Chinese pharmaceuticals: does sub-national marketisation matter? Evidence of cross-province acquisitions by Guangdong pharmaceutical firms

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Abstract: This article assesses the influence of sub-national marketisation on the equity share choice in mergers and acquisitions. Focusing on domestic acquisitions, we examine the relationship between marketisation of the target firm and the acquirer firm’s equity share choice by Guangdong (GD) firms in pharmaceuticals. Our sample consists of 53 domestic acquisitions in China of which acquirers are located in GD province and targets are located all over China. Findings confirm that differences exist in equity share choice based on different sub-national marketisation within China. Sub-national marketisation has significant association with equity share in cross-province acquisitions. An acquirer will more likely opt for partial shares in the acquired firm than full shares when acquiring a firm across provinces.

Keywords: sub-national marketisation; merger and acquisitions; equity share; pharmaceuticals; China.
1 Introduction

The choice of equity share has long been considered an important decision that influences “the control over the venture, the effective transfer of tacit assets, investment requirement, and risk” (Chari and Chang, 2009). The entry mode literature has described entry by acquiring 100% equity in firms as full acquisition, and entry by acquiring less than 100% equity in firms as partial acquisition. The acquired equity share choice in cross-border mergers and acquisitions (M&As) is crucial, but it still has not received much research attention because such a decision is always described as a type of joint venture or as an equity alliance (Chen and Hennart, 2004). However, entry into different markets through M&As should be considered as a distinct category of entry mode and differences in the acquired share of equity should be further studied and tested (Chari and Chang, 2009). In particular, the determinants of ownership-based entry mode strategies in cross-border M&As from emerging economies have not drawn adequate attention in the literature.

China provides a good context for testing this argument, because the nation varies significantly across its sub-national regions (Hoskisson et al., 2000; Wright et al., 2005; Di Tommaso et al., 2014; Rubini et al., 2015), especially in terms of marketisation among provinces, which affects to a different extent costs, opportunities and therefore strategic decisions as well as performance (Ma et al., 2013; Lan et al., 2013; Di Tommaso et al., 2013; Huang et al., 2015; Zheng et al., 2016). These differences across its sub-national regions, typically provinces, mainly result from institutional factors since the Reform and Open Policy in late 1970s, instead of natural endowments (Yin and Cai, 2001), and such diversification materialises in a context characterised by market fragmentation (Young, 2000; Poncet, 2005). China’s market segments further lead to heterogeneity in the marketisation across provinces, which in turns generates numerous institutional constrains on cross-province M&As (Boisot and Meyer, 2008). Researchers have largely agreed that institutions do matter (North, 1990; Scott, 1995; Acemoglu et al., 2001), and
many of them found out ‘how’ they matter, i.e., ‘under what circumstances, to what extent, and in what ways’ they do influence strategic choice (Powell, 1996; Peng, 2003; Peng et al., 2008). However, the issue of how the variation of such institutional factors can affect the choice of the share acquired in M&As has remained untested.

The purpose of this study is to explore the factors that determine the acquired share in M&A within China considering the impacts of heterogeneity in marketisation across provinces. Drawing on transaction cost economics theory (TCE) and institutional theory literatures, as well as the logic of economic geography literature, our study aims to examine how, and to what extent, sub-national marketisation affects the share acquired in M&As by firms from a specific province, i.e., Guangdong (GD), operating in the pharmaceutical sector. GD has been one of the most marketised provinces since the Reform and Open Policy starting from late 1970s according to the most cited evaluation of marketisation index raised by Chinese scholars (Fan et al., 2007; Rubini and Barbieri, 2013). In this framework, GD firms’ strategic decisions concerning M&As – including whether to acquire, who, when and how many shares to acquire – might be influenced to a lower extent by government intervention. Therefore, the dynamics concerning GD firms represent a suitable case in order to examine the significance of the institutional factors on the acquisition shares caused by the cross province heterogeneity in marketisation, controlling for other kinds of government inventions or institutional factors. Further, our study selects the pharmaceutical industry given that in such sector M&A is the mostly common used way of firms to acquire outside technology and innovation. For instance, M&A deal making in the Healthcare sector worldwide totalled 672.9 billion USD during 2015, which has the largest amount of transaction value among all sectors (Thomson Reuters, 2015). Considering China, the number of domestic M&A deals by firms from the bioengineering and the pharmaceutical sector ranked third among all sectors in 2015 (National Bureau of Statistics of China, 2015). In this regards, it is worth stressing that GD represents one of the most important provinces. In 2013, among all the deals in bioengineering and pharmaceutical sector all over China, the number of acquirers from GD is the largest (National Bureau of Statistics of China, 2015). In addition, with respect to the development of pharmaceutical sector, GD is one of the leading provinces in China in terms of output and performances. The sales value reached 129 Billion RMB, consisting of 5.56% of the whole China pharmaceutical sector in 2014. In addition, in the pharmaceutical sub-sector of traditional Chinese medicine, GD accounted for 65.04% of the total export value of China (China Industry Economy Statistical Year Book, 2015).

