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Globalization, Capabilities, and Distance: Theory and a Case Study (of China)

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The Oxford Handbook of Dynamic Capabilities

Edited by David J. Teece and Sohvi Leih

Subject: Business and Management, Business Policy and Strategy, Organizational Theory and Behaviour

Online Publication Date: Jun 2016 DOI: 10.1093/oxfordhb/9780199678914.013.009

Abstract and Keywords

This article examines how firm-level capabilities relate to competitive outcomes between multinational companies (MNCs) from advanced economies and challengers from emerging economies. It examines John Sutton's theory of the "capability window" in light of new empirical evidence on competition in particular between MNCs and Chinese firms inside China. Market share leadership by MNCs in China is found to be positively related to industry R and D- and advertising-intensities; and where leadership varies by segment, MNCs tend to lead in high-end segments and Chinese firms in low-end segments. The empirical research provides support for Sutton's model but also suggests a set of extensions to it—most significantly, the incorporation of horizontal distance alongside the vertical distance emphasized in his baseline model. And since dealing with both kinds of distance requires firms to do things that they have not done before, dynamic capabilities are essential to success in this context.

Keywords: capabilities, emerging markets, emerging multinationals, Sutton, capability window, China, CAGE Distance Framework, AAA strategies

1 Introduction

Recent years have seen a surge of interest in linking international/global strategy to new ideas about the broader field of strategy. An important example is provided by the refinement of theories of MNCs in line with the resource-based view of strategy. Thus, international strategists' discussions of firm-specific advantages (FSAs) and country-specific advantages (CSAs) now recognize that FSAs must have certain characteristics if they are to underpin sustained superior performance.¹

But despite progress in this and other respects, emphasis in the international domain on the recombination of FSAs and CSAs—particularly with “new internalization theory’s” consideration of host as well as home CSAs and the development of subsidiary specific advantages (SSAs)² in addition to FSAs—is an awkward fit with the resource-based view that differences among firms are the result of unavoidable heterogeneity in specialized factors or factor combinations rather than of purposeful differentiation. More specifically, the resource-based view takes firms’ resource endowments as given, and so in that sense adopts a static perspective.³

A more dynamic referent is provided by work that strategy scholars have undertaken since the 1990s to extend the resource-based view by explaining how capabilities that enable firms to perform activities better than their competitors can be built and redeployed over long periods of time. Unlike resources in the resource-based view, such capabilities are to be developed rather than taken as given, as described more fully in a pioneering article by David Teece, Gary Pisano, and Amy Shuen:

If control over scarce resources is the source of economic profits, then it follows that such issues as skill acquisition ... and learning become fundamental strategic issues. It is in this second dimension, encompassing skill acquisition [and] learning ... that we believe lies the greatest potential for contributions to strategy.⁴

Teece, among others, has also sought to relate firm capabilities to theories of the multinational enterprise. Thus, Teece distinguishes between ordinary and dynamic capabilities and argues that firms from emerging economies often lag behind those from advanced economies with respect to even ordinary capabilities—and that MNCs from advanced economies can transfer and adapt such capabilities to compete in emerging economies, with the adaptation process itself being “partially a dynamic capability.”⁵

This chapter digs deeper into competition between multinational firms from advanced economies and challengers from emerging economies. It draws on both new theory that endogenizes capability development in a globalizing context and new empirical evidence, from China. The basic theoretical model—attributable to John Sutton, the industrial organization economist—is presented briefly in Section 1. Section 2 argues that China is a particularly interesting test bed for Sutton’s model of globalization and capabilities—and one that is underexplored in terms of competition between multinationals and local firms. Section 3 presents the basic results about competition within China. Sections 4 and 5 examine, respectively, matches between actual outcomes and Sutton’s baseline model of globalization, capabilities, and vertical differentiation/distance; and directions in which that baseline model might usefully be extended: most importantly, to consider horizontal as well as vertical distance. Section 6 concludes.

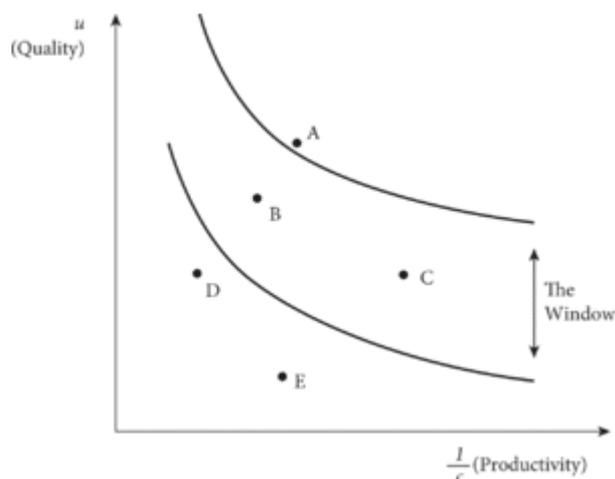
2 Sutton's Baseline Model

Sutton moves beyond the “better have better capabilities” notion of competition among global firms to embed endogenous capability development in a model of global competitive interactions.⁶ It is worth beginning by quoting at some length his characterization—in the context of a discussion of China's industrial development—of how his analytical framework relates to the notion of capabilities:

A firm's capability can be defined, for our present purposes, in two steps: (a) The firm's (“revealed”) capability relates to the range of products that it currently produces; specifically, for each (narrowly defined) product line, it refers to (1) the unit variable cost of production expressed as the number of units of materials and labor input required per unit of output product, and (2) a measure or index of “perceived” quality defined in terms of buyers' willingness to pay for a unit of the firm's product, as against rival firms' products. (It is worth noting that this index of “perceived quality” can be raised not only by improving the physical attributes of the product, via R&D or otherwise, but also through improvement in reputation, brand image, and so on).

(b) Underlying the firm's revealed capability is the firm's “underlying capability,” which consists of the set of elements of “know-how” held collectively by the group of individuals comprising the firm. The importance of this deeper notion of capability lies in the fact that some of these elements of “know-how” will be useful in producing products not currently made by the firm, and this will enhance the firm's ability to take advantage of new opportunities over time, as shifts occur in the underlying pattern of technology and demand that it faces.

A generic property of the class of models considered here is that competition between firms will generate some “threshold” level of capability below which no firm can survive (in the sense of achieving any positive level of sales revenue at equilibrium). Thus, there is a range, or “window,” of capability levels at any time, between the current “top” level attained by any firm and this threshold, and any potential entrant must attain a capability that puts it into this window ... As competition intensifies, the market share gap between more capable firms in each market, and their less capable rivals, widens. Moreover, a firm's current (“revealed”) capability is not always mirrored in its underlying (“dynamic”) capability, that is, its ability to adjust to shocks in its environment. It follows that shifts in the ranking of firms in the market are likely to occur.⁷



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Figure 1 Capabilities and the window of viability

Source: John Sutton, *Competing in Capabilities*, Fig. 1.2, p. 13. By permission of Oxford University Press.

