Tax Competition, Regional Environment and Inter-regional Capital Flow:

An Empirical Research Based on the Perspective of Inter-province M&A

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Abstract: As a way of market allocation of resources, capital flow characterizes the degree of market progress, and is also subject to administrative barriers as well as market segmentation caused by government intervention in the background of Chinese transition economies. This paper aims to investigate the influencing factors and mechanism of inter-regional capital flow from the perspective of tax competition. For a long time, the effect of tax competition on capital flow is a hot issue in public economics and investment theory research. Existing empirical research are mainly concentrated in areas such as capital formation and FDI. The former ignores the directionality of capital flows and the latter is confined to the homogeneity of investment forms. Inter-province M&A is a micro process of inter-regional (cross-border) capital flows, and is a growth path of firms based on location choices as well. Based on the unique micro perspective of inter-province M&A, this paper measures tax burdens and environment scores of 30 provinces using factor analysis, then investigates investment effect and firm growth effect of tax(environment) based on Logistic model using listed domestic companies merging unlisted companies between 2009 and 2011 as samples. It's been found that inter-regional tax competition affects firm's inter-province M&A behaviors significantly and then leads to inter-regional capital flows; Firms may not get tax saving benefits by merging firms which locate in a lower tax burden region, while regional environment has gradually become one of the motives for inter-province M&A. These findings are of enlightening revelations to enterprise growth region choices and can help local government correct competitive behavior.

Key Words: Tax Competition; Regional Environment; Inter-regional Capital Flow; Inter-province M&A

JEL Classification: G34, G38, H77

1. Introduction and Literature Review

Inter-regional capital flow characterizes the degree of marketization and is also the key factor of regional economic development. With the deepening of China's economic transformation reform, different regions intend to attract capital flows into their own regions using various means from the perspective of their own economic interests. In recent years, inter-regional capital flow continues to reflect an upward trend and is quite the level of OECD countries, but is still far below that of the United States and Japan (Jennifer Lai et al., 2013). Since China's tax reform in 1994, every region was given a relatively independent economic interest. With the corresponding financial powers and responsibilities, local governments also have the competing policy tools and thus compete under the decentralized system. In addition, China's economic performance appraisal system, especially the GDP-centered appraisal system, makes the competition become more intense and complicated. As an important means of government competition, tax competition promotes economic development by attracting capital and accelerating resource flow on the one hand, but also sparked local protectionism, market separatism, redundant construction and serious of resource distortion problems which influence the coordination and steady growth of the national economy(Shen and Fu,2006). Local government's tax competition which aims at attracting capital also intensifies under the background of economic globalization and regional integration. Therefore, an important question which deserves exploration is what is the internal relationship between tax competition and inter-capital flow? Since inter-capital flow characterizes the degree of marketization and is also subject to administrative barriers and market segmentation brought about by government intervention, especially in the background of China's transition period, what are the realistic factors that influence the inter-capital flow and what is the specific mechanism? Intend to explore the local government's tax capital attracting effect and depict the occurrence mechanism of inter-capital flow objectively, Empirical analysis of these problems is needed and of great importance to further understand the mechanism and effect of government and market in participating resource allocation. This is the macro conception of our paper.

Theoretical research of tax competition on capital flows among regions begins from the pioneering exploration of Tiebout(1956) who studies that local government competition appeals to families migration which induces the "population resources" flow. Following Tiebout's decentralized research paradigm and discussing the relationship of tax competition and capital flow, scholars finds that government compete to lower taxes to attract capital flows under the condition of perfect competition, but government who imposes inefficient taxes will lead to the short supply of public goods(Oates,1972). More research focuses on the capital flow effect of tax competition under the perfect competition condition. For instance, model of Thomas & Worrall(1994) prove since tax preferences can lead local government's short of money, rational enterprises can predict that local government has the incentive not to promise and increase enterprise's tax rate, thus tax preferences does not necessarily lead to the increase of foreign investment. Fuest et al.(2005) argue that tax competition which taxes according to the source tax places distorts the capital allocation at the international level due to the lack of liquidity in reality. Waldasin(2011) finds that adjustment cost of capital stock not only depends on product's complementarity or the substitutability nature, but also on local government's tax policy and tax competition using a comparative dynamic model which explores the influence of tax competition on capital stock's adjustment.

Examining the capital flow effect of tax competition from the perspective of enterprise's behavior, scholars mainly study the mechanism of how tax incentive policy influences FDI enterprise's organization way and entrance mode. Bucovetsky & Haufler(2008) construct a sequential game of tax competition between two symmetry counties and analyzes the tax saving motivation of enterprise's choice of multinational companies as the form of organization. Buettnet et al.(2009) examine multinational enterprises of low-tax countries' investment in Germany and reports that FDI's tax sensitivity may decline due to the transferring income to low-tax countries. Davie et al.(2010) focus on how tax competition influences capital flow by affecting enterprises' entrance way into the market. In the absence of tax competition, enterprise will choose FDI; If there exists tax competition, enterprise will then substitute FDI by export. Recent research begins to focus on the relationship between tax structure and corporate investment behavior (Devereux et al., 2008).

