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Based on Contract Duration Theory**

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A Research on the Long Staying Mechanism of South Korean Enterprises in Shandong: An Empirical Analysis Based on Contract Duration Theory

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Abstract: Thanks to its good infrastructure and unique geographical position, Shandong becomes an ideal investment place to South Korean firms, among which many choose to have long staying in Shandong. This research shows that the intertwined factors of economics, enterprises' traits, host governments and others produced the long staying mechanism. Parameters are estimated by using microeconomic data. The estimation results show that enterprises' operation state, infrastructures, integrity levels, human resources and geographical positions have all played significant roles in affecting South Korean enterprises' long staying in Shandong.

Key words: relation contract contract duration long staying mechanism

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1. Introduction

According to China's official statistics, by the end of 2004 South Korean investment in Shandong reached 10.2 billion US dollars, which accounted for 40% of the total South Korean investment in China. And Shandong has become the first investment destination for Koreans in China. Korean investment concentrates in eastern coastal cities such as Qingdao, Yantai and Weihai, which accounts for more than 80% of the total Korean investment in Shandong. Thanks to its good infrastructure and its unique geographical position, Shandong becomes an ideal investment place for South Korean enterprises. Most Korean enterprises expand and extend their operations and some managers of Korean enterprises even purchase local houses for their family members. Since many Korean enterprises seem to have long staying in Shandong, a question arises naturally: why they choose to have long staying in Shandong instead of other places in China?

A research on the long staying mechanism of South Korean enterprises in Shandong could not only enrich the theory of international economics, but also guide host government's policy in attracting foreign investments. Different economic schools may have different research approaches. Though equilibrium analysis is advocated by the mainstream, contract analysis is a very useful tool in new institutional economics (Boeuf etc., 1930; Willimson, 2002). The reason that contract analysis is emphasized lies in the fact that any transaction relation can be viewed as a kind of contractual relation in new institutional economics. South Korean enterprises would establish transaction relations with the host governments once they invest in Shandong. Transaction relations can be viewed as contractual relations, which in explicit or implicit terms assign rights and duties to both parties: host governments set certain conditions and policies to attract investments from Korean enterprises, and the later must follow host governments' policies or regulations. However, these contracts are different from those normal contracts between individuals. They are special contracts for two reasons. Firstly, these special contracts have no definite deadlines. Normal contracts usually have specific time limits. However, as to these special contracts, these contracts become effective once enterprises start their operations, but when they will expire is unknown. Secondly, contractual parties have

asymmetric negotiation powers. Enterprises may request host governments to give corresponding policy supports, but such supports are not compulsory for host governments. On the contrary, abiding by host governments' policies are compulsory for enterprises. For instance, execution of new Labor Law is compulsory for Korean enterprises, leaving no room for negotiation. Therefore, these contracts are not competitive but monopoly contracts. Lastly, these contracts are defined naturally or implicitly. Termination of a contract does not require an agreement from both parties. Enterprises can choose to terminate a contract at any time without consent from host governments. In sum, the investment relations between South Korean enterprises and Shandong government fall in the field of contractual relations, which endorses using *contract duration theory* to analyze Korean enterprises' long staying mechanism in Shandong.

In addition, both parties of a contract are opportunistic from the perspective of new institutional economics (Williamson, 1979). A contract must be monitored in order to ensure the efficiency of it. The contract duration becomes the benchmark to judge if a contract is efficient, especially when there are specific investments. If a South Korean enterprise has specific investments in Shandong, the longer the contract duration is, the more efficient the investment will be. This endorses the use of *contract duration theory* to analyze the long staying mechanism. Certainly, the most direct and important endorsement to this theory lies in the fact that Korean enterprises' long staying in Shandong indicates their operation terms are unlimited. Since the investment relation between Korean enterprises and host government is a kind of contract relation, the longer the operation term is, the longer the contract duration will be. So the research on Korean enterprises' long staying mechanism is equivalent to the research on the factors determining these special contracts' duration.