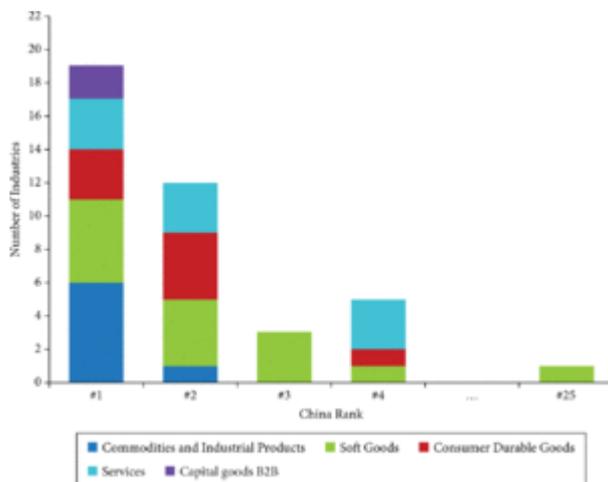
From the standpoint of strategic management, this analytical framework has several useful features. First, it clearly distinguishes between product market interactions in the operational short run and long-run competition via investments in improving product market position that must be justified in terms of the ensuing product market payoffs (or quasi-rents). Second, it focuses, as does much of

modern strategic management, on (relative) costs and willingness-to-pay as determinants of product market positioning. Third, while recognizing that firms may vary in their ability to shift costs or willingness-to-pay over time—in their “underlying” or dynamic capabilities—it nonetheless clarifies the boundaries within which outcomes are possible in terms of product market positions that will be viable in equilibrium. Briefly, Sutton looks at equilibrium in the space of outcomes rather than equilibrium in the space of strategies and thereby manages to pin down the range of possible outcomes without making nearly as many assumptions about functional forms, etc., as game-theoretic models generally do.⁸ His key results concerning competition among firms of differing capabilities can be summarized in terms of his notion of capabilities and the “window of viability.” Thus, in Figure 1, firm A, which has the highest level of capability is viable, but so are B and C, whereas D and E are not.

Globalization shifts the window of capabilities that are viable (see Figure 1) upward over time. More specifically, trade liberalization causes the bottom of the window to move up, i.e., a higher level of wage-adjusted revealed capability (quality divided by unit cost) is needed to be viable. And the “great arbitrage,” marrying advanced economy capability with developing country wages—of particular interest in the Chinese context—also causes the top of the window to move up: competition among MNCs to build up their capabilities intensifies as challengers improve their capabilities through technology transfer. Note that the upward movement of the capability window is a gain from globalization—from a consumer perspective, more is available for less—that is distinct from the other gains traditionally emphasized in the literature and potentially larger than many of them.⁹

Sutton's analytical framework is of general interest to strategic management because, as Gary Pisano has recently noted, "research on dynamic capabilities should focus on the connection between capability creation/investment decisions and competitive outcomes."¹⁰ While the notion of the moving "window of viability" is applicable to a range of situations that involve an intensification of competition, we focus here on examining—and confirming—its applicability to the context of globalization and specifically, to competition between MNCs and emerging challengers. Two fairly specific predictions are examined. First, MNCs should do better in industries that offer more potential for investments in sunk costs to boost operating margins, with the two key proxies being high advertising-to-sales and R&D-to-sales ratios (the traditional indicators of product differentiation possibilities). Second, in industries that can be partitioned into vertically differentiated segments, MNCs should be more likely to lead in the higher-end segments and emerging economy challengers in the lower-end ones.

3 China as a Test Bed



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Figure 2 China's rank in terms of market size, 2012

Notes: Market size is measured by the country's domestic consumption/sales in volume, or in value if volume data unavailable. Based on 40 industries, the full listing of which and their classification into the categories shown on the chart are available upon request.

Sources: Data source is mainly Euromonitor Passport. The other data sources are the following: Bank Deposits from World Bank "Financial Development and Structure Dataset", updated Nov. 2013; Cement [BCA1] from International Cement Review "An overview of global cement sector trends: Insights from the Global Cement Report 10th Edition"; Chemicals from McKinsey "What's next for international chemical companies in China?" (2013), Cefic Chemdata International "Chemicals Industry Profile: Facts and Figures 2011"; Electric motors from UN Comtrade and Euromonitor Passport; Gold from World Gold Council "Gold Demand Trends"; International Phone Calls from Telegeography International Traffic Database; Machine Tools from KPMG "China Machine Tools Market 2004," and Gartner Research "The World Machine Tool Output & Consumption Survey 2013"; Rice from UN Comtrade, FAO, and University of Arkansas—Division of Agriculture "World Rice Outlook"; Steel from World Steel Association "World Steel in Figures 2013."

One could, in principle, confront the two specific predictions from Section 1 with competitive outcomes in any one of the 150 + countries that might be classified as emerging—or, in fact, any of the nearly 200 countries, in total, in the world today; but China seems the ideal test bed, for several reasons. First, China is one of the largest, if not the largest, markets in the world, especially in volume terms (see Figure 2 for China's global market size rank across a sample of 40 industries—and note comparatively higher ranks in commodities and industrial products and capital goods, and comparatively lower ranks in services.) In small markets, even modest cross-border economies of scale and scope can undercut the viability of local competitors relative to vertically differentiated MNCs who can to some extent spread fixed costs across the multiple markets in which they

compete; but China is a large market that is actually being contested keenly by MNCs—and by local firms.

Second, while the United States and the European Union are each still larger, in terms of GDP, than China, Chinese competitors would seem much more subject to vertical differentiation disadvantages than might be exposed, for instance, by a focus on the European Union vs. the United States. There are likely to be more vertical differences in capability terms between Chinese challengers and western (and Japanese and S. Korean) MNCs than within the latter, so that a focus on China and Chinese competitors is more likely to expose sharper, clearer differences than the more customary focus on competition among MNCs from advanced countries.

		Host Market Size	
		Small	Large
Vertical Capability Differences between MNCs and Emerging/Local Challengers	Small	Uncontested?	Local Heroes
	Large	Global Champions	China/ Focus of Research

Click to view larger

Figure 3 Market sizes, vertical capability differences, and likely winners

Source: Authors.

Third, relative to many other emerging economies, conditions seem to be in place for (at least some) Chinese domestic firms, particularly the private ones, to actually climb the vertical ladder of

capabilities. In contrast, with a stunted domestic response (and there do seem to be examples of emerging economies caught in such a bind),¹¹ there would be no point to the kind of analysis, domestic versus foreign, attempted here: the all-too-predictable outcome is that locals would be wiped out in proportion to the degree of opening up. Figure 3 summarizes these arguments about why China is such an appealing test bed. It corresponds to the cell (shaded for emphasis) in the matrix that presents the most interesting ambiguities—and that looking at China lets us focus upon. Focusing on China sets up a test of whether vertically-advantaged MNCs—competitors from advanced countries typically still hold an edge in terms of marketing and technological know-how—will win or lose ground to less vertically differentiated (lower cost/lower quality) emerging challengers, often locals. And while China was deliberately selected to be an outlier in terms of size, outcomes there may also afford some insight into the broader shift of many economic activities toward emerging economies, particularly the larger ones—although again, averaging across dozens of categories, China accounts for more than 40 percent of the big shift to emerging economies since 2000.¹²