In empirical research, scholars examine the relationship between tax competition and capital flow mainly based on total amount of capital formation and FDI. China is a typical investment-led country so that adopting the approach of gross capital formation to measure tax competition gross capital formation is a concept relating to total amount category, including local investment and out-region investment analyzing from the source of funding and also covering government investment and corporate investment looking from the perspective of investment entity, thus measure of capital flow based on gross capital formation can be regarded as a macroscopic analysis. However, this macro-analysis perspective does not accurately portray the direction and scale of inter-regional capital flow related to tax competition. The use of FDI to measure tax competition can overcome the above shortcomings to some extent. Earlier researches mainly use gross data of FDI and find a negative relationship between high tax rate and FDI flows (De Mooij & Ederveen, 2003). In recent studies, Javorcik & Wei(2009) adopt a enterprise-level data to estimate the affects tax competition has on multinational subsidiary location. Nevertheless, large amounts of empirical studies assume homogeneity of FDI and neglect the difference between M&A and Greenfield investment (Devereux, 2007). Only a few scholars concern about this problem (Li and Li, 2013).

To sum up, capital flow effect of tax competition is a hot issue of public economics and theoretical research of investment. Previous empirical researches mainly focus on capital formation and FDI, in which the former ignores the direction of capital flow and the latter is confined to the homogeneity of investment styles. We argue that as a way of inter-regional flow of stock capital, inter-province M&A is an important channel of attracting businesses and investment and an observation to view capital flow effect of tax competition as well in the background of China's decentralization competition. In essence, inter-province M&A is not only a micro process of inter-regional (cross-border) capital flows, but also a growth path of firms based on location choices. Traditional economic geography examines the factors of enterprise location choices from labor cost, transportation cost, resource endowment and so on, but it ignores market structure and factor flow (Higgins et al., 1997). New economic geography provides new explanations of enterprise's location choice from the aspects of market potential and the industrial agglomerations (Baldwin & Krugman, 2004). Kinda (2010) studies a mechanism of investment environment covering physical capital, human capital and infrastructure investment has on enterprise's investment and location, but few scholars explores enterprise's location choice from the comparative perspective of tax competition and investment environment.

When we turn our attention to the reality of inter-regional capital flow associated with China's decentralization reform, we find that M&A investment is growing rapidly compared with traditional green field investment such as FDI and fixed-asset investment. In 2010, total M&A scale reaches

722.2 billion yuan which hit a record high. China launches a ten industry revitalization plan after the financial crisis which aims at enhancing industrial concentration by promoting M&A and optimizing resource allocation. However, compared with the global merger wave, our local government's long-term investment is given priority to greenfield investment. Data shows that between 2002 and 2010 the average M&A investment account for only 5.97% which is significantly low. This is consistent with the study of Li and Li (2013). Reasons leading to this situation can be attributed to the particularity of capital flow in the process of China's marketization and local government competition in our decentralization system as well. Therefore, studying the relationship between local government's tax competition, regional environment as well as capital flow and examining the capital flow effect are of enlightening revelations to provide evidence for the argue between government intervention theory of structuralism and neoclassical theory and can also help local government correct competitive behavior and optimize inter-regional capital flow.

Based on the unique micro perspective of inter-province M&A, this paper measures tax burdens and environment scores of 30 provinces using factor analysis, then investigates investment effect and firm growth effect of tax(environment) based on logistic model using listed domestic companies merging unlisted companies between 2009 and 2011 as samples. Our paper expands or enriches related research in the following two aspects: First, study the relationship between tax competition and capital flow based on the new angle of inter-province M&A and can provide evidence for the research on the validity of tax competition has on capital flow. As a way of capital flow, inter-province M&A has the cross regions and flow characteristics which can make up for the deficiencies in the existing empirical literature. At the same time, inter-province M&A is the actual enterprises' investment behavior and micro process of capital flow which can be viewed as revealed index of local government's attracting businesses and investment. So, the use of inter-province to test tax competition effect is more focused and accurate. Second, enriches enterprise growth theory from a macro perspective, especially explores the M&A occurrence mechanism combined with modern corporate location theory. Concentrating on the enterprise location choice problem, scholars mainly focus on enterprise's new site choice and are less concerned about merger firms' choice of the target firms' location in the process of M&A expansion. Our paper explores tax and environment characteristics of the target firms' location and provides some empirical evidence for enterprise inter-province M&A growth.

The remainder of the paper is structured as follows: Section 2 is an analysis of related theory and put forward some hypotheses based on theory. Section3 is our research design. Section4 presents empirical findings and analysis. Section5 concludes with a discussion on the implications of the empirical findings for economic theory and policy making.

2. Theory and Hypothesis

Inter-province M&A is a reallocation of stock capital and also a micro process of inter-regional capital flow. Generally, stock capital has strong local inertia and its inter-regional flow is fettered by administrative barriers as well as market segmentation which are associated with local government competition, especially under the context of China's decentralization economy (Wang and Dong, 2013). For local governments, they limit the outflow of local capital and attract out-region capital's inflow using several means in which the most important way is tax competition in order to promote local economic growth and maximize social benefit (Shen and Fu, 2006). Based on the enterprise perspective, M&A is a path for enterprise to realize external growth and low-cost expansion. And on the investigation into M&A motivation, recently many scholars carry on valuable exploration from the angles of ownership and political associations, government intervention, market segmentation and so on (Fang, 2008), but we haven't found research on enterprise M&A motivation. We classify enterprise's inter-province M&A motivation into two kinds: One is the cost motivation which means enterprise can save cost by enjoying tax reductions provided by local government. Another one is growth motivation which corresponds to environmental factors such as regional characteristics, infrastructure level, industrial agglomeration and marketization level of target enterprise's location. And depend on which enterprise can obtain growth resources. It is also important to note that tax preferences and financial rebate constitute part of regional environment from a broad sense. Tax competition is a direct tool of attracting capital of local government based on the inter-province M&A perspective and can reduce inter-province investment cost. Regional environment is a coupling of economy, society, culture and other kinds of factors and can provide comprehensive external support for enterprise's growth. This paper thus demarcates tax competition and regional environment based on the perspective of inter-province M&A motivation.