In fact, contract duration has been an important dimension of new institutional economics. As for research methods, *contract duration theory* does not exclude the empirical methods of neoclassical economics. However, empirical analysis of contract duration is rare due to the unavailability of empirical data. Most contract economists use models to set the relation between contract duration and its determining elements (Harris etc., 1987; Guriev etc., 2005).

However, some contract economists have made breakthroughs in empirical research of contract duration theory. Saussier (2000) analyzed the correlation between contracts duration and specific investments using empirical data from French power companies, and concluded that the level of assets specialty plays an important role in determining contract forms, and what's more, specific investment has positive effects on contract duration. Luis (2007) found that franchise contract duration correlates positively with the franchisees' experience, and long-term contract can solve the hold-up problem for franchisees.

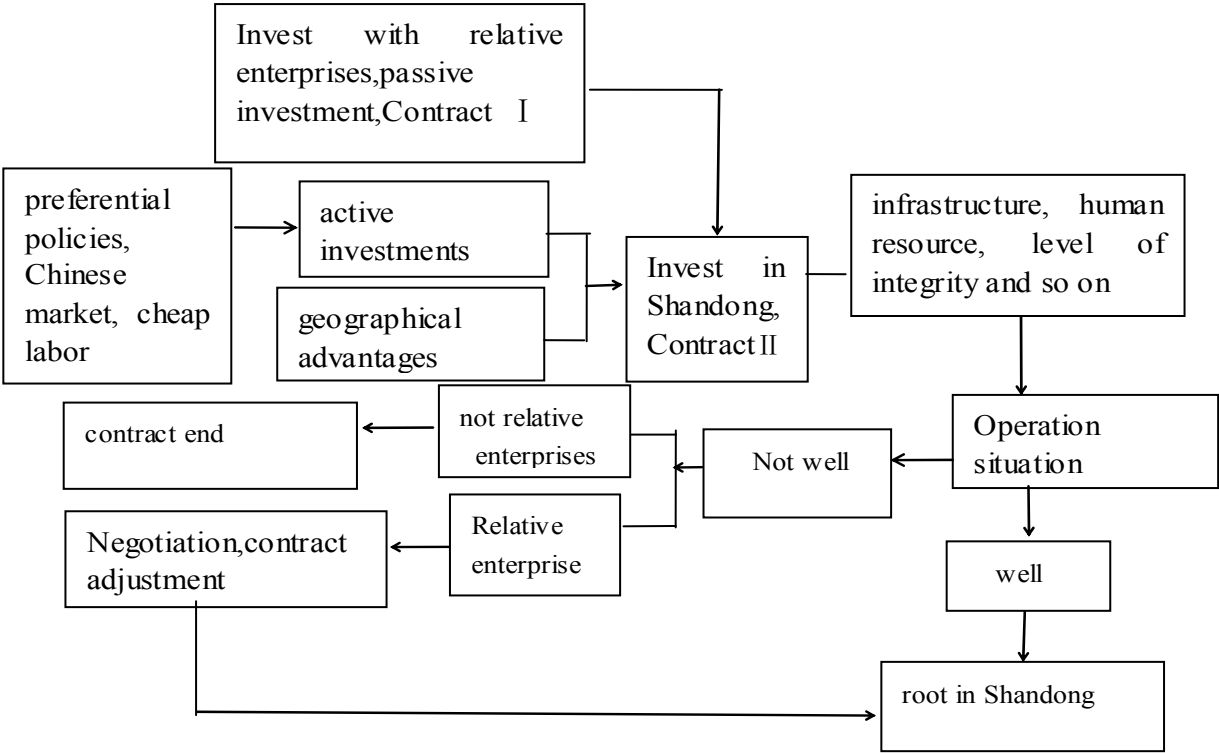
In this paper, *contract duration theory* is used to analyze the long staying mechanism of South Korean enterprises and empirical proof is provided. This paper will be outlined as follows. Section 1 is introduction. Section 2 analyzes South Korean enterprises' long staying mechanism based on contract duration theory. Section 3 describes the data and estimation models. Section 4 gives estimation results. Finally, section 5 is conclusion.