2 Literature review

2.1 Equity share decision in cross-border M&As

The prior literature about entry mode has distinguished between two forms of acquisition: partial and full. An acquisition involving the purchase of 100% equity is referred to as full acquisition, while a purchase of less than 100% equity is referred to as partial acquisition (Barkema and Vermeulen, 1998). The choice between the two forms is the consequence of different considerations (Chen and Hennart, 2004). For example, full
acquisitions involve the sole purchase of target firms and enable acquiring firms to obtain a complete control of invested assets and returns. Partial acquisition brings instead both advantages and disadvantages, such as the opportunity to share investment and risk and the lack of a complete hierarchical control over the target firms, the potential opportunism of partners and the inability to fully integrate the operations of target firms (Anderson and Gatignon, 1986; Hennart, 1991; Kogut and Zander, 1993).

Based on the TCE and on the institutional theory, prior literatures on the decision of equity share in M&As have shown that factors at the country level such as institutional or cultural distance (Contractor et al., 2014; Tihanyi et al., 2005; Malhotra et al., 2011) and factors at the industry level such as industry unrelatedness (Chari and Chang, 2009; Contractor et al., 2014) are significantly related to ownership participation. Furthermore, a full acquisition of a local target firm allows foreign investors to acquire and access complex and organisationally embedded knowledge (Barkema and Vermeulen, 1998), together with a complete access and control of a local firm (Meyer et al., 2009). According to some scholars, shared and full ownership modes can be considered as two opposing poles on a continuum, with different implications for the firm’s level of control, commitment of managerial and financial resources, and risk. As firms move from shared to full ownership modes the control, commitment, and risk increase (Anderson and Gatignon, 1986; Erramilli and Rao, 1990). Likewise, TCE suggests that a higher level of control is needed to reduce the transaction costs (Madhok, 1997). A wrong choice in the equity share may result in problems and mistakes such as mismatch between acquiring and target firms and difficulties of integration of target firms (Lahiri et al., 2014).

2.2 Sub-national marketisation

Marketisation is defined as the degree of market-based mechanism development and the preference towards institutions allowing to achieve a more efficient market (Cuervo-Cazurra and Dau, 2009; Fan et al., 2007; Henisz et al., 2005). Differences in the marketisation degree exist among sub-national regions, which demonstrate that territories have different institutions, both formal and informal ones. While the topic of within-country (sub-national) institutional differences is a traditional question in the economic geography research field (Coughlin et al., 1991), it has been introduced into the international management literature very recently (Chan et al., 2010; Meyer and Nguyen, 2005), focusing particular on differences at cross-country level (Meyer et al., 2009).

China provides a good context for sub-national marketisation research. First, it has a large number of sub-national regions (provinces) that demonstrate a significantly diverse institutional landscape (Chan et al., 2010). These are both in terms of informal differences, such as their own cuisines, customs, dialects, and sometimes languages and as regards formal institutions, such as market-related policies. Second, the literature on China has developed rapidly in international business field. In the past decades a lot of studies have explored the ownership choice in China through different views (Michael et al., 2009; Jefferson et al., 2000), while there are very few scholars paying attention to the factors of sub-national marketisation. Our focus on the level of sub-national will help us make additional progress along this line of research.
3 Hypothesis

In large and complex emerging economies, sub-national institutional differences are significant because they both constrain and facilitate the strategies pursued by foreign entrants and domestic firms (Chan et al., 2010; Meyer and Nguyen, 2005). As regards marketisation, institutions can facilitate or constrain market exchanges by reducing or increasing the transaction costs involved in these exchanges (North, 1990). Within emerging economies, firms have to acquire local knowledge on how to operate in the unfamiliar informal and regulatory environment (Peng et al., 2008), which is very costly.