2.1 Cost motivation: tax saving effect and inter-province M&A

Western scholars propose tax saving theory when they explores why enterprises will launch M&A and believe M&A aims to reduce tax burden, produce a reasonable tax avoidance effect and then increase enterprise shareholder's value. If target enterprise's tax burden is low, the probability of M&A will increase. Dertouzos et al. (1990) researches M&A of newspaper industry and reports that tax avoidance is the main purpose of M&A. An enterprise with tax saving potential will be the target to chase in M&A market. China's tax competition begins in the 1990s. Although the statutory tax rate is the same, local government tax competition whose tools include tax incentives and financial rebates make a de facto tax differences among different regions. Laws related to M&A stipulate merger enterprise can enjoy target enterprise's tax preferences which become part of tax revenues of the company whether it's an equity merger or asset merger. This shows that tax cost is always inevitable regardless of tax items and tax subjects and M&A can occur motivated by tax saving to some extent.

Specifically, merger enterprises and target enterprises both need to pay taxes in M&A processes. For merger firms, taxes associated with M&A are part of their cost. In terms of target firms, they not only care about how much the buyers pay in cash or stock. If large parts of price are used to pay taxes, price will increase which is an obstacle to the success of M&A. Since tax burden is an important factor to consider in M&A, enterprises that are in a low-tax location due to the tax incentives will usually be the target of merger enterprises. If local enterprise has to pay high taxes because of overloaded tax burden, then merger enterprise will go out and implement inter-province M&A instead of mergering local enterprises.

The selection of target companies is also influenced by the characteristics of target enterprises and M&A recognition model provides an explanation for it. Simkowits & Monroe (1971) establish a model which includes target firm's scale, PE ratio, dividend payment ratio as well as equity growth speed and estimate the probability of mixed M&A of 1968. Stevens (1973) selects 20 financial indicators covering 5 aspects such as target firm's liquidity, profitability, financial leverage as well as operating level and forecast the M&A probability using factor analysis method. Dietrich & Sorense (1984) build a logistic model to predict the M&A probability using indicators such as target firm's turnover rate, profit issuance rate, stock trading volume, asset-liability ratio and so on. If enterprises have strong profitability and great development potential but locate in high tax rate regions, as long as enterprise's expected benefits can make up for the high taxes of M&A, inter-province M&A still happens. Therefore, target enterprises with tax avoidance benefit may not always be the selection of merger firms according to target firm identification theory.

Based on the above analysis, we put forward two alternative hypotheses:

Hypothesis 1A: The more tax burden of target enterprise's location is, more inter-province M&As are prone to happen.

Hypothesis 1B: The less tax burden of target enterprise's location is, more inter-province M&As are prone to happen.

2.2 Growth motivation: environment effect and inter-province M&A

Enterprise growth theory analyses how regional factor influences enterprise's growth from environmental aspects which include hard environment such as infrastructure and soft environment such as institution, culture and so on. On one hand, hard environment including transportation condition, communication level and life facilities can provide external support for enterprise's growth. On the other hand, soft environment can play an important role in enterprise's development.

Researchers discuss the support mechanism of how environment promote enterprise's growth from different perspectives. Economic globalization and acceleration of innovation make a great change to the competition and cooperation among firms, and "New Competition" pattern appears. In the new environment, enterprise not only relies on their own resources, but also pays more attention to their external environment and establishes network growth relationships among enterprises. Fishman & Rob (2000) construct an equilibrium model concerned with enterprise scale and evolutions, then analysis mechanism of enterprise growth from the perspective of industrial evolution. They find a well developed industry of one region will support enterprise's development and growth. Nixon et al. (2004) build an enterprise growth mechanism from the angle of how market demand and supply affect enterprise performance. Makino et al. (2004) study comprehensively the impact environment on enterprise growth from a macro policy level.

Environment has opposite influences on inter-province M&A. On the one hand, environment advantage of target firm's location appeals to investment of merger firms and influences integration performances of different resources of M&A. Das Teng (1998) emphasizes M&A can achieve aims of acquiring target firm as well as its location's resources and develop their own resources. Miller & Shamsie (1996) report that property resources and corporate performance are significantly related in a steady environment and relationship between knowledge resources and corporate performance is closer in a dynamic environment. On the other hand, better environment provide an impetus to the business power of local enterprises which increase the difficulties of inter-province M&A to some extent. Heeley et al. (2006) survey the influence environment has on M&A probability from the aspect of target firm's R&D investment and find target firm's R&D investment does not significantly increase their M&A probability. But this probability will shift largely when environment is considered.

Based on the above analysis, we put forward two alternative hypotheses:

Hypothesis 1A: The better environment of target enterprise's location is, more inter-province M&As are prone to happen.

Hypothesis 1B: The better environment of target enterprise's location is, more inter-province

M&As are prone to happen.

