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Compact organizational space and technological catch-up: Comparison of China's three leading automotive groups

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ABSTRACT

This study examines why compact organizational space may matter for technological catch-up, through a comparison of China's leading automotive groups. The comparative analysis demonstrates that the Shanghai Automotive Industry Corporation (SAIC) surpasses its two local rivals in terms of technological capabilities partly because the firm has managed its organizational space in close connection with intensive growth strategies at the group level. SAIC has greatly benefited from compact organizational space in building technological capabilities, as it encourages the mobilization and integration of internal resources and promotes group-wide synergy for an effective internalization of acquired assets.

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"[I]n the next century, our nation's position in the international economic order will be, to a large extent, determined by the position of our nation's large enterprises and groups."

– Wu Bangguo, former Vice Premier of China¹

1. Introduction

Does compact organizational space matter when latecomer firms are trying to build in-house technological capabilities? Here, I use the term *compact organizational space* to conceptualize the organizational climate of a business group, whose affiliated firms maintain close proximity through active interactions, collaboration, and resource-sharing for group-wide common goals.

The majority of the latecomers with global recognition are business groups (Colpan and Hikino, 2010). In the context of developing countries, the business group is often understood as an

institutional means to technological catch-up (Lee, 2006), beyond an organizational form emerging as a passive, firm-level response to the underdeveloped market environment (Khanna and Palepu, 2000). Successful East Asian latecomers, in particular, have demonstrated that market entry into capital and knowledge-intensive sectors can be managed successfully under the business group structure, which offers critical advantages in organizational learning, internal-resource mobilization, and market-risk management (Amsden, 2001).

Leading market performers in China are also multi-unit enterprises (Lee and Jin, 2009). A catch-up motivation underlies the emergence of Chinese business groups, although they differ from their East Asian predecessors, in terms of less diversified business domains and dominant state ownership (Keister, 2000). China's automotive sector offers a good example. The sector's major constituents were once state-owned enterprises (SOEs) with single manufacturing plants, but have become business groups as a result of their catch-up strategy, involving various knowledge and efficiency-seeking activities (Nam, 2011).

The business group, however, should not be seen to guarantee improved technological capabilities, as it is a means to technological catch-up, not the catch-up itself. An effective use of the

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¹ Quoted in Nolan (2001), p. 17.

tool depends largely on the capacity of those who utilize it. So far, the organizational transformation of China's leading automakers into multi-unit enterprises has been spurred by international joint ventures (IJVs) and intra-industry mergers, expanding their organizational space dramatically. This may suggest that internal resources and skills that can be utilized to enhance in-house technological capabilities are dispersed across multiple sub-operational units. Accordingly, mobilization or integration capacity for such internal resources at the group level may have arisen as a crucial determinant of overall technological performance.

Despite the plausibility of this scenario, the literature is sparse on the topic. Most studies that explore similar hypotheses focus on Japanese or Korean cases, which differ from their Chinese counterparts in several key characteristics. In addition, many analyses of Chinese industries or business groups have different foci, highlighting government policy or foreign direct investment (FDI) as primary determinants of cross-firm performance variations, while largely neglecting firm-level managerial practices. This study is motivated to fill this gap.

2. Theoretical framework and method

2.1. Proximity and compact organizational space

As mentioned earlier, the term *compact organizational space* is used to describe the degree of proximity among affiliates of a business group. By "proximity," I primarily mean geographical and organizational proximity, although the concept can extend to include cognitive, institutional, and social dimensions (Boschma, 2005). The potential contribution of compact organizational space – or geographical and organizational proximity among group affiliates – to technological catch-up at the group level is hinted at in the literature.

Geographical proximity – or "the extent to which multiple collaborating actors can have daily face-to-face relations without prohibitive costs" (Capello, 1999, p. 357) – can facilitate access to knowledge and spread of best practices at the group level. Face-to-face interactions can raise the efficiency of organizational learning or technology transfer substantially, as knowledge is by nature tacit and non-codifiable. Geographical proximity may also generate unintended knowledge spillover from local labor pooling. However, geographical proximity is not sufficient for effective inter-organizational learning. Certain organizational ties are essential, since relational capital, knowledge, and other intangible assets, if substantially territorialized, are often available to the insiders only (Kirat and Lung, 1999). Also, automatic sharing of such assets among different sub-operational units of a business group should not be assumed (Amsden and Hikino, 1994).

Organizational proximity refers to the situation where organizations belong to the same relational space or share a common reference space or knowledge base (Torre and Gilly, 2000). In general, organizational proximity enhances inter-organizational learning, as it tends to expand collective capacity for knowledge transfer and integration (Burmeister and Colletis-Wahl, 1997). In a multi-unit enterprise setting, the same term may be understood

as "the proximity between employees of a multi-plant firm who identify with each other as a result of belonging to the same firm and of their knowledge of firm-specific routines" (Schamp et al., 2004, p. 609). If a business group includes quasi-independent sub-operational units, such as IJVs, its organizational proximity may be challenged (Nam, 2011).

2.2. Hypothesis

My main hypothesis is that compact organizational space benefits business groups as a promoter of technological catch-up, as it can blur the boundaries across group affiliates and can reduce costs of mobilizing internal resources and internalizing external resources.

Once a firm established access to external knowledge or capabilities, what matters next would be their effective utilization, in combination with other internal complementary assets. In particular, the key to successful catch-up is creating a mutually reinforcing, interactive circle among the three components of technological capability – production, project execution, and innovation capabilities (Amsden and Hikino, 1994). A main limitation of China's IJV model is that the IJVs, despite their contribution to increased local production capability, have constrained the channel through which the increased production capability can be utilized to nurture project execution and innovation capabilities (Nam, 2011). A recent case study of China's outward FDI demonstrates that an effective relaxation of the constraint would require a consistent and careful firm-level strategy, beyond public interventions such as industrial policies (Nam and Li, 2013). In this context, I focus on the potential role of compact organizational space as one effective relaxer of the constraint, particularly when the firm is a business group.

2.3. Method

To test my main hypothesis, I conduct a comparative case study of China's three leading automotive groups: the Shanghai Automotive Industry Corporation (SAIC), the First Automotive Works (FAW), and the Dongfeng Motor (DFM) Group. The rationale for the method is that these three firms differ in terms of in-house technological capabilities and organizational space characteristics, while sharing some key aspects which I want to control for.

More specifically, SAIC, FAW, and DFM are similar in the following four respects. First, all three firms are China's oldest automakers, with over a half century of vehicle-manufacturing history (Table 1). Second, all have achieved comparably high economies of scale. As of 2012, their aggregate passenger vehicle market share reached 58%, and each of the three firms has already developed a passenger-vehicle production capacity exceeding two million units a year. Third, the Chinese central government has picked these three firms as major beneficiaries of its automotive policy and has treated them preferentially in a comparable manner. Finally, all three firms have used the IJV arrangement to access advanced vehicle-manufacturing technology.

On the other hand, the three firms have adopted different growth strategies, particularly in the ways to manage their

Table 1
Overview of China's big three automakers.

	SAIC	FAW	DFM
Ownership	Shanghai Municipal Government	Central Government	Central Government
Annual passenger vehicle production in 2012 (units)	4.2 million	2.4 million	2.5 million
Passenger vehicle market share in 2012	26.9%	15.6%	15.9%
Year of establishment	1958	1953	1964
First year of mass production of modern passenger vehicles	1985	1990	1992
Own passenger-vehicle brands	Roewe, MG	FAW, Xiali, Haima	Fengshen

Source: Data from Fourin (2013) and each firm's official website.

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