As already mentioned, China has a large number of provinces which vary from each other in many aspects. Province-level differences in marketisation are the result of a divergence in the local government deregulation efforts and of the different degrees of market efficiency across territories (Fan et al., 2007). In addition to the differences in the level of marketisation, other factors such as the local norms and practices, the informal connections with local authorities, and other non-market protection mechanisms are likely to exert a significant role in diversifying firm’s doing business activities across provinces (Shi et al., 2012). Furthermore, the Chinese provinces show a considerable heterogeneity in the dysfunctionalities of the financial markets and other market institutions, thus differentiating the territorial incentives with respect to the attraction of M&As. On the other hand, within the same province, the market is revealed to be fairly homogeneous with quite similar formal and informal institutions. In this perspective, we assume that the province is the correct unit for our analysis to catch the difference of sub-national marketisation. Therefore, cross-province M&As in the Chinese context are constrained by different levels of marketisation across provinces as a result of different institutional contexts. In this context, when the difference is huge, i.e., institutional distance is very large (Kostova and Zaheer, 1999), the market exchange costs are likely to dramatically increase as the market entry through M&A is associated with greater uncertainty and unfamiliarity.

In order to reduce the uncertainty and unfamiliarity and mitigate the exposure to risks, prior literatures focuses on two distinctive explanations related to the choice of acquired share of M&As, even though they are both based on TCE. One stream argues that acquirers prefer a greater strategic and operation control over the target (Broutghers, 2002; Contractor et al., 2014), so as to maintain the same institutional logic within the organisation (Besharov and Smith, 2014). Especially in an emerging market like China that has less stringent accounting standards, fewer legal requirements surrounding listing and registration in a stock market (Marosi and Massoud, 2008), decision makers should be more cautious when conducting M&As. At the same time, in order to eliminate information asymmetry with target firms, when entering a different market with different degree of marketisation, acquiring firms have to invest more for higher involvement of governance and control. On the other hand, the other stream advances that entering into a new environment with high uncertainty and risk, particularly in the case of M&A, the acquiring firm prefers to seek for and then cooperate with local players so as to lower the unexpected transaction cost. In this case, the acquiring firm would reduce its share of ownership opting for a partial acquisition and operating in conjunction with a local partner (Duarte and Garcia-Canal, 2004) to exploit the advantages of higher flexibility and lower exit costs than in full shares (Hill et al., 1990).
In summary, prior studies of M&As between countries suggest contrasting results, even within the same logic of TCE. Especially when looking for insight of China’s diverse level of marketisation among provinces, which is untested before, we argue that this relationship requires specific testing. Therefore, we hypothesise the existence of this relationship hereby and further reveal its positive-negative relationship after the empirical test.

H Sub-national marketisation has significant impacts on the choice of acquired share between full shares and partial shares.

4 Methodology

4.1 Data and sample

To test our hypothesis, we collect a dataset of China domestic M&A events that was drawn from China Stock Market Accounting Research (CSMAR) database, which is widely used in Chinese research for all over the world, from August 1, 2008 to December 31, 2014. We choose acquirers located in Guangdong, with target firms’ location varied. At first, we got 1,358 events covering all sectors, then we further concentrated on the bioengineering and pharmaceutical sector and GD acquirers. In this case, we finally got 53 M&A examples in bioengineering and pharmaceutical sectors by GD acquirers, which occupied 3.9% of the total M&As by GD acquirers from all sectors.

4.2 Variables and measurements

4.2.1 Acquired share

Our analysis follows prior research that defines full acquisitions as those acquiring 100% equity share and partial acquisitions as those acquiring < 100% equity shares (Barkema and Vermeulen, 1998; Chen and Hennart, 2004). This paper aims to test the decision making when acquiring a firm. The acquired share is captured by a dummy variable assigned a value of 1 for full acquisition (100%) and 0 for partial acquisition (< 100%).

4.2.2 Sub-national marketisation

The sub-national marketisation is captured by a dummy variable assigned a value of 1 for cross-province M&A, which means that the target firm is located outside of GD, and 0 for within province M&A.