2. Analysis on the long staying mechanism of South Korean enterprises in Shandong province

Initially, South Korean enterprises are motivated to invest in Shandong by several factors, such as favored policies, massive Chinese market, cheap labor and large enterprises' synchronized investments, etc., which are not significantly different from other parts of China. With gradual elimination of favored policies, increasingly fierce competition and increasing labor costs in China, theoretically South Korean enterprises would withdraw from China, but why Korean enterprises still choose to have long staying in Shandong? This shows some other more important factors may affect Korean enterprises' decisions in addition to the above-mentioned investment motivations. The following diagram is designed to describe the long staying mechanism of Korean enterprises in Shandong.

The diagram shows that there are two types of investments from South Korean enterprises. One is active investment, such as those attracted by favored policies, massive Chinese market, cheap labor, geographical advantages and so on. The other one is passive

investment, compelled to invest in China since some large Korean enterprises with which they have industrial chain relations already invested in China. Once investing in Shandong, a Korean enterprise's operation state will be affected by the operation environments provided by the government, such as infrastructure, industrial matching and some other policies. If operation state deteriorates over a long period, the small enterprises without relations with large enterprises will withdraw from Shandong. The small enterprises suffering loss but having strong relations with large enterprises will choose to stay in Shandong if large enterprises agree to compensate them upon negotiation. Two kinds of contracts exist. One is the contract between large enterprises and their related ones (contract I). The other one is the contract between host government and Korean enterprises (contract II). It is the efficiency of contract execution along with the above-mentioned factors and enterprises' traits that determine the long staying mechanism of Korean enterprises.



Rooting-mechanism of South Korean enterprises.

Contract I is a relationship contract, which covers specific investments defined by Williamson. As for relationship contract, long-term contracts should always be established in order to avoid the ruin of contract efficiency by opportunism. Due to the contract relationship, one party may have to follow the other party's decision to transfer its industry. If contract relation is unequal, the weak party may have to follow the strong party's decision to transfer its industry. Therefore, small enterprises that have contract relations with large Korean enterprises like Samsung and Hyundai may have to follow these giant enterprises' move to Shandong. As for contract II, it is an incomplete contract established on free but unequal basis between the host government and Korean enterprises. As an enterprise investing on foreign land, a Korean enterprise can require some support policies but not policies eliminating all its operating risks. On the contrast, policy changes of a host government usually make operations more risky, especially when large amount of specific investment is involved, in this case enterprises have to maintain operations with little profit or even at a loss due to high costs of terminating a contract. Most Korean enterprises put the raw material and sales ends abroad. The product costs are determined to a large extent in Shandong while product prices are determined in Korea. If a policy change in Shandong increases operation costs, a contract will probably be terminated soon. However, with the new Labor Contract Law implemented and wage system reformed in China, operation costs of Korean enterprises will increase inevitably with a boost in labor cost. But some factors are against the rising cost of labor: the labor-intensive industries are replaced with capital-intensive ones and technology-intensive ones in Korea, relevant industrial policies adopted by host government to facilitate the match between local firms and Korean enterprises, etc. While Korean enterprises face high costs of imported raw materials, industrial matching policies can help them reduce operation costs by using local materials and this will benefit contracts duration. In addition, the investment environment improvements made by the host government can also reduce the operation costs of Korean enterprises: national treatment, infrastructure such as energy, water and power, convenient transportation like ports, normal labor market, and high level of integrity etc.

The above analysis shows that factors affecting the long staying mechanism of South Korean enterprises in Shandong fall into four categories: traits of Korean enterprises such as

investment amount and motivation, industry style; economic factors, especially the performance of an enterprise; factors of the host government like infrastructure, human resource, level of integrity etc. These factors combined produce the long staying mechanism of South Korean enterprises. These factors or variables will be estimated in the following section.