It is also worth pointing out some of the complementarities between our analysis and previous empirical analyses of Chinese competitors' positions in global competition. These generally focus on competition outside China, mostly through exports. Thus, Schott compares China's exports to the United States with those of other US trading partners

and concludes that China's export bundle increasingly overlaps with those of more advanced OECD economies; he also notes, however, that its exports still sell at a substantial discount to those from the OECD.¹³ Pula and Santabárbara look at the prices of Chinese exports to the European Union and infer that given Chinese market shares, Chinese quality is higher than would be implied by a simple conflation of low prices with low quality, and that it has increased significantly since 1995.¹⁴ Ge, Lai, and Zhu focus on comparing export prices between domestic and foreign-invested firms in China and find a significant price premium for the latter—especially for majority- or wholly-owned affiliates as opposed to minority-owned affiliates—that is significantly correlated with MNCs' firm-specific intangible assets. Such assets include R&D capability and reputation for quality (as well as managerial practices such as sending technicians and managers from headquarters to China).¹⁵ Dean, Fung, and Wang focus on the role that imports of intermediate goods—a key technology transfer mechanism identified by Sutton—play in Chinese exports and find that their importance has grown over time.¹⁶

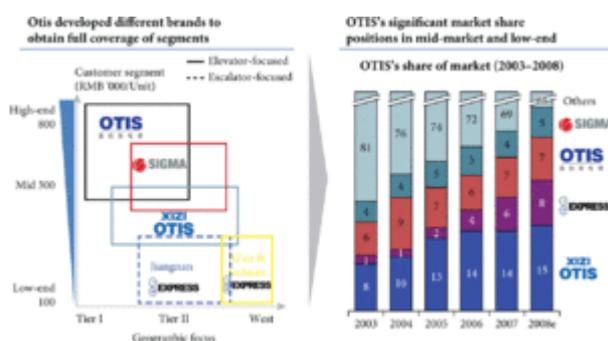
Given this focus in the prior literature, our core analyses, in Section 3, can be thought of as complementing it by focusing on competition within China—although we also briefly touch on outbound Chinese foreign direct investment (FDI) and the emergence of the first Chinese MNCs.¹⁷

4 Competition within China Patterns

Our focus on competition between Chinese and foreign firms within China creates a significant complexity. Many sectors in China are still officially or unofficially closed to foreign competition, and there is even a sense that such official home bias may be worsening, as China turns to a more domestically driven, services-led growth model as well as continues to emphasize the development of technological self-sufficiency.¹⁸ As a result, the analysis that follows focuses on sectors where the Chinese government does allow meaningful foreign competition.

What basic patterns do we see when we look at contested sectors within China? This section begins by presenting data from 2012–2013 about whether MNCs or Chinese companies lead within China in industries in which meaningful foreign competition is allowed (see Figure 4). We then compare these recent data with the data we compiled on the same question for 2006 and published in 2008.¹⁹ After these cross-industry analyses, this section digs more deeply into patterns within industries in which leadership is segment dependent.

low R&D- and advertising-intensive industries; and not coincidentally, China’s early multinationals are mostly drawn from this same group (see Box 1, “China’s Multinationals”). The more intensive in R&D and advertising an industry is, the more likely foreign multinationals are to lead. In the most R&D intensive industries—modern pharma, packaged software, long-haul jet aircraft, etc., foreign MNCs continue to lead. The only major exception to the rule about R&D-intensity is IP network equipment, currently dominated by Huawei Technologies and ZTE—and one arguably shrouded in some mystery insofar as links with and support by the People’s Liberation Army are concerned. MNCs also lead in industries such as personal care and carbonated beverages that are very advertising-intensive and, apparently, in ones that combine relatively high levels of the two, most notably sports apparel and shoes. The most advertising-intensive industry in which Chinese companies lead is healthy beverages, where local cultural insight is presumably more important than in colas (more on such cultural considerations follows in Section 5).



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Figure 5 Otis China’s historical multi-segment strategy and market positions

Source: Boston Consulting Group, 2008.

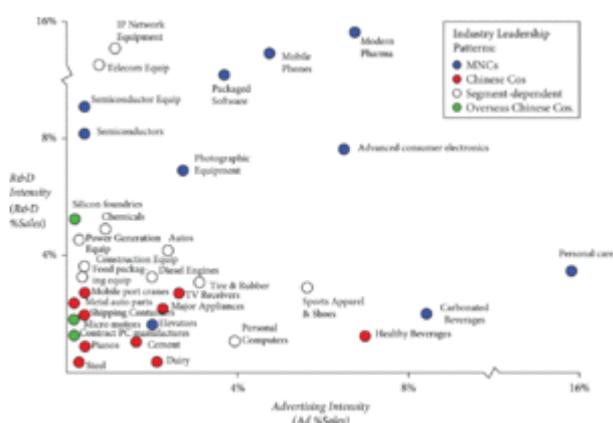
There are also industries in which MNCs lead even though they would seem to fall below the R&D-plus-advertising frontier that generally separates MNC-led industries from ones led by Chinese companies: industries such as elevators and aseptic food packaging. American, European, Korean, and Japanese companies lead

the elevator business in China. Otis in elevators and TetraPak in aseptic packaging established leadership in their industries in China early. Both got to China early (in the mid-1980s) and established a big installed base and network of local service operations, both of which were critical to success in these businesses. Thus, Otis developed by far the largest set of maintenance contracts. At least early on, Otis had a design knowledge advantage in putting together customized high-rise systems and mastering safety specifications, although probably several Chinese companies can now match it on these dimensions. Otis builds its hardware in China except for some safety-related parts that are still single-sourced from the United States and Europe, and according to its head of operations in China, its Chinese plants now achieve the same yields and quality—or improve on them—as legacy operations in the United States. And over the years it has

been very effective in setting up separate companies and product lines to cover all of China's market segments (see Figure 5).

TetraPak also began with superior system knowledge that helps dairies reduce cost and improve quality. Its business has both a filling/packing machine side and a packaging side (à la razor and razor blade model). Aseptic packaging may account for a third of the cost of a carton of milk in China, and TetraPak now also makes most of its hardware in China. The tainted milk scandals in China a few years ago probably helped TetraPak relative to competitors as it tilted the market toward foreign-owned dairies where TetraPak's market share is highest. And it is reputed to be a tough competitor that meets price competition selectively where it has to, although its dominance did come under investigation in summer 2013 by the Chinese anti-monopoly authority for tie-in sales.

4.1 Shifts over Time



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Figure 6 Industry leadership: Chinese companies vs. foreign MNCs (2006)

Note: Sources as in Figure 4.