2.3 Tax environment, M&A types and attracting investment effect

As mentioned above, the basic motivation of local government's tax competition is attracting economic resources (capital) into their own regions, namely investment appealing effect. Previous literatures about investment appealing effect concentrate their study on FDI. Nevertheless, local government's business attracting competition is not confined to attracting FDI, the competition to attracting domestic businesses is also intense (Fu and Geng, 2011). Local government usually uses tax incentive which is a special institutional arrangement to attract investment. Local government focuses more on attracting capital by greenfield investment in practice given the choice of greenfield investment and M&A investment. However, compared with greenfield investment, M&A investment is in favor of expanding scale as well as improving competitiveness and has low cost in addition. M&A investment shows its advantages especially after the financial crisis.

As two types of M&A, equity M&A and asset M&A involve different taxes, environmental factors as well as capital attracting effect. On one hand, in asset M&A taxpayers are merger enterprise and target enterprise. M&A targets are target enterprise's physical capital and intangible assets such as patent, trademark, reputation and so on which generally don't involve the change of target enterprise's ownership structure. While in equity M&A, taxpayers are merger enterprise and shareholders of target enterprises. In reality government often levies taxes on merger enterprises and target enterprises are exempted from taxes. Since asset M&A relates to more taxpayers and high tax expenses, tax burdens have more influences on asset M&A s. On the other hand, asset M&A can better show capital attracting effect compared with equity M&As. In asset M&A, target enterprises appeals merger enterprises whose capital stock complement or synergize with them in order to realize an effective integration with their asset. Thus both enterprises penetrate mutually and develop harmoniously in aspects of market, brand, sales and management (Choi & Jeon,2011).

Based on the above analysis, we put forward a third hypothesis:

Hypothesis 3: Environment (tax) of target enterprise's location appeals more significantly to asset M&A's business attracting effects compared with equity M&A.

3. Research design

3.1 Sample selection and information sources

We use samples of listed domestic companies merging unlisted companies between 2009 and 2011 as a primary sample and perform the following screenings: (1) Choose the merger enterprise whose trading status is buyer. (2) Drop the merger event if target firms are different when two or more than two deals occur to a listed company. Combine the merger event if the listed company deals with different shareholders but within one target company. (3) Drop the sample of Tibet in which target firm registers due to severe lack of data. (4) Drop sample enterprises that go public after 2009. (5) Drop samples whose registered location is overseas. (6) Drop the merger event whose financial indexes are missing. Finally we end up with 984 valid samples, including 714 intra-province M&A s and 270 inter-province M&A s respectively. Data we use include M&A data, firm characteristics data, tax data and regional investment environment data. Among them, M&A data and firm characteristics data are drawn from the CSMAR database, and tax data and regional investment environment data are from "China Statistical Yearbook" of 2009 to 2011. The table below gives the distribution of M&A events.

Table 1 Distribution of inter-province M&A

Sample distribution	2009	2010	2011	Total Mount
Total sample	327	319	338	984
Sample of inter-province M&A	83	91	96	270
Proportion of inter-province M&A	25.38%	28.53%	28.40%	27.44%
Sample of equity M&A	213	218	216	647
Number of inter-province M&A in equity samples	67	79	75	221
Proportion of inter-province M&A in equity samples	31.46%	36.24%	34.72%	34.16%
Sample of asset M&A	114	101	122	337
Number of inter-province M&A in asset samples	16	12	21	49
Proportion of inter-province M&A in asset samples	14.04%	11.88%	17.21%	14.54%

3.2 Measure of tax competition

Literatures about tax competition generally use tax burdens as the index to measure tax competition. There are two kinds to measure China's tax burdens: One uses fiscal revenue as a share of GDP (Shen and Fu, 2006). This kind of measure covers all categories which also brings extra-budget revenue into this category and is in fact a measure of taxes and fees. Another one uses tax revenue as a share of GDP, such as Guo and Li (2009).

This paper combines the above methods, considering not only tax burdens in a general sense but also in a narrow sense. At the same time, if targets of local government's tax competition is investment, then competition can only be launched in taxes which can have direct influences on capital flow. In this way, regional tax competition nature will be different if measure tax competition from different kinds of taxes (Fu and Geng, 2011). In consequence, we also include value –added tax and business into the measure of tax burdens.

3.3 Model of regional environment score

Regional environment refers to the sum of all external conditions which influence or restrict investment behaviors of one region. The external condition include infrastructure, economic condition, government services and so on. In order to evaluate regional environment objectively and scientifically, we construct the following index system from the perspective of infrastructure environment, market environment as well as science, technology and culture environment according to our analysis need (Bai et al., 2004). According to the chosen three levels of indicators, we standardize the original data using extremum method and calculate 30 provinces' regional environment scores between 2009 and 2011 using factor analysis.

Table 2 Regional Investment Environment Evaluation Index System

First-grade Index	Second-grade Index	Third-grade Index
Infrastructure Environment	Transportation	Total passenger annually (ten thousand)
		Total cargo annually (ten thousand tons)
		Traffic density (km/square meters)
		Urban road area per capita (square meters)
		Bus number per ten thousand person
	Communication	Post volume per capita (one hundred million yuan /ten thousand

		person) Internet broadband access port (per ten thousand person)
	Living Facilities	City water penetration rate (%) City gas penetration rate (%)
Market Environments	Market Size	GDP (one hundred million yuan) Fixed asset investment (one hundred million yuan)
	Economic Structure	Second industry ratio (%) Third industry ratio (%) Non-state-owned economy/GDP (%)
	Export-orientated level of economy	Total import and export/GDP（%） Total amount of foreign investment（one hundred million dollars）
	Market Growth	Total retail sales of consumer goods（one hundred million yuan） Year-end urban residents savings per capital(one hundred million yuan /ten thousand person)
Technology and Culture Environment	Science and technology input	R&D expenses (ten thousand yuan) Trading volume of technology market (ten thousand yuan)

3.4 Descriptive analysis of sample characteristic variables

We calculate tax burdens and regional environment scores based on data of 30 provinces between 2009 and 2011, thus we have the following inter-province M&A distribution figure (See figure1). Figure1 shows regional tax burdens and regional environment varies significantly which provide a basis for our analysis.