4.2.3 Control variable

In investigating the effects of sub-national marketisation on acquired share, we need to control for other variables most likely to influence this decision. Ownership is one of the most cited variables in the literature when considering the institutional impact, especially government intervention, in China (Buckley et al., 2007; Li et al., 2015). Further, given
that M&As are always considered as important strategic decisions, in order to capture the slight changes of the impacts from government, which reflects the different weight of voting power on the board, we measure ownership with a continuous variable, taking the percentage of shares held by state in the same year of the M&A event. Moreover, according to prior literatures, we control for the acquirer’s size in two measurements (Kogut and Singh, 1988; Chari and Chang, 2009). One is measured by the number of employees, and the other is measured by the amount of total assets. Third, we include the control variables of acquirer’s debt asset ratio and profitability (Barkema and Vermeulen, 1998; Chari and Chang, 2009), which are tested to have an influence on the choice of acquired shares.

5 Results

The results of our logistic regression analysis over the sample are reported in Tables 1 and 2.

Table 1 presents means, standard deviations, and correlations matrix for the variables. Sub-national marketisation and acquired share are significantly correlated at $r = -0.243$ ($p < 0.1$). We included them in separate regression models. None of the other correlations are such that they would give rise to concerns.

Table 2 represents the results of logistic regression analysis. All the models suggest that sub-national marketisation is significant at 10% level for M&As where the acquirers in Guangdong province from bioengineering and pharmaceutical sector, in line with Hypothesis that sub-national marketisation does have significant impact on the choice of acquired share between full and partial shares. Furthermore, the results reveal that sub-national marketisation is negatively associated with the choice. That is, a GD acquirer in bioengineering and pharmaceutical sector will more likely opt for partial acquisition in the acquired firm than full acquisition when acquiring a firm across-province (compared with acquiring a firm within province). These results have confirmed that a GD firm tends to prefer partial shares in order to mitigate the exposure to risks, uncertainty and unfamiliarity when acquiring target firms in other provinces of China.

With respect to control variables, the coefficient for acquirer’s ownership is significant ($p < 0.05$) and positive, indicating that firms with a higher percentage of state-owned have higher intent to opt for full shares in M&A within China. This result well illustrates another kind of influence from government invention besides the heterogeneity of marketisation cross provinces. These two institutional factors, heterogeneity of marketisation and state-owned ownership, have completely different impacts on the choice of acquired shares.

In order to make deeper understanding of these two different kinds of impacts, we incorporate the interaction of these two variables into the regression model (Table 3). The results of model 4 to model 6 reveal that the interaction variable is significant and positive, but the variable of sub-national marketisation turns to be not significant but maintains negative sign. The results indicate that when considering jointly the impacts of the degree of state-owned ownership and sub-national marketisation, the positive impacts of state-owned ownership prevails.
### Table 1

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acquired share</td>
<td>0.58</td>
<td>0.497</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>sub-national marketisation</td>
<td>0.58</td>
<td>0.497</td>
<td>−.243†</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ownership (%)</td>
<td>12.0158</td>
<td>23.68142</td>
<td>.273*</td>
<td>.117</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Size (employee)</td>
<td>3,497.92</td>
<td>4,018.993</td>
<td>.148</td>
<td>.208</td>
<td>.571**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Size (total asset)</td>
<td>3,940,160,071</td>
<td>3,251,413,903</td>
<td>.249†</td>
<td>.297*</td>
<td>.711***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Debt asset ratio</td>
<td>0.3925</td>
<td>0.23088</td>
<td>.044</td>
<td>−.072</td>
<td>.399**</td>
<td>.133</td>
<td>.252†</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Profitability</td>
<td>0.1837</td>
<td>0.13808</td>
<td>−.171</td>
<td>.227</td>
<td>−.263†</td>
<td>−.165</td>
<td>−.137</td>
<td>−.613***</td>
</tr>
</tbody>
</table>