It is also interesting to compare the data for 2012–2013 with similar data we compiled earlier for 2006 (and published in 2008) (see Figure 6). Perhaps the most striking aspect of the comparison is how little change there has been over six-plus years to the broad pattern identified above in terms of industries with high R&D- and advertising-intensities. These are

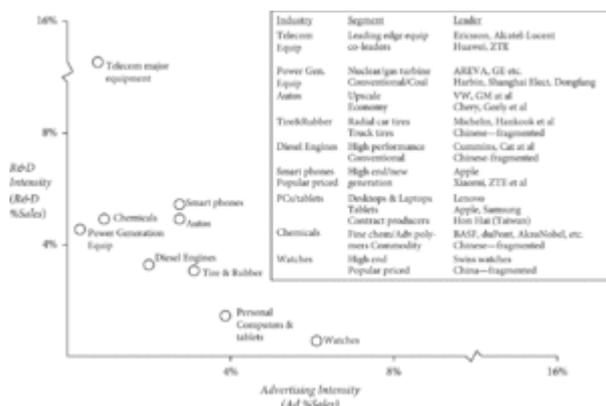
relatively likely to be led by MNCs, with industries with low R&D- and advertising-intensities being more likely to be led by Chinese (or overseas Chinese) companies.

That said, there have been some changes. The period between 2006 and 2012–2013 has seen some strengthening of Chinese positions, especially in internet protocol (IP) network equipment (lumped together with telecom equipment in 2006) and in popular-priced smartphones. Solar panels is another relatively high R&D-intensive industry in which they have taken over market share leadership—again, amid the backdrop of an international row about governmental support. Three of the four leading silicon-based solar panel producers globally—Trina, Ying Li, and Jinko—are Chinese. Construction

equipment leadership was formerly segment dependent but Sany now rivals Komatsu for overall leadership, while Chinese producers still lag behind on quality at the high end, but do now lead, overall, in the local consumer electronics market.

It should also be noted, though, that the changes have not *all* been one-way. MNCs have retaken the lead in sports apparel and shoes (Nike and Adidas principally) as well as in food packaging since 2006. And many MNCs continue to dominate their industries in China, including P&G in personal care products (although it is suffering some challenges); Intel, Qualcomm, and MediaTek in semiconductors; and Applied Materials in semiconductor producing equipment. And there are many other businesses (not displayed in these exhibits because of limitations in confirmed data) from high-tech components like avionics and small jet engines to niche consumer businesses such as soluble chocolate drinks and fine wine. Thus the determining issue for MNCs successfully competing in China is not simply in which industries they are allowed to play, but the absolute level and rate of change of the capability demands of the industry.

4.2 Segment Dependent Leadership



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Figure 7 Segment leadership: Chinese companies vs. foreign MNCs in vertically segmented industries (2012-2013)

Note: Sources as in Figure 4.

Figure 4 (and for that matter, Figure 6) classifies leadership in a number of industries as segment dependent. Figure 7 breaks them down into vertical segments. Basically, advanced-country multinationals lead in the higher-end segments whereas Chinese competitors do comparatively better in lower-end segments. Consider some examples

of such “vertical differences”:

- Machine tools: China acquired many struggling European and American machine toolmakers and now leads in many basic numerically controlled machines but has not yet mastered design of complex, highly flexible, multipurpose machines. China is easily the largest machine tool market in the world, explaining why its Shenyang Group is

the world's largest producer. But MNCs such as Japan's Yamazaki Mazak and Germany's Trumpf lead the higher end in China and globally.

- Enterprise resource planning (ERP) software: China's UFIDA dominates the small- and medium-size enterprise market for enterprise software, but Germany's SAP leads in large, complex customers. China does not compete in many packaged software categories, but where it does it usually starts in the less sophisticated segments and develops from there.
- Airframes: China's Comac markets a regional 100-passenger jet, the ARJ21, but not yet a long-haul airplane where the systems design and control challenges are far greater. Of course, China's level of "quality" here is rising, and the longer-term question is, will wage differences disappear before quality and productivity parities are achieved. But this is a very long-run question.

Box 1 China's Multinationals

China has produced a first generation of multinationals in a fashion consistent with the notions of vertical and horizontal distance in capabilities. China's first exports were processing exports where the offer was low-cost assembly of products designed, branded, and mostly manufactured elsewhere. Next came contract outsourcing where a substantial Chinese company would manufacture more of the product, again designed and branded elsewhere. Many of China's best-known multinationals today—including Wanxiang in auto parts, Haier in home appliances, Galanz in microwave ovens—got started this way. These contract manufacturers over time worked to narrow the vertical distance from their original equipment manufacturer (OEM) customers, first in manufacturing, then design, and finally marketing and distribution, on the path to becoming multinationals.

Other Chinese companies became multinationals by becoming globally preferred suppliers of products under their own brand where there was no strong advanced market incumbent. Pearl River Pianos in upright pianos, Goodbaby in baby strollers, and China International Container Corporation (CIMC) in shipping containers are examples. These three companies in particular are now global market leaders in their product category. Finally, there are bigger-ticket capital goods companies that took a long time to gain acceptance against strong advanced market incumbents where the vertical capabilities challenge includes deep technical knowledge, reliability, user training, etc. Examples are Huawei in IP and telecom equipment, Shanghai Zhenhua in port cranes, and Lenovo in computers. Apart from Huawei, all these multinationals compete in low to medium R&D- and advertising-intensive industries, as indicated in Figure 4.

Chinese multinationals followed up export success with direct investment overseas, and a few now have more foreign sales than domestic. An estimated two-thirds of Huawei's revenue comes from abroad, mostly from emerging markets. Similarly, Shanghai Zhenhua's and CIMC's revenues are estimated as two-thirds foreign, roughly equally divided between advanced markets and emerging markets. China's capital goods multinationals' early successes were more in emerging markets where barriers to customer acceptance are lower. Goodbaby's and Lenovo's revenues are also mostly overseas but are distributed more across advanced and emerging markets. Lenovo's presence in advanced markets grew mainly from its acquisition of the IBM personal computer business.

China's multinationals are essentially young, non-state-owned companies, started in the 1980s (or 1990s) after private enterprise was opened up. Haier began as a township enterprise but flourished only after being liberated from this status. Lenovo was started by state-employed scientists but was never a state-owned enterprise, and Huawei famously by ex-military people. Many others were launched with offshore (mostly Hong Kong or Singapore) customer sponsors or money or governance, including CIMC and Pearl River Piano. Shanghai Zhenhua was mainly a privately funded venture of a state-owned corporation. Many of China's big well-known state-owned oligopolies such as the China National Offshore Oil Corporation or China State Construction Engineering Corp. operate overseas and had international project origins, but are not multinational in the sense of competing on their own merits in foreign markets with local corporations.

Some Chinese multinationals are acquisitive, enter new businesses aggressively, and are now effectively conglomerates. Wanxiang Group, for example, began in auto parts then diversified into financial services, clean energy and electric vehicles, natural resources, and real estate. CIMC leveraged container design and manufacture knowledge in entering highway truck trailers, cold chain logistics, and offshore engineering equipment.

A similar pattern is observed in the 2006 data on vertically segmented industries.