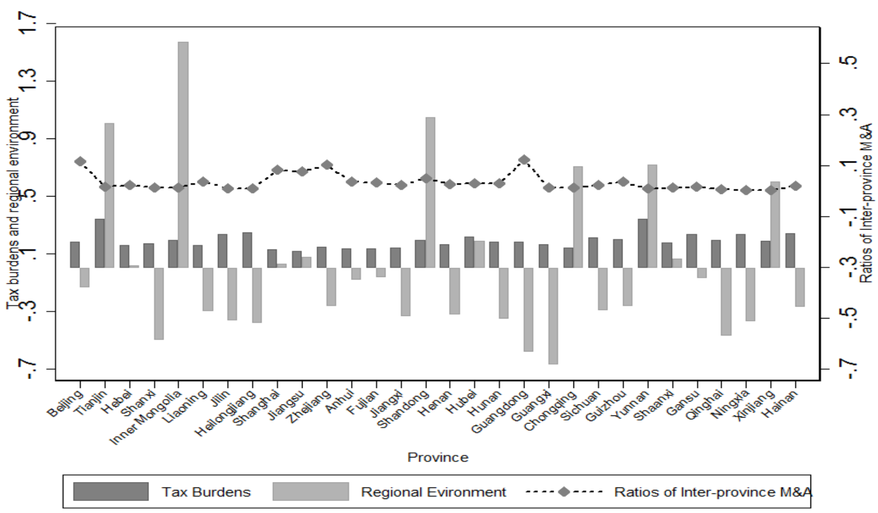

Figure 1 Inter-province M&A distribution of different regions' tax burdens and regional environments

In addition to the dependent variables of our model, we choose relevant control variables referring to related literature (Fang, 2008; Pan & Yu, 2011). Table3 is a descriptive statistical analysis of variables.

Table 3 Summary Statistics

Variable	Variable Definition	Mean	Min	Max	S.D
Income tax burden	Regional income tax/Regional GDP	0.022	0.006	0.059	0.016

Turnover tax burden	Regional turnover tax/Regional GDP	0.044	0.020	0.081	0.018
Total tax burden	Regional fiscal revenue/Regional GDP	0.215	0.116	0.370	0.071
Value-added tax burden	Value-added tax/Second industry GDP	0.031	0.012	0.063	0.016
Sales tax burden	Sales tax burden/ Third industry GDP	0.044	0.020	0.081	0.018
Regional environment score	Calculating according to regional environment score model	0.480	-0.710	1.660	0.638
Related transaction	Involved in related transaction is 1, otherwise 0.	0.512	0.000	1.000	0.500
Relative size of M&A	Payment amount of M&A/market value of merger enterprise	0.060	0.000	16.424	0.564
ROE	Net profit/shareholders' equity balance	0.215	-4.829	1.255	0.285
Asset-liability ratio	Total asset/Total liability	0.414	-10.170	3.290	0.490
Cash flow ratio	Net cash flow from operating activities/Liquid liabilities	0.219	-2.347	8.396	0.669
Number of independent director	Independent director number of merger enterprise	3.325	1.000	6.000	0.732
Enterprise scale	Natural logarithm of total asset	21.772	15.376	27.346	1.271
Correlations between merger firm and government	Sum of state-owned shares proportion and legal shares proportion	0.254	0.000	0.959	0.236

4. Empirical results and analysis

4.1 Tax competition, regional environment and inter-regional capital flow: inter-province M&A analysis of total samples

Based on the above analysis and assumptions, we conduct an empirical analysis of tax (environment) competition and inter-regional capital flow from the perspective of inter-province M&A. We construct the following econometric model:

$$\mathrm{Inter}_{it} = \alpha + \beta_1 \mathrm{tax}_{jt} + \beta_2 score_{jt} + \beta_3 tax_{jt} * score_{jt} + \beta_4^{'} X_{it\text{-}1} + \varepsilon_{it} \qquad (1)$$

Among them, inter is the dependent variable and a dummy variable of inter-province M&A. If merger enterprise and target enterprise belong to different regions, inter value is 1, otherwise is 0. Tax represents tax burden of target enterprises' region. Score represents comprehensive score of target firm's regional environment. Since tax burdens and regional environment may have interactive effect, we join the cross terms tax*score to measure this effect. X is a control variable vector. We use total asset, ROE, asset-liability ratio and cash flow ratio to represent merger enterprise's operational scale, profitability, solvency, cash flow ability of M&A's previous year respectively (Fang,2008; Pan and Yu, 2011). We use number of independent directors to represent governance efficiencies. At the same time, we consider total amount of M&A, related transactions and correlations between merger enterprise and government. Finally we control annually dummy variables in the model.

Table 4 reports the regression results of Logit model based on 984 M&A samples between 2009 and 2011.