3. Data and estimation model

The data is provided by the Northeast Asia Research Center of Shandong University, South Korean Pusan National University and South Korean BOGO Academe in a survey of South Korean enterprises' operation states in Shandong. The survey is based on questionnaires sent to 330 South Korean enterprises in Tsingtao, Yantai and Weihai with random sampling method covering the following: basic situation of South Korean enterprises in Shandong such as investment amount, operation term, industry type, and joint-ventured or wholly-owned; evaluation to investment environment such as infrastructure and so on; survey on operating situation and difficulties in operating.

A total of 330 questionnaires were sent in this survey, 281 (85.2%) usable questionnaires were obtained. The following variables are defined: contract duration as yearly series-time variable, investment amount to measure contract traits, a series of dummy variables to show other contract characteristics: investment expanding, located in Qingdao or in Weihai, industry style, five industrial clusters of peninsula, wholly-owned or not. A series of ordinal variables are also included, operation state, evaluation of infrastructure, human resources and labor market, business information supplied by government, local financing system, taxation and accounting system, industry matching, level of integrity etc. Valid samples including all these variables are 214. Table 1 gives details of these variables. Two regression models are established: contract duration model (OLS model) and contract duration probability model (LOGIT model).

Table 1 Statistics of variables' characteristics

variables	definition	samples	mean	standard deviation	min	max
Duration	Duration of contract, unit: year	214	59.39	41.44	1.1	20.0
Inv	Amount of investment, unit: 10 thousands US\$	214	313.37	698.84	1	5500
Exp	1 stands for expanding, 0 stands for no expanding.	214	0.54	0.50	0	1
OS	Operation situation	214	-0.06	0.75	-1	1
EI	Evaluation to Infrastructure	214	1.7	1.06	1	6
EHR	Evaluation to human resource	214	1.83	1.01	1	5
ELI	Evaluation to level of integrity	214	1.91	1.17	1	6
EIJ	Evaluation to industry joint	214	1.75	0.90	1	5
ELF	Evaluation to local financing	214	0.82	0.81	0	2
ETA	Evaluation to taxation and accounting system	214	0.99	0.37	0	3
EOI	Evaluation to operation information supplied by host government	214	1.75	0.85	1	5
Tsingtao	1 stands for enterprise in Tsingtao, 0 stands for the else	214	0.40	0.49	0	1
Weihai	1 stands for enterprise in Yantai, 0 stands for the else	214	0.45	0.50	0	1
IIT	1 stands for investment into industry, 0 stands for the else	214	0.98	0.14	0	1
FIC	1 stands for five industrial clusters, 0 stands for the else	214	0.71	0.45	0	1
IF	Investment form, 1 stands for wholly-owned, 0 stands for joint venture	214	0.95	0.21	0	1
IFPP	1 stands for investment for preferential policies, 0 stands for the else	214	0.20	0.40	0	1
IFCM	1 stands for investment for Chinese market, 0 stands for the else.	214	0.15	0.36	0	1
IFCL	1 stands for investment for cheap labor, 0 stands for the else	214	0.36	0.48	0.48	1
IFA	1 stands for adjacency, 0 stands for the else	214	0.47	0.50	0	1
RILE	1 stands for relative investment with large enterprise synchronously, 0 stands for the else	214	0.16	0.37	0	1

In contract duration model (OLS model), the dependent variable is Duration, and independent variable is vector X, including investment amount, dummy variables and ordinal variables listed in table 1, and three other unlisted interactive variables: operation situation and synchronized investment, investment amount and industry style, five industrial clusters and favored policies. The interactive variables are defined to observe the influence on contract duration caused by the interaction of factors. Having direct influence on contract duration, these independent variables have linear relationships with duration. Econometric OLS model is set as: $\text{duration} = X \beta + u$. Duration, X, β and u are matrix vectors, random error u meets non-autocorrelation assumption, but heteroskedasticity may exist.