5 Matches with Sutton's Model

To summarize what has been learned from Section 3, go back to the cell, shaded for emphasis, in Figure 3 at the end of Section 2. The data on China clearly indicate that whether MNCs or local companies are likely to lead locally is strongly dependent on industries' R&D- and advertising-intensities. While the Chinese data are novel this basic finding is not: the success of multinationals from advanced economies in R&D- and advertising-intensive sectors reminds us of the basic theory of the (horizontal) multinational enterprise developed more than 40 years ago by Richard Caves, in which such intangible assets, and the increasing returns to scale that underlie them, are what typically propel companies to expand across national borders.²¹ Interest in intangible assets has only increased with the surging intensity of investments in them. Thus in the United States, which leads on this metric, gross business investment in intangibles increased from slightly over 4 percent of non-farm business output at the end of World War II to nearly 14 percent by 2007—with about one-half of the total being accounted for by investments in R&D and brand equity—while the rate of investment in tangible assets hovered between 10 percent and 12 percent.²² In addition, investment in information technology (IT) in the form of both hardware and software also came to account for a

significant chunk of total investment. A similar surge in intangible asset investment-intensities is apparent in Chinese macro-data, although such macro-estimates do tend to be much higher than what micro-, company-level data would suggest. (In addition, questions have been raised about the productivity of Chinese investments in intangible assets.)

Sutton's baseline model, in addition to its formal attractions, helps one think about these patterns in the context of competition to develop capabilities. As low-wage competitors up their game—the bottom of the window of viable capabilities in Figure 1 shifts upward. To maintain their relative positions, vertically differentiated MNCs have to shift the top end of the window upward as well. Industries in which there are actually opportunities to do so—industries that MNCs can continue to lead—tend to be the ones in which it is possible to sink costs into improving products and operating margins by enhancing intangible assets associated with image/reputation and know-how. These are, of course, roughly proxied for by advertising intensity and R&D intensity respectively. For example, P&G is China's largest television and digital advertiser. Applied Materials is the industry's biggest spender on R&D and in fact moved its corporate R&D director to China as it became a leading-edge market.

Since Sutton's work is based explicitly on a vertically differentiated structure, it is, additionally, a good theoretical referent for the finding that in industries in which leadership is segment dependent, MNCs lead in the higher-end segments whereas Chinese competitors do comparatively better in lower-end segments. Some of the trade data hint at the importance of vertical distance as well. Thus, comparisons of the similarity of China's exports to Japan's find that only a little more than 50 percent of China's exports "compete" with Japan's, up from one-third 20 years ago—more than India (<40 percent) but less than South Korea and Germany (>70 percent). (Of course, such comparisons do not fully capture differences in specs, and will be skewed by China's large volume of processed exports.) While China both imports and exports capital goods, imports are mostly from advanced economies and exports mostly to other emerging economies.²³

Sutton's treatment of the role of competitively priced intermediates in boosting competitiveness in low-wage countries also finds some support in China. In his model, any economy unable to move into world-class intermediates must continue to lower its wages in order to compete in the final product. This makes bringing world-class intermediates to the lower-wage economy critical in avoiding a wage squeeze and allows local vertically rising enterprises to tolerate rapidly rising wages without losing competitiveness as the move of high-priced intermediates from advanced countries to lower-wage local producers helps offset rising wages. Of course, this is yet another source of vertical pressure on MNCs from advanced economies. And again, several

apparent examples of this dynamic at work can be cited in the Chinese context. Thus, early on, Chinese auto companies stayed alive by importing high-value components and subsystems and acting as assemblers. Now, China has backward integrated into these intermediates (based on both domestic initiatives and inbound FDI by MNCs), reducing MNCs' vertical differentiation. If it had not done so, it is hard to see the domestic auto industry surviving, as its labor-intensive assembly model would have been squeezed hard by rising wages *and* intermediates that continued to be costly. Airframes, discussed briefly in Subsection 3.2, supplies a similar example. The Comac ARJ21 incorporates components from 19 major European and US aerospace suppliers, including a GE engine, Honeywell's fly-by-wire technology, and Rockwell Collins's avionics systems. Each of these suppliers is moving more value added including R&D to China.

Such examples also fit with Sutton's broader emphasis on upgrading—and Chinese managerialist discourse on becoming world class. Upgrading is also visible in China's international economic relationships, particularly in its processing trade, which brings in inputs free of import duties under contract to export the finished products to a foreign buyer who will be responsible for their distribution and marketing.²⁴ Processing (examples: consumer electronics assembly; cutting and sewing of apparel based on imported fabrics) drove China's big expansion of trade in the 1990s, accounting for as much as 55 percent of exports and more than 45 percent of imports by the end of that decade, and is seen as a success in no small part because it addressed the problem of expensive imported inputs. Its decline since then, to fewer than 45 percent of exports and 30 percent of imports by 2011, is *prima facie* evidence of the migration of additional business functions (international marketing and distribution) to China-based entities.²⁵ Other trade-related indicators of upgrading include:

- increased domestic value added of exports associated with the shift away from processing—although the picture is complicated by the increasing domestic value content of processing exports from levels as low as 20 percent in the second half of the 1990s and decreases for ordinary exports from levels as high as 95 percent as more advanced imported intermediates have been plugged into ordinary Chinese exports;
- increased share of total high-tech exports that are non-processed (although much of the increase is due to MNCs' China operations—Siemens, GE, Airbus, etc.).

Upgrading by Chinese competitors also obviously presses their vertically differentiated MNC competitors.

There are other reasons as well, though, for the pressures experienced by MNCs in China in recent years. To understand them, and to make sense of some additional features of competition in and out of China, one has to move beyond Sutton's baseline model.

6 Extensions

One of the additional reasons MNCs have experienced significant pressure within China in recent years—and which we wrote about in a *Harvard Business Review* article under the title “Whose Technology Is It?”²⁶—has to do with pressures exerted by the Chinese government on MNCs to transfer technology to Chinese entities through mandatory transfer requirements; high duties on imported MNC intermediates; limitations on access to public procurement markets; and so on. As we wrote back then, “Foreign companies dominate most of China’s high-tech industries, accounting for 85 percent of the high-tech exports from China in 2008 ... Exports of cellular telephones and laptops, for instance, had less than 10 percent Chinese content—and foreign-owned factories accounted for most of it.”²⁷ This dominance prompted Beijing in 2009 to designate ten pillar industries—including high-speed air and rail transportation, clean power generation, and IT—as part of its Indigenous Innovation initiative aimed at increasing “created in China” technology content. Beijing sees these as China’s next generation export industries once revaluation of the renminbi makes current low-tech exports uncompetitive. For targeted industries, the government has issued sets of complex and shifting rules limiting foreign investment ownership, restricting market access, and insisting on local content and the transfer of proprietary foreign technology to state-owned companies and agencies.

Since then, there has probably been some upgrading of the relative status of Chinese private companies in this technology transfer thrust, for example in LED lighting where China is showing a trajectory much like it did earlier in solar panels. But the overall effort itself is state-led and orchestrated—and continues. So this is a reminder of the proposition—obvious perhaps, but not included in Sutton’s baseline model of competition in capabilities—that **state policy can, and sometimes does, appear to matter a great deal in its influence on outcomes**, for example in fast rail and wind turbines where state-owned enterprises (SOEs) dramatically first grew market share in China, then in other emerging markets.

