

Original Article

A New Frame of Transaction Capacity for Exchange of Knowledge Goods

Xiugang Yang¹

¹110/1-4 Prachachuen Road, Tungsonghong, Laksi, Bangkok, Thailand.

MBA department in China-Asean International College of Dhurakji Pundit University

Received Date: 08 May 2020

Revised Date: 04 June 2020

Accepted Date: 06 June 2020

Abstract - By panel data from year report 2009 to 2017 of 40 economies, this paper builds a new analysis frame of transaction capacity of exchange knowledge goods to analyze the role of knowledge transaction played in transaction capacity of firms. We find that though business sophistication promoted the transaction capacity, knowledge goods and the intellectual transaction didn't play a deserved active role in transaction capacity through both technological readiness and business sophistication timely because technological and political barriers exist, yet technological readiness is negative correlative with transaction capacity because there is the asynchronous effect between technological readiness and transaction capacity, firm and government should take responsibility to uplift the transaction capacity of firms by broken technological and political barriers.

Keywords - Charges for intellectual property, technological readiness, business sophistication, transaction capacity of the firm.

I. INTRODUCTION

The transaction is the most important one of the basic actions in firms and economic society; for this sake, transaction capacity should be taken into consideration as a focus by firms and economic society, as well as by the academic circle. However, transaction capacity lacks academic research with the system, efficiency and expertness. The literature below is connected with transaction capacity but different:

The first one is the market efficiency theory. All the market efficiency theories focus on Pareto's optimality in Pigu's welfare Economics; under the condition of perfect ratio and ignorance on information cost, the market will be Walras equilibrium by auction and wrong-tests repeatedly, market plays a role to distribute the resources optimally. In fact, market efficiency embodies the transaction capacity, and though it can be the proxy or measurable dimension for transaction capacity, it is not the transaction capacity itself.

The second is transaction cost theory, represented by Coase and Douglass C. North, considered organizational development and market problem solution from the

viewpoint of transaction cost, drawing a conclusion the reason for the western world's economic booming lies in the reduction and save of transaction cost by organization form choice and institution design. If considering the transaction cost of the market, the effect of market distribution to resources is unable to reasonably and efficiently take advantage of available resources and save the cost, and it is not optimal.

Coase's transaction cost theory drops a hint that property (including intellectual property) and transaction cost impact on transaction capacity of firms and organizations, yet the scope of transaction capacity is beyond transaction cost and property theory, including the beyond property right theory and non-cost factors, the development of the organization is to uplift transaction capacity rather than to reduce transaction cost.

The third is financial market efficiency or financial capacity theory; in financial theory, financial market efficiency is a kind of reflection degree of financial products' price to the valuable information of firms. World Bank defines the financial capacity from a customer viewpoint, and they think that financial capacity is an internal capacity to act in one's best financial interest, given socioeconomic and environmental conditions. It encompasses the knowledge (literacy), attitudes, skills, and behaviour of consumers with respect to understanding, selecting and using financial services and the ability to access financial services that fit their needs. The UK government, for example, has adopted the following definition:

Financial capability is a broad concept encompassing people's knowledge and skills to understand their own financial circumstances, along with the motivation to take action. Financially capable consumers plan ahead, find and use information, know when to seek advice and can understand and act on this advice, leading to greater participation in the financial services market (HM Treasury, 2007, p. 19).

Financial market efficiency, especially the financial capacity, is a part of transaction capacity, but not the transaction capacity itself. Transaction capacity obviously includes the castability of products and services.



The fourth is marketability and liquidity, general understanding, marketability is the capability by sales, and Marketability is defined in the International Glossary of Business Valuation Terms as “the ability to quickly convert the property to cash at minimal cost” Some texts go on to add “with a high degree of certainty of realizing the anticipated amount of proceeds”.