Table 4 Tax competition, regional environment and inter-region capital flow of inter-province

M&A —An analysis of total samples

Variables	Logit			OLS	
	(1)	(2)	(3)	(4)	(5)
Total tax burdens	1.073*** (0.185)	1.118*** (0.184)	1.217*** (0.351)	1.215*** (0.214)	1.278*** (0.381)
Regional environment scores			-0.008 (0.097)		-0.008 (0.102)
Total tax burden*regional environment score			-0.102 (0.458)		-0.036 (0.502)
Related transaction		0.202*** (0.026)	0.201*** (0.026)	0.202*** (0.027)	0.202*** (0.027)
ROE		-0.187* (0.111)	-0.188* (0.111)	-0.172** (0.072)	-0.172** (0.074)
Asset-liability ratio		0.016 (0.028)	0.015 (0.027)	0.018 (0.023)	0.017 (0.023)
Cash flow ratio		0.012 (0.022)	0.013 (0.023)	0.012 (0.025)	0.012 (0.025)
Number of independent directors		0.016 (0.019)	0.016 (0.019)	0.016 (0.019)	0.017 (0.020)
Firm scale		-0.008 （0.013）	-0.009 （0.012）	-0.010 （0.013）	-0.011 （0.013）
Correlations between merger firm and government		0.075 (0.059)	0.076 (0.059)	0.072 (0.061)	0.073 (0.062)
Year dummy variable	Control	Control	Control	Control	Control
R^2				0.099	0.010
Pseudo R^2	0.03	0.09	0.09		
Predicting accuracy percentage（%）	72.36	74.87	74.87		
Log-likelihood ratio	-564.06	-525.27	-525.08		
N	984	984	984	984	984

Note: (1) Robust standard errors in parentheses. *, **, *** represent significantly at 10%, 5% and 1% respectively. (2) Coefficients of logit model is average marginal effect.

Result of table 4 shows that tax burdens of target firm’s region are positively related with M&A probability and the correlation is significantly at 1% level. It means the heavier tax burdens of target firm’s region, the more inter-province M&A is prone to happen. Conversely, the lighter tax burdens of target firm’s region, the less inter-province M&A is prone to happen. This suggests interregional tax competition does influences inter-province M&A which is also inter-regional capital flow. Specifically, the empirical results don’t support our tax avoidance theoretical assumption. It also means in the choice of target firms, tax revenues is only one aspect to consider. In the conditions of great potential of target enterprise, inter-province M&A will still happen if expected return can compensate for the large amounts of tax burdens. This proves the assumption 1B, namely target enterprise recognition theory.

In our control variables, related transaction has a positive impact on inter-province M&A. Since inter-province M&A has higher cost due to information asymmetry, this cost can be reduced by related transaction which can lower the influence of information asymmetry and increase inter-province M&A's probability. ROE correlates negatively with inter-province M&A's probability. Despite higher ROE represents high profitability, it also correlates with higher financial leverage which leads to higher merger risk. Combined with higher lending risk, high debt ratio can reduce inter-province M&A's probability. Stronger correlation between merger firm and government is positively correlates with inter-province M&A. Its meaning is that government institutional correlations don't become the obstacle to inter-province M&A; On the contrary, local government encourages enterprise to go out for more mergers in the process of improving marketization.

4.2 Tax competition, regional environment and inter-regional capital flow: comparison of two kinds of M&A

In the above empirical analysis of total samples, the influence of target firm's regional environment on inter-province M&A is not significant. This may due to the great differences between two types of M&A which may lead to the counteracting effect in total samples. At the same time, in the condition of not confirming merger tax avoidance effect, we need to explore how regional environment affect inter-regional capital flow from the angle of inter-province M&A. Therefore, we divide the total sample into equity M&A subsample and asset M&A subsample. Further, we divide environment into good environment which means regional environment score is greater than zero and poor environment which means regional environment score is less than zero. We conduct a grouping regression of M&A types and environment types respectively to examine the differentiation path of tax (environment) competition's influence on inter-province M&A. Table 5 is the empirical results of different types of M&A.

Table 5 Tax competition, regional environment and inter-region capital flow of inter-province M&A —An analysis of subsamples

Variables	Equity M&A subsamples				Asset M&A subsamples			
	（1）	（2）	（3）	（4）	（5）	（6）	（7）	（8）
Sample Types	Equity samples	Equity samples	Good environment	Poor environment	Asset samples	Asset samples	Good environment	Poor environment
Total tax burdens	1.296*** （0.218）	0.463 （0.509）	0.460 (0.089)	0.160** (0.069)	0.573** (0.278)	1.358*** (0.351)	2.516 (2.147)	2.729*** (0.776)
Regional environment scores		-0.225* (0.130)	-0.217* (0.130)	-0.009 (1.080)		0.324** (0.137)	0.058** (0.267)	-1.298* (0.707)
Total tax burden*Environment score		1.102* (0.639)	1.113* (0.657)	-1.207 (5.882)		-1.650*** (0.616)	-3.090** (1.300)	6.586* (3.593)
Related transaction	0.266*** （0.031）	0.267*** 0.033	0.251*** (0.038)	0.282*** (0.051)	0.088** (0.042)	0.074* (0.042)	0.120** (0.061)	0.016 (0.060)
ROE	0.004	-0.009	-0.002	0.249*	-0.063	-0.037	0.183	-0.288