Most SOEs in China are protected oligopolies and do not compete directly with MNCs so vertical capability differences are opaque but other evidence suggests they can be significant. Illustratively, China only recently commissioned its first aircraft carrier, reflecting its weakness in complex systems including design and operational coordination among ship, avionics, aircraft, escorts, remote refueling, personnel skill, and distributed decision making. US carrier operations are built on public/private capability partnerships; China’s almost solely on public. Elsewhere, some SOE capability bright spots appear, for example in aluminum smelting and domestic cell phone operators.

A second extension has to do with the notion that local companies can hold significant home court advantages, that MNCs can suffer some relative disadvantages. In Sutton's baseline model, local firms are not able to do anything that vertically differentiated MNCs cannot: rather, the latter chose not to emulate the former because they would only reduce their profitability by doing so (in models of vertical differentiation, more vertically differentiated positions yield higher operating margins). But looking at competition within China, there does seem to be evidence of scarce capabilities not just toward the top of the quality ladder—Sutton's point—but also lower down in a way that creates opportunities not necessarily available to MNCs:

- *cultural attunement* or the internal ability to spot (and address) emerging segments faster than MNCs. Local consumer goods companies employ more eyes and ears, especially “nonstandard” types such as fast-moving opportunists, and rely less on brand recognition and more on capturing emergent market space and customers in transition. Chinese housewives' disaffection with food contamination is an example: small, clean Chinese companies registered some overnight successes as a result. For example, Joyoung in Shandong province created a home soy milk maker which presses fresh soybeans into juice, giving homemakers an alternative to pesticide-contaminated soy milk in supermarkets. In five years, this machine became a \$300 million business. Another example is Chinese-owned popular-priced restaurant chains like Hai Di Lao upstaging traditional leaders like US-based KFC with more varied regional menus and creative service packages for diners;
- *administrative ties* or favoritism: local companies often have an advantage over MNCs in mobilizing around new opportunities as they know local party-state gatekeepers, can offer them quid pro quos including some benefits that MNCs' ethical codes preclude, and are benefited by China's industrial and trade policies that explicitly favor local producers. For example, Sany took over volume leadership from Komatsu in excavators and ready-mix concrete trucks by selling to small leasing companies (as opposed to large regional contractors, the traditional customer), which in turn rent their equipment to small, local contractors who get public projects through connections. Sany navigates this contracting landscape better than MNCs;
- *geographic clustering*, which makes local capability pools more than the sum of their parts because of spillovers. China's early export successes like lighters, toys, and shoes were almost all from clusters with good availability of complements; local authorities that helped entrepreneurs access resources; and intense local competition at the end product level. Many China exports are still clustered, e.g., auto parts and solar panels. Thus, the city of Wuxi is home to Suntech, Konca, and Jietion Holdings—all major solar players.

Cultural	Administrative	Geographic	Economic
<p>Disadvantages in achieving a local face: language, tradition, identity (TV prog. vs. content)</p> <p>Disadvantages at catering to preferences (heterogeneity) (horizontal distance²⁸)</p> <ul style="list-style-type: none"> • Idiographic tastes (Shi storage, beer, alcohol) • Design diff. (house appliances) • Differences in standards (electrical equipment) • Differences in skypackages (processed foods) • Differences in target segments (portable radio/cassette players in U.S. vs. Japan) <p>Entrenched tastes for local products</p> <p>Local tastes in demand ("buy local" campaigns)</p> <p>Lack of social connectivity networks</p>	<p>Host government discrimination against foreign products/firms. Generally most likely when:</p> <ul style="list-style-type: none"> • High governmental involvement <ul style="list-style-type: none"> - regulation (healthcare) - procurement (building construction) - political influence (TV broadcasting) - state ownership (infrastructure) - assisted national champions (airspace) - national security concerns (telecommunications) • Organized domestic resistance to displacement (agriculture, services) • National patriotism effects (natural resources) • Sociocultural/strategic character (automobiles) • Asset specificity and the scope for holdup problems (infrastructure) <p>Negotiations with host government hindered by activities in the world (e.g., Israel and China or the Dubai Lamas)</p> <p>Constraints imposed by host government (e.g., on bribery)</p> <p>Multiple regulatory requirements</p> <p>Fluctuates to home-host relation (e.g., Microsoft in China)</p>	<p>High transport costs. Generally most likely when:</p> <ul style="list-style-type: none"> • Low value to weight/bulk • Hazards/differences in transportation • Perishability <p>Lack of required transportation/communications infrastructure</p> <p>Intense local supervision requirements</p> <p>(Other local prod. requirements for value activities (money services))</p>	<p>Cost disadvantages (e.g., labor, high costs, infrastructure/transportation)</p> <p>Know-how disadvantages if differences in suppliers, channels, business ops. or eq.</p> <p>Lack of appropriate technology</p> <p>Disadvantages at providing variety/quality/commitment</p> <p>Incapability to global pricing responses (e.g., suppliers to soft drink manufacturers, retailers)</p> <p>High opportunity costs or hurdle rates (e.g., home shareholders unfamiliar with local markets)</p> <p>Eff. of local competition from tough selection environments, dilution of profitability by expanding there</p> <p>Late-mover disadvantages</p> <p>Less perceived commitment to a particular market</p>

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Figure 8 Possible disadvantages for MNCs vs. local companies

Source: Pankaj Ghemawat, *Redefining Global Strategy* (Harvard Business School Press, 2007, p. 57). Reprinted by permission of Harvard Business Review Press. Copyright ©2007 by the Harvard Business Publishing Corporation; all rights reserved.

In addition to specifying some influences on relative competitive position that go beyond vertical distance, this (partial) list also starts to suggest an integrative way of thinking about the kinds of considerations captured in Sutton’s baseline model and the extensions highlighted in this section. It is useful to begin by noting that Sutton’s model of competition among firms from different economies is based on differences in country income and resultant

differences in capability levels that lead to different “quality” levels, where high quality underpins price premia and the viability of higher-wage firms. In other words, the positions of firms from different countries change over time in just three variables: (vertical) quality, in which more is always better, wages, and productivity. This structure ignores country differences other than economic and specifically, income-related ones: the cultural, administrative, and geographic distances referred to in the three bullet points above. Many of these components of distance involve horizontal rather than vertical distance, which suggests one way of thinking integratively about them. **The cultural, administrative, geographic, and economic (CAGE) distance framework originally proposed in Ghemawat²⁸ suggests modeling international differences in terms of cultural, administrative, and geographic distances between countries—which typically involve horizontal distance—as well as economic distances that include the vertical dimension focused on by Sutton.** Since this framework has already been discussed extensively elsewhere, it will not be reproduced here. Take a look, instead, at a direct application to the question with which this section began: the kinds of disadvantages that multinationals might face with respect to local companies (see Figure 8).