In contract duration probability model (LOGIT model), the dependent variable is binary variable (Expanding)—to expand investment or not, the independent variable is vector Y, including the continuous time variable contract duration, investment amount, dummy variables, ordinal variables listed in table 1, three unlisted interactive variables as in OLS model. Econometric model $\text{Expanding} = Y \gamma + u$ is established to estimate the probability of investment expansion of enterprises. No investment expansion does not necessarily mean the termination of a contract, but investment expansion means definitely that a contract will sustain.

4. Estimation Result

The OLS and LOGIT models are estimated with Stata 8.0 and results are given in table 2. Most coefficients are significant and their signs meet expectations.

OLS results show, Performance of Korean enterprise affects contract duration most. When evaluation of the enterprise performance increases by one unit, the contract will be 1.21 years longer. Being “economic men”, Korean enterprises always pursue to maximize their profits, so it's natural that enterprises with good performance will maintain their operation (contract duration). Both investment and industrial styles have significant positive influence on contract duration. Moreover, contract will be 0.1 years longer if investment amount increases by

\$10,000. For industrial styles, contract duration of industrial investment is 0.18 years longer than that of other types of investments. The significance of interactive variable of investment and industrial styles shows that each additional US\$10,000 investment in industry makes the contract 0.098 years longer than that invested in other fields. Because a considerable part of industrial investment is fixed investment, even specialized investment, withdrawal of which is more difficult than that in service field, and the contract naturally lasts longer. As for the investment forms, single-ventured or joint-ventured has no significant influence on contract duration. It is worth noting that contracts motivated by favored policies and cheap labor are 0.15 and 0.12 years shorter respectively than those by other investment motivations, and those motivated by China market, geographical approximation and synchronized investment are 0.03, 0.24 and 0.07 years longer than others. This can be explained by the fact that Chinese government will inevitably change its “welcome all” attitude on FDI to adjust its favored policies from general industries to its desired industries as FDI flows in constantly. However, the interactive variable between five industrial clusters and preferential policies is significant, which indicates foreign investment is motivated by favored policy. Moreover, the contracts in five industrial clusters are 0.09 years longer than those in favored policies. Meanwhile, among the host country factors, infrastructure has significant positive influence on contract duration, and the result shows that if infrastructure increases by one unit, contract will be 0.33 years longer. Infrastructure in the host country is critical to investors. It shows the main concerns in infrastructure are land, water and electricity, which are the necessary conditions and guarantee for investment and production. Human resource has significant positive influence on contract. In recent years, in Shandong province, especially in peninsula areas, the shortage of skilled workers and senior managers has seriously affected the operation and production of South Korean enterprises. Industrial matching also has significant positive influence on contract duration. The Korean enterprises have to purchase expensive qualified raw materials from abroad unavailable in the host country. So if the host government can develop industries similar to those transferred from South Korea, it will reduce the cost of Korean enterprises and extend the contracts duration. Just as the result shows, a rise in industrial matching by one grade can extend the contract by 0.117 years. And the integrity level is also significant, it shows if the integrity level increases by one unit, the contract will be 0.08 years longer. Local

financing system and tax accounting system have no significant influence on contract duration. Most Korean enterprises are financed by Korean funds, so little influence is made by Chinese local financing system. It is somewhat surprising that no significant heteroscedasticity is found in the contract durations of South Korean enterprises in Qingdao, Yantai and Weihai.

