in the USA and in Western Europe
5. Tata Motors (Chapter 4)	India – manufacturing the entire range of automobiles from small cars to large trucks	● Largest Indian automobile manufacturer ● Total sales revenue of USD 38.9 billion in 2014 ● Took over Land Rover and Jaguar in 2004, Daewoo Commercial Vehicle Company of South Korea in 2008	● Highly internationalized with presence in 175 countries across the globe either through exports, affiliates, franchisees or joint ventures

Table 1.2 (continued)

Firm	Country – industry	Market share	Internationalization and innovativeness
		● Joint ventures with Thornburi Automotive Assembly plant company of Thailand for making small pick-up trucks ● Assembly plant in South Africa	● Franchisee/joint venture assembly operations in Bangladesh, Ukraine and Senegal ● Manufacturing facilities in the UK, Spain, South Africa, Morocco, Thailand and South Korea, besides India ● R&D centres in the UK, Spain, Italy, India and South Korea
6. Cipla (est. 1935) (Chapter 5)	India – generic drugs manufacturer	● Largest generic drugs manufacturer from India ● Total sales revenue of USD 1.5 billion ● Most important manufacturer of inexpensive ARVs in the world	● Highly internationalized with presence in 170 countries with exports and strategic alliances ● Has taken over pharmaceutical companies the world over
7. HCL (est. 1976) (Chapter 6)	India – computer and information services	● One of the largest computer software companies from India ● Total sales revenue of USD 6.5 billion	● Highly internationalized with presence in 35 countries
8. Marcopolo (est. 1949) (Chapter 7)	Brazil – automotive-specializing in bus body-making: intercity, urban, micro and mini buses	● One of the largest bus body builders in the world ● Total sales revenue in 2014 was USD 1.4 billion	● Highly internationalized with subsidiaries or joint ventures in the Americas, Western Europe, South Africa, India, Australia

Table 1.2 (continued)

Firm	Country – industry	Market share	Internationalization and innovativeness
9. Totvs (est. 1969) (Chapter 8)	Brazil – computer software, ERP systems	● Largest developer of computer software	● Internationalized with presence in other Latin American countries and in Western Europe (Portugal)
10. Positivo (est. 1989) (Chapter 8)	Brazil – computer hardware manufacturer	● One of the largest computer hardware manufacturers, accounting for about 30% of the retail PC sales in Brazil	● International-ization and acquisitions in Latin America

Source: Authors' summary drawn from chapters.

firm is active across a range of product areas, in all other cases the firms are specialized in specific product segments. Our cases also vary according to age: while some have roots in ventures that date back a few decades, others have been established more recently.

1.5 THE STRUCTURE OF THE BOOK

The book is organized according to country. Chapters 2 and 3 examine market leaders in China in two industries: automobiles (Geely in Chapter 2) and pharmaceuticals (Sinovac, WuXi and BGI in Chapter 3). Next we focus on India, with three chapters related to the automotive sector (Tata Motors in Chapter 4), pharmaceuticals (Cipla in Chapter 5) and information technology (Hindustan Computers in Chapter 6). After that, three cases from Brazil are examined, one from the automotive sector (Marcopolo in Chapter 7) and two from different segments of the information technology sector (Totvs and Postivo in Chapter 8). In the final chapter (Chapter 9), we identify some of the main lessons learned from these case studies and draw our conclusions.

One final note: while the authors all had a free hand in writing their contributions, the chapters share a similar structure. After a brief discussion of the dynamics of the sector in the country, an analysis of the history of the company and the factors related to entrepreneurship,

capability and strategy and system factors (sectoral and national) are examined.

NOTE

1. This situation may change in the future because the Brazilian government has launched several initiatives to support start-ups. Financial support is provided through grants (Programa Primeira Empresa Inovadora, PRIME), venture capital investments (INOVAR), or reduced interest loan programmes (Juro Zero Programme). In addition, the Pro-Innova programme introduced in 2008 encourages entrepreneurship by diffusing information about the legal tools, facilities and mechanisms available to support initiatives.

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