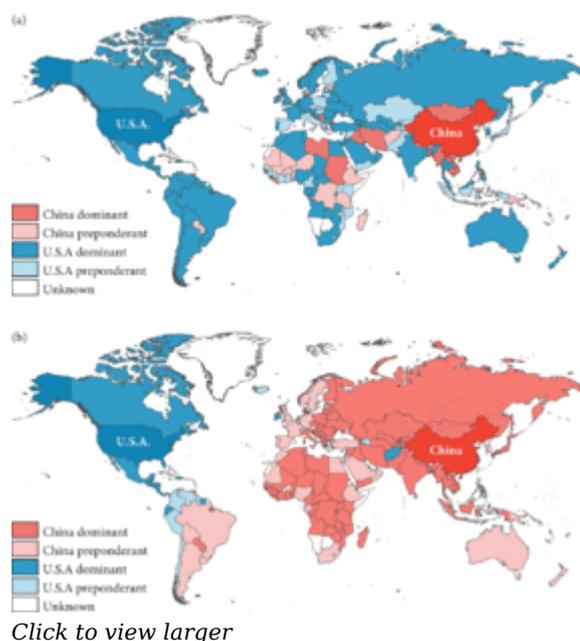


Figure 9 (a) US vs. China export dominance, 2000.
(b) US vs. China export dominance, 2012

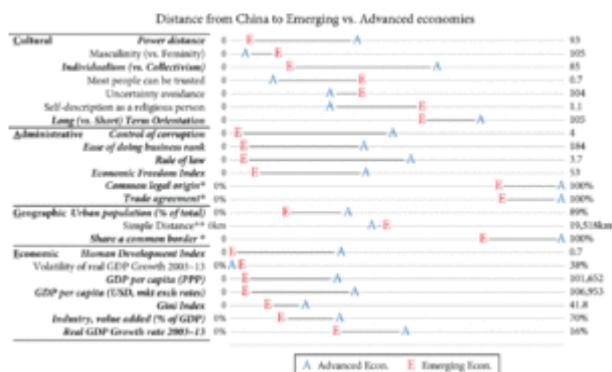
Note: China dominant implies Chinese exports to a country are more than double the US exports. China preponderant implies that China's exports to a country exceed, but are less than double, US exports. US dominant and US preponderant are defined similarly.

Source: IMF's Direction of Trade Statistics (DOTS).

Looking outside, some of the markers of horizontal distance between China and the West also seem to imply relative proximity for China with emerging economies and account for its relative success exporting to them. As Figure 9a and 9b show, the 2000–2012 period has seen a huge shift. Back in 2000, 60 percent of countries in our sample imported more than twice as much from the United States as from China. Now, 55 percent, mostly in the South and the East, import more than twice as much from China.

Digging a little deeper, most of China's machinery/

equipment exports are to other emerging markets, and are mostly business-to-business (B2B). (In contrast, most consumer goods exports are to the United States and Europe where technology transfer powered by processing trade eroded quality and productivity differences, so wage arbitrage has long driven trade—but is itself now under pressure.) Power generation equipment, fast rail rolling stock, even major home appliance exports from China go mostly to the rest of Asia, Africa, etc. While these trading partners are generally not “vertical” equals of China, vertical quality distances—across procurement processes as well as product/offer levels—from China seem significantly fewer than from the advanced West (in line with a general correlation with levels of income and institutional development). And it is generally reinforced by proximity to China along other, non-economic dimensions (principally related to the first three descriptors of the CAGE framework—cultural, administrative, and geographic).



Click to view larger

Figure 10 Distance from China to emerging vs. advanced economies

Notes:

For unilateral variables (labeled without *), distance from China reflects the weighted average (based on GDP) of the absolute value of the difference between China’s value for each variable and that for all other emerging and all advanced economies. Axes for unilateral variables extend from zero to the maximum difference (in absolute value) among all country pairs. Variables are sorted by China’s distance to emerging economies, from closer to further away, within the CAGE categories. Bold italics format of the variable name indicates there is a shorter distance from China to emerging economies than to advanced economies.

(*) Bilateral and binary. Defined as 1 if a country lacks a given type of commonality or proximity with China, otherwise 0. For instance, in the case of “Common legal origin,” the farther to the left the marker is, the more countries share a common legal origin with China.

(**) Bilateral and continuous. Only “Simple distance” falls into this category, and it reflects weighted average (based on GDP) of China’s geographic distance to every other emerging and to every advanced economy.

Source: Data for this figure were drawn from the following sources: Power Distance, Masculinity (vs. Femininity), Individualism (vs. Collectivism) and Uncertainty avoidance, from The Hofstede Centre; Most people can be trusted, and Self-description as a religious person from World Value Survey (wave 5 2005–2009); Control of corruption and Rule of law from World Bank Worldwide Governance Indicators; Ease of doing business ranking from the World Bank “Doing Business 2013: Smarter Regulations for Small and Medium-Size Enterprises”; Economic Freedom Index from the Heritage Foundation Economic Index of Freedom 2013; Common legal origin, Trade agreement, Share a common border, and Simple distance from Centre d’Études Prospectives et d’Informations Internationales (CEPII); Urban population (% total), Gini Index and Industry, value added (% of GDP) from World Bank World Development Indicators; Volatility of real GDP Growth 2003–13, GDP per capita (PPP), GDP per capita (USD, mkt exch. rates) and Real GDP growth rate 2003–2013 from IMF World Economic Outlook Database (April 2014).

The broader implication of recognizing the importance of horizontal as well as vertical distance is that it suggests that even controlling for (vertical) quality and productivity differences, there may be more than one best place for making something. And indeed, Sutton’s analysis of vertical differentiation can be superimposed on models of horizontal spatial competition to show that horizontal distance causes variations

in the lower end of the window of viable capabilities, with requirements being somewhat relaxed in “exotic” markets and likely to be met by local competitors in markets that are also large. So both those attributes of the Chinese market matter: its size but also its large horizontal distance, along many dimensions and sub-dimensions from the West (although Japan is a bit closer), as summarized in Figure 10.

China’s administrative (as well as economic) similarity to other emerging economies is particularly striking. Across all of the types of administrative and economic distance measured in Figure 10, except the volatility of its GDP growth, China is more similar to other emerging economies than it is to advanced economies. Geographically, China is also closer to other emerging economies except with respect to simple geographic distance—and even that comparison is reversed if Japan is excluded from the analysis. Culturally, there is a mixed pattern, with China sharing, for example, high power-distance and collectivism with other emerging economies, while having higher generalized levels of trust and lower religiosity more typical among advanced economies.

A final extension to Sutton’s baseline model which will be highlighted here relates to what an expanded conception of the space of international differences implies for the space of international (or global) strategies. In Sutton’s model of vertical distances, there is just one strategic imperative for firms, whether high-wage or low-wage: vertical upgrading. This is a non-trivial conclusion from what is, in many respects, a general model of international competition and therefore important. But it does focus on a small

subset of distances—only income differences, really—and so should be augmented in strategy- as well as distance-space.