In the LOGIT model, the signs of variables determining whether to expand investment are similar to those in OLS model, but some parameters are no longer significant. The dependent variable contract duration in OLS is an independent variable in the LOGIT model, but the regression results show that contract duration has no significant influence on the probability of expanding investment. Among the investment motivations, the coefficient of favored policies is -0.202059, indicating holding all else constant, the possibility of expanding investment on favored policies is 81.7047% ($e^{-0.202059}$) lower than those on other motivations. And those on cheap labor are 49.219% lower than those on other motivations. On the contrast, possibility for those on Chinese market, geographical location and synchronized investment is 110.6406%, 275.9052% and 103.9758% higher than those on others respectively. The possibility of expanding investment from those having good performance is 267.3181% higher than others. However, investment amount and investment forms have no significant influence on the possibility of expanding investment, and industrial style is not significant. Among the host country factors, level of integrity has the most significant influence on expanding investment leading to the good integrity being 129.9316% higher than the bad one. Other factors have similar effects. Good infrastructure, industrial docking and human resource are 180.7533%, 109.636%, 122.9579% higher respectively than their bad counterparts and so on. Local financing which was not significant to contract duration in OLS becomes highly significant in LOGIT model. The investment expanding possibility of those enterprises with good comments on financing is 129.0655% higher than that with bad comments, and thus showing local financing, although not expected, can certainly encourage Korean enterprises' investment if they can enjoy national treatments. All three interactive variables have significant influence on investment expanding.

Table 2 Coefficient estimation results

variable	OLS	LOGIT
Constant term	-1.164676 (0.600348)	-2.619114 (1.329499)
Duration	—	0.0792502 (0.061434)
Inv	0.100389 (0.047578)	0.14363 (0.156105)
OS	1.210245 (0.247494)	0.983269 (0.678117)
EI	0.3287085 (0.118896)	0.2618383 (0.044606)
EHR	0.276611 (0.128899)	0.2066718 (0.064384)
ELI	0.076611 (0.018899)	0.591963 (0.164539)
EIJ	0.1174 (0.041091)	0.0919956 (0.024337)
ELF	0.3777756 (0.312211)	0.25515 (0.122987)
ETA	-0.0629989 (0.07495)	0.1857951 (0.484128)
EOI	0.320341 (0.106426)	0.420638 (0.141154)
Tsingtao	-0.2254186 (0.13662)	0.0706648 (0.289582)
Weihai	-0.0444641 (0.03318)	-0.0205704 (0.015351)
IIT	0.1799065 (0.060371)	-3.013923 (1.79329)
FIC	0.1306925 (0.027986)	0.325499 (0.106684)
IF	-0.2158112 (0.220216)	0.12764 (0.116036)
IFPP	-0.153382 (0.273900)	-0.202059 (0.25905)
IFCM	0.0304946 (0.011912)	0.1011171 (0.041272)
IFCL	-0.1163019 (0.13068)	-0.708884 (1.691964)
IFA	0.2390754 (0.112366)	1.014887 (0.323212)
RILE	0.068942 (0.010606)	0.0389884 (0.006699)
OS*RILE	0.089278 (0.029759)	0.106582 (0.02193)
Inv*IIT	0.097852 (0.034281)	0.128963 (0.05286)
FIC * IFPP	0.090283 (0.036725)	0.084325 (0.04329)
R ² (Pseudo R ²)	0.7645	0.3883

Note: the values in parentheses stand for the standard error of estimated values

5. Conclusion

Conclusion can be made from the above analysis. First, contract duration is correlated with investment motivation. In the investment motivations, the contract duration of South Korean enterprises purely for favored policies and cheap labor will be increasingly shorter. Those South Korean enterprises investing in Shandong for Chinese market, location and synchronized investment will have longer contract duration, and will become the main force of long staying in Shandong. Second, whether South Korean enterprises can have long staying in Shandong is also correlated with their investment types. The invested industry by South Korean enterprise has to stand up the test of the structural change in Shandong industry. At present, contract

duration is longer for those South Korean enterprises investing in five industrial clusters. Third, for the host government, perfecting infrastructure and ensuring sufficient supply of water, electricity and land for South Korean enterprise can extend the contract duration. Qualified human resources supplied by education institutions can extend contract duration too. Others factors determining contract duration such as industry matching, integrity level can reduce production cost and transaction cost too. Fourth, no difference is found for South Korean enterprises in the investment region, at least in Shandong Peninsula.

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