Notes: N = 53, †p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.
Table 2  Logistic regression analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.951</td>
<td>1.986†</td>
<td>1.976</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ownership (%)</td>
<td>0.40†</td>
<td>0.041†</td>
<td>0.041†</td>
</tr>
<tr>
<td>Size (employee)</td>
<td>0.000</td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Size (total asset)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Debt asset ratio</td>
<td>−2.210</td>
<td>−2.348</td>
<td>−2.330</td>
</tr>
<tr>
<td>Profitability</td>
<td>−2.299</td>
<td>−2.411</td>
<td>−2.387</td>
</tr>
<tr>
<td>Independent variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-national marketisation</td>
<td>−1.284†</td>
<td>−1.307†</td>
<td>−1.307†</td>
</tr>
<tr>
<td>Cox and Snell R²</td>
<td>0.179</td>
<td>0.180</td>
<td>0.180</td>
</tr>
<tr>
<td>Nagelkerke R²</td>
<td>0.242</td>
<td>0.242</td>
<td>0.242</td>
</tr>
<tr>
<td>Chi-square</td>
<td>10.481</td>
<td>10.513</td>
<td>10.514</td>
</tr>
<tr>
<td>Forecast accuracy</td>
<td>67.9%</td>
<td>67.9%</td>
<td>67.9%</td>
</tr>
</tbody>
</table>

Note: †p < 0.1

Table 3  Logistic regression analysis with interaction effect

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.787</td>
<td>1.817</td>
<td>1.820</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership (%)</td>
<td>0.040</td>
<td>0.042</td>
<td>0.042</td>
</tr>
<tr>
<td>Size (employee)</td>
<td>0.000</td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Size (total asset)</td>
<td>0.000</td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Debt asset ratio</td>
<td>−2.415</td>
<td>−2.606</td>
<td>−2.611</td>
</tr>
<tr>
<td>Profitability</td>
<td>−2.355</td>
<td>−2.503</td>
<td>−2.150</td>
</tr>
<tr>
<td>Independent variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-national marketisation</td>
<td>−0.883</td>
<td>−0.912</td>
<td>−0.912</td>
</tr>
<tr>
<td>Sub-national marketisation × ownership(%)</td>
<td>0.075†</td>
<td>0.077†</td>
<td>0.077†</td>
</tr>
<tr>
<td>Cox and Snell R²</td>
<td>0.238</td>
<td>0.240</td>
<td>0.240</td>
</tr>
<tr>
<td>Nagelkerke R²</td>
<td>0.320</td>
<td>0.323</td>
<td>0.323</td>
</tr>
<tr>
<td>Forecast accuracy</td>
<td>71.7%</td>
<td>71.7%</td>
<td>71.7%</td>
</tr>
</tbody>
</table>

Note: †p < 0.1

Other control variables, such as firm size, no matter how they are measured are not significant. The coefficients for acquirer’s debt asset ratio and profitability are not significant.
6 Discussion and conclusions

This study represents both an extension and a fresh beginning in the study of the sub-national marketisation and equity share decision in M&A, and it advances our understanding of this important strategic relationship, offering some new insights in comparison with prior literature. In this article, we provide evidence to support the hypothesis that sub-national marketisation has a relationship with equity share in cross-province acquisitions. We chose acquisitions of targets all over China and acquirers located in GD province as the context for this study. The heterogeneity of marketisation across Chinese provinces provides us the conditions to explore the topic. We provide evidence to support the hypothesis that sub-national marketisation has significant association with equity share in cross-province acquisitions and confirm that their relationship is negative.

Overall, this article makes three contributions. First, we develop prior research on the choice of equity share in M&As in a micro-level perspective introducing a discussion among different Chinese provinces. Second, we contribute to the literature on the institution-based view by testing whether sub-national marketisation influences equity share decision in M&As. More importantly, our analysis allows us to examine whether differences exist in terms of the heterogeneity of marketisation on the share of equity obtained in targets.

Just like most empirical researches, our study also has limitations. First, the context of this study is only China. Therefore, the results of our study might be applied specifically to Chinese firms, not to the whole world. Second, the study only focuses on cross-province acquisitions, it may be not applied to other expansion strategies (e.g., greenfield investment and strategic alliance) which are under different strategic considerations. Third, due to data availability, only public firms with sufficient information in corporate governance and performance are included in this sample. Future research may consider the above limitations and improve them. Besides, the measurement of variables could be another breakthrough. Last, different provinces have different degrees of marketisation which has not been tested. Future researches might develop more precise measurements of the degree marketisation.

The marketisation segment of China provides a context to examine the effect of sub-national marketisation on equity share choice. Better understanding of Chinese sub-national marketisation is needed in order to help across-province firms choose appropriate strategies that will allow them not only to successfully compete in these markets but also to promote much needed economic growth in the region.

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