We find it natural to **turn to the adaptation, aggregation, and arbitrage (AAA) strategies that Ghemawat originally developed to categorize firm-level responses to CAGE distances across countries.**²⁹ **The AAA strategies embody a broader set of possible responses to a broader range of differences across countries than just vertical distance—one that encompasses horizontal distance as well.**

More specifically, *adaptation* to achieve local responsiveness is neither necessary nor feasible—except in terms of vertical positioning—in Sutton’s model. Also missing are regional and other *aggregation* strategies aimed at achieving cross-border economies of scale and scope—even though regional groupings often account for 50 percent–60 percent of most international flows,³⁰ and the vast majority of even the Fortune Global 500 derive the bulk of their sales from their home region.³¹ The problem with pure verticality is that there is no sense of countries—provinces even—being located in multidimensional space at varying distances from each other. All that are allowed are variations in position along a unidimensional (vertical) continuum, without any other obvious way for countries A and B, say, to be closer to each other and better candidates for aggregation, than to country C, which is far from both. Finally, *arbitrage* to exploit differences does appear in Sutton’s model, but it is of a specific economic sort. There is no provision, for instance, for international expansion based on cultural arbitrage (e.g., the advantages of French origins in perfumes or Italian in luxury handbags) or for that matter, of administrative arbitrage (across differences in tax or regulatory systems, for example). Yet when one actually looks at competition in and out of China, one observes the broad range of AAA strategies. And conceptions of horizontal distance are essential to making sense of some of the patterns observed, e.g., China’s dominance of exports to the rest of Asia and Africa.

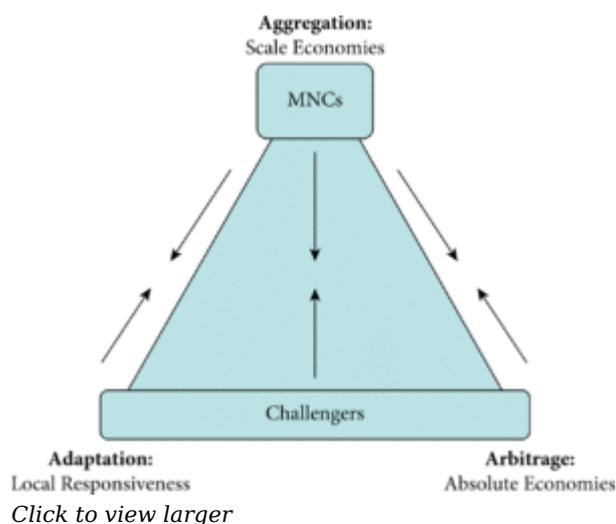


Figure 11 Adaptation, aggregation, and arbitrage strategies and multinationals vs. challengers

Source: Authors.

Beyond articulating a range of strategic possibilities, the AAA setup suggests a structure for thinking about the interactions between MNCs and local challengers in emerging economies (see Figure 11).

The graphic evokes for us as much as anything else a race toward the middle, even though neither side is likely to give up entirely on its initial type(s) of advantage. In this race

toward the middle, MNCs try to get more adapted to China or to arbitrage more effectively out of China if attention is focused on the globalization of production rather than the globalization of markets (or, obviously, both). All this takes organizational patience, attitudinal changes, and considerable investment in the development of locally relevant capabilities. Some MNCs succeed, but many continue to struggle with this AAA balancing act, since in striving to adapt and arbitrage, they cannot give up on aggregation, which remains their key strength relative to local competitors. (Of course, not all MNCs fit this typical profile. For example, Philips was more oriented toward adaptation than aggregation for decades given its strong country-centered management structure—leaving it vulnerable to efficient aggregators such as Matsushita.)

Meanwhile, local challengers continue to cultivate the adaptation and/or arbitrage advantage/s that got them started but also often typically have to make a start at aggregation en route to becoming truly multinational, i.e., to competing on an equal strategic footing with existing MNCs. This is unless, of course, the challengers elect not to become multinational or have some other attribute that renders the additional A of aggregation unnecessary (e.g., an arbitrage strategy sustained by proprietary access to cheap resources, as in the case of Gazprom and Russian natural gas). Otherwise, bulking up on one or more intangibles with cross-border applicability—marketing, technology, and, in many cases, management capabilities—is indicated.

The notion of this kind of dynamic at work, in which both types of firms face a range of competitive outcomes based on strategic choices, new capabilities, and execution

prowess as well as basic industry conditions is consistent with, or certainly not contradicted by, the analysis of competition within China presented in Section 3.

7 Summary

Company examples as well as cross-industry evidence have been used to make the points that looking at MNCs' interactions with local firms in the largest such lab, the Chinese market, suggests that both Sutton's moving window of viable capabilities gets at a real dynamic of real interest, but also that much of what is observed suggests the criticality of bringing horizontal differences back into the picture. Three specific propositions about China were advanced in this regard (see bold text in Section 5). First, state policy can and sometimes does appear to matter a great deal in its influence on outcomes. Second, the CAGE distance framework originally proposed by Ghemawat suggests modeling international differences in terms of cultural, administrative, and geographic distances between countries—which typically involve horizontal distance—as well as economic distances that include the vertical dimension focused on by Sutton.³² Third, the AAA strategies—adaptation, aggregation, and arbitrage—that Ghemawat originally developed to categorize firm-level responses to CAGE distances across countries embody a broader and useful set of possible responses to the broad range of differences across countries. And since implementation of these strategies requires firms to do things that they have not previously done, success in this regard depends on dynamic capabilities in sensing opportunities, seizing them, and transforming how businesses compete.

Acknowledgements

We are grateful to the editors and Jordi Olle Garmendia for helpful comments on an earlier draft.

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⁽⁴⁾ David J. Teece, Gary Pisano, and Amy Shuen, "Dynamic Capabilities and Strategic Management," *Strategic Management Journal* 18(7) (1997): 514–515.

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(⁹) For more on gains from globalization, see chapter 4 of Pankaj Ghemawat, *World 3.0: Global Prosperity and How to Achieve It* (Boston, MA: Harvard Business Review Press, 2011).

(¹⁰) Gary P. Pisano, "Searching for Dynamic Capabilities: A Need for New Directions." Harvard Business School Working Paper, May 22, 2015 (unpublished).

(¹¹) Thus, according to Sutton, *Competing in Capabilities*, 181, companies from sub-Saharan Africa have mostly yet to follow leading companies from China and India in "moving into the window" of viability.

(¹²) This 40 percent is based on analysis of China's contribution to emerging economies' shares of world totals shown in Pankaj Ghemawat and Steven A. Altman, "Depth Index of Globalization 2013," (2013), Figure 1.5. Available at: <http://www.ghemawat.com/dig/>, accessed 6 Feb 2016.

(¹³) Peter K. Schott, "The Relative Sophistication of Chinese Exports," *Economic Policy* 23(1) (2008).

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(¹⁷) Brandt et al., "China's Industrial Development", applies Sutton's analytical framework to China's industrial development, but focuses primarily on using it to interpret how Chinese competitors have emerged and upgraded over time rather than focusing, as we do, on competition between them and MNCs from advanced economies.

(¹⁸) European Chamber, *Business Confidence Survey 2014*, Beijing: European Chamber Publications (2014).

(¹⁹) Pankaj Ghemawat and Thomas Hout, "Tomorrow's Global Giants? Not the Usual Suspects," *Harvard Business Review* 86(11) (2008).

(²⁰) Richard Dobbs et al., "Playing to Win: The New Global Competition for Corporate Profits," September (2015). Available at: http://www.mckinsey.com/insights/corporate_finance/the_new_global_competition_for_corporate_profits, accessed 6 Feb 2016.

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