What is liquidity? Liquidity is the ability to quickly convert the property to cash or pay a liability. Said another way, Liquidity is the ability to readily convert an asset, business, business ownership interest or security into cash without significant loss of principal. Compare Liquidity to the definition of Marketability: the capability and ease of transfer or salability of an asset, business, business ownership interest or security. How does Liquidity differ from Marketability? These terms are often used interchangeably, although there is a technical distinction between them. Marketability indicates the fact of “Salability”, while Liquidity indicates how fast that sale can occur at the current price. Capability is one core of transaction capacity, yet apart from cash ability, the transaction also includes the financial capacity and transaction support system; marketability and liquidity is just part of transaction capacity, but not all of it.

From the literature review, an accepted definition for transaction capacity is not confirmed by academia. This paper suggests that transaction capacity is the ability for assets, value or wealth to transfer, comminute, exchange and raise the money, from which to get the profit and added value due to the needs fit of both sides for the transaction. Transaction capacity is made up of cash ability and financial capacity, unable to depend on the support system for the transaction.

We can understand transaction capacity from several aspects below:

The first is the needs fit from both sides for assets, value or wealth transaction, that is the precondition of transaction capacity owned by assets or value, if the assets or wealth is unable to meet the needs of transactional two sides, exchange will not happen, that means the assets or the wealth have no transaction capacity for the people.

The second aspect is the assets or wealth should have the property that is able to be transferred and comminuted, that is to say, if there is no property or property right is not clear, the transaction will be difficult, even be cancelled, that means the assets or wealth have no transaction capacity.

The third lies in the transaction of assets or wealth, which is a procedure of transfer and comminute of property, so transfer and comminute of property become a substantial part of transaction capacity. The degree of comminute and way of transfer for property determines how strong the transaction capacity is. Here so-called

“degree of comminute” in the process of transaction for assets and wealth should be understood as different combinations among property bunches, part property and whole property, and some are the transfer of the right of us, some are the transfer of the right of management, some are the transfer of ownership of the property itself, different degree of comminute means different transaction capacity. Here so-called “the way of transfer ” should be understood as the forms or methods of the transfer, such as to sell or to rent.

The fourth is to take advantage of the assets or wealth to raise money. Also, here will be taken as the embodiment of the transaction capacity; that's to say, the stronger the ability to raise money by assets or wealth, the more powerful the transaction capacity of assets or wealth reflects. From the viewpoint of substance, any exchange action is the process of flow in or flow out of cash, transaction of assets is just to get the income of the cash flow by assets exchange, no matter they are sells, mortgage, comminute or transfer of property. The financial capacity of assets is able to be divided into two parts: debt financing and stock right financing; they both are transaction capacity of assets.

The fifth is the aim of the transaction is to increase the profit or add the value, the result of transaction embodies the transaction capacity when the transaction capacity is powerful, the result of transaction for assets is to add the value or to get more profit naturally if the transaction capacity of assets is weak, the result of the transaction is to lose the money.

The sixth is that the transaction capacity is unable to depend on the support system, such as the human resources management et al.

In a word, a transaction is able to be understood from its precondition, process, and its result, among them, the first and the second is the precondition of transaction capacity, the third and fourth is the process of transaction capacity, and the fifth is the result of transaction capacity. In the abstract, transaction capacity is the ability to realize the value, is the change and liquidity of cash flow and its equivalent. It can be expressed as follow figure1.

Transaction capacity belongs to the circulation ability in nature; its front connects with the production and supply and its end links of payment and consumption, it is the mediator from supply to demand; this mediator guides the production and supply in one side and serves the purchasing and demand in another side, it is the acting force to realize the value or profit for products or services, and the penetrating force to the link of both producing force and purchasing power.

II. A NEW ANALYSIS FRAME OF TRANSACTION FOR EXCHANGE KNOWLEDGE GOODS

Although transaction capacity is much important for firms or economic society, There is no Literature to answer the question of how to uplift the transaction capacities of a firm, that is to say, how a system to increase the transaction capacity of firms is a big question.

New Institution Economics expect to uplift transaction capacity by reducing transaction cost, but it's wrong because the transaction capacity is cause and transaction cost reduce is effect, new institution economics' logic is upside down. Financial capacity theory wants to increase transaction capacity from raising money, but cashability is ignored. Marketing theory focuses on marketability and liquidity but forget the financial capacity.