	（0.059）	(0.056)	(0.057)	(0.148)	(0.104)	(0.108)	(0.134)	(0.178)
Debt-liability ratio	-0.035 （0.105）	-0.145 (0.096)	0.052 (0.037)	-0.359** (00.175)	0.014 (0.027)	-0.013 (0.029)	0.049 (0.052)	-0.004 (0.020)
Cash flow ratio	-0.009 （0.034）	-0.013 (0.035)	0.002 (0.037)	-0.014 (0.035)	-0.211 (0.196)	-0.234 (0.203)	-0.196 (0.215)	-0.504** (0.208)
Number of independent directors	0.044* （0.023）	0.020 (0.022)	0.085*** (0.027)	-0.078** (0.039)	-0.036 (0.032)	-0.035 (0.033)	-0.052 (0.044)	-0.052 (0.053)
Firm scale	-0.042** （0.017）	-0.043** (0.016)	-0.076*** (0.020)	-0.063** (0.031)	0.038** (0.018)	0.032* (0.018)	-0.004 (0.031)	0.075** (0.029)
Correlations between merger firm and government	0.055 （0.074）	0.054 (0.069)	0.090 (0.089)	0.085 (0.120)	0.060 (0.085)	0.032 (0.082)	0.035 (0.105)	0.153 (0.148)
Year dummy variable	Control	Control	Control	Control	Control	Control	Control	Control
Pseudo R^2	0.111	0.113	0.126	0.190	0.072	0.112	0.124	0.321
Predicting accuracy percentage（%）	70.54	71.63	69.37	77.95	85.63	87.13	86.64	88.6
Log-likelihood ratio	-368.14	-366.90	-255.58	-93.94	-129.21	-123.56	-79.43	-32.59
N	647	647	444	203	337	337	217	120

Note: The same as table 4.

Table 5 shows that regional environment of target firm’s location definitely has influence on inter-province M&A, but it affects equity M&A and asset M&A differently. For equity M&A, regional environment of target enterprise’s location is negatively correlated with inter-province M&A at the 10% significance level. For asset M&A, regional environment of target enterprise’s location is positively correlated with inter-province M&A at the 5% significance level.

From the subsample analysis we can see different influence of regional environment on asset M&A and equity M&A. In equity M&A, enterprises in better regional environment appeal to merger firms but enhancement of the enterprise also increase the difficulty of M&A. The reason is that better regional environment can promote local enterprise’s development and bring opportunities to enterprises from aspects such as market structure, industry evolution structure and network support.

In this way enterprise's strength was enhanced and is easier to become merger firm instead of target firm. In asset M&A, enterprise's main aims is to obtain target firm's asset such as intangible asset, supply and marketing channels which are embedded in regional environment of target firm's location. Better environment can ensure a maximum release of various type enterprises' potential and promote enterprise's growth. Therefore, the better environment of target enterprise's location is, more inter-province asset M&As are prone to happen. Thus we prove hypothesis 2A.

At the same time, when we consider the influence of target firm's regional environment, total tax burden become no longer significant and regional environment is significant at 10% level for equity M&A. While for asset M&A, total tax burdens and regional environment are both significant at 1% level because in asset M&A target firm's regional environment is a key factor to attract merger firms, thus its tax (environment) competition attracting investment effects are more obvious. This proves our hypothesis 3.

Since regional environment advantage can mitigate high cost brought by high taxes, the trend of local government's traditional competition to lower taxes is reversed. Grouping regression test of differences in regional environment proves this point of view. Under circumstances of good environment, tax competition effect becomes no longer significant while effects of differences in regional environment on inter-province M&A are more significant. Under circumstances of poor environment, competition effect of equity M&A and asset M&A is significant at levels of 5% and 1% respectively which is exactly the time tax competition works. This suggests local government's tax competition strategy is only effective in poor regional environment. When local governments compete to improve investment environment, tax competition is no longer applicable.

4.3 Inter-regional capital flow based on inter-province M&A's scale: Comparisons of tax competition and regional environment

Next, we compare the different effects of tax competition and regional environment on inter-regional capital flow empirically from the perspective of inter-province M&A's relative scale. We construct the following econometric model:

$$\mathrm{scale}_{\mathrm{it}} = \alpha + \beta_1 \mathrm{tax\_dif}_{\mathrm{jt}} + \beta_2 score\_dif_{jt} + \beta_3 tax\_dif_{jt} * score\_dif_{jt} + \beta_4^{'} X_{it\text{-}1} + \varepsilon_{it} \quad (2)$$

Among them, Scale represents relative scale of inter-province M&A. Tax_dif measures whether M&A can bring tax saving benefit. When tax burden of merger enterprise's location is heavier than that of target enterprise's location, the value is 1 and otherwise 0. Score_dif measures whether M&A's motivation is to obtain resources. When regional environment of target enterprise is better than that of merger enterprise the value is 1 and otherwise 0. Other control variables are the same with model(1). Meanwhile, we use Heckman selection model to construct a inverse Millers ratio (IMR) to control the endogenous problem of inter-province M&A(Pan & Yu, 2011).

Table 6 Business attracting effects of tax competition and regional environment: Relative scale of inter-province M&A

Variable	OLS		Heckman	
	(1)	(2)	(3)	(4)
Tax_dif	-0.773** (0.297)	0.074 (0.062)	-0.608** (0.310)	0.072 (0.062)
Score_dif		0.178*** (0.056)		0.153*** (0.057)
Tax_dif*score_dif		-0.240*		-0.202

		(0.131)		(0.132)
Related tranction	-0.109*** (0.036)	-0.124*** (0.036)	-0.197*** (0.059)	-0.205** (0.059)
ROE	0.065 (0.064)	0.083 (0.064)	0.146* (0.077)	0.157** (0.077)
Debt-liability ratio	0.021 (0.038)	-0.023 (0.038)	0.010 (0.038)	-0.012 (0.038)
Cash flow ratio	0.008 (0.026)	0.005 (0.026)	0.001 (0.027)	-0.002 (0.027)
Number of independent directors	-0.006 (0.025)	-0.006 (0.025)	-0.009 (0.025)	-0.009 (0.025)
Firm scale	-0.089*** （0.015）	-0.093*** （0.015）	-0.090*** （0.015）	-0.092*** (0.015)
Correlations between merger firm and government	0.045 （0.080）	0.053 （0.080）	0.012 （0.082）	0.022 (0.082)
IMR			-0.100* (0.054)	-0.094* (0.053)
Year dummy variable	Control	Control	Control	Control
F value	5.73	5.12	5.53	4.98
N	984	984	984	984

Note: The same as table 4.

Table 6 reports that without considering target firm's regional environment, influences of differences of tax burdens of target enterprise's location and merger enterprise's location on inter-province M&A is still negative and significant at the 1% level. Obviously, since tax burden is not the main factors to consider in inter-province M&A, tax saving revenue will not have a positive effect on inter-province M&A's relative scale. When we consider the influences of environmental differences between the two locations, tax factors become no longer significant. Dummy variable of differences in regional environment scores between two regions has a positive effect on M&A's relative scales with a significance level of 1%. This further confirms the enterprise inter-province M&A' growth motivation which is also the environment effect.

4.4 Robust check

Though we confirm basically the influences local government's tax (environment) competition on inter-province M&A, there may exist other mechanisms and interpretations. Next we exclude the interference of these factors by robust test.

(1) Different types of taxes

In the inter-province M&A process many kinds of taxes to merger enterprises and target enterprises may occur, which mean different cost to merger parties. Thus different taxes have different affects on inter-province M&A. However, our empirical work suggests the basic regression results of income tax competition, turnover tax competition, value-added tax competition and business tax competition is the same which provides support for robustness of this article.

(2) Influence of headquarter economy on tax burden's measurement error

Under the mode of headquarter economy, some enterprises will set headquarters in the center cities or center areas which may lead to the separation of regional tax and tax sources. This may influences tax competition effects. The organization forms of enterprises include two types which are head company, branch company and parent company, subsidiary company. These two types of tax consolidation is different. But there exist situations of transferring tax from parent company or headquarter to branch company or subsidiary company in reality which make us difficult to measure the transferring tax amount exactly in headquarter economy. In view of most enterprise's headquarter concentrating in the development zone, we use the number of regional development zones as a proxy variable to measure the headquarter economy. The empirical results report that coefficients of total tax burdens have slight changes but signs and significance have not changed considering the influence headquarter economy have on tax burdens. This suggests headquarter economy has little influence on the accuracy of tax burden measurement and our result is robust.

Besides, we use provincial enterprise business environment from "Business Environment Index for China's Provinces" of Wang(2013) as a substitution variable for regional environment variable to conduct another robust test and get a consistent result.

5. Conclusion and highlights of findings

As a way of market allocation of resources, capital flow characterizes the degree of market progress, and is also subject to administrative barriers as well as market segmentation caused by government intervention in the background of Chinese transition economies. This paper aims to investigate the influencing factors and mechanism of inter-regional capital flow from the perspective of tax competition. For a long time, the effect of tax competition on capital flow is a hot issue in public economics and investment theory research and has attracted much attention under the background of China's decentralization reform. Previous empirical research shows tax competition has an important influence on capital flow's scales and patterns but doesn't explain its micro-economic mechanism. We believe that inter-province M&A is not only a way of inter-regional capital flow but also an important channel of local government's way of attracting businesses and investments. Based on the angle of enterprise, motivation of inter-province M&A can be categorized into two kinds: cost motivation and growth motivation. The former aims to obtain tax saving effect and the latter environment effect.

This paper measures tax burdens and environment scores of 30 provinces using factor analysis, then investigates investment effect and firm growth effect of tax(environment) based on Logistic model using listed domestic companies merging unlisted companies between 2009 and 2011 as samples. Finally we have the following conclusions. First, regional tax competition influences inter-province M&A significantly and causes inter-regional capital flow. Second, choosing an enterprise which locates in low-tax regions doesn't have tax-saving revenue based on the angle of enterprise and empirical result doesn't support cost motivation of tax saving effect. Further we investigate different influences of environment of target enterprise and merger enterprise's location on inter-province M&A, and then tax factors become no longer significant. While influences of regional environment have on inter-province M&A is positive and significant. Thus it can be seen environment effect has become enterprise inter-province M&A's growth motivation. Third, in terms of different kinds of merger types, business attracting effect of target enterprise's tax (environment) is more significant for asset M&A compared with equity M&A. These findings are of enlightening revelations. First, it's more effective to improve regional environment by fiscal expenses than just depending on tax preferences for local government under the background of economic globalization and regional integration and also facing the increasingly fierce and complicated competition environment. In terms of capital attracting methods, effect of fiscal expenses is more apparent to enterprise growth and operation mode is more flexible compared with tax preferences. So local government should strengthen using means of fiscal spending to improve regional environment and promote enterprise growth and economic development. Meanwhile, local government should adjust capital attracting methods and changing its emphasis from Greenfield capital attracting way to both Greenfield capital attracting and M&A capital attracting way. Second, inter-province M&A is a way of low-cost expansion for enterprise and enterprise should balance tax-saving effect and environment effect comprehensively and then realize inter-regional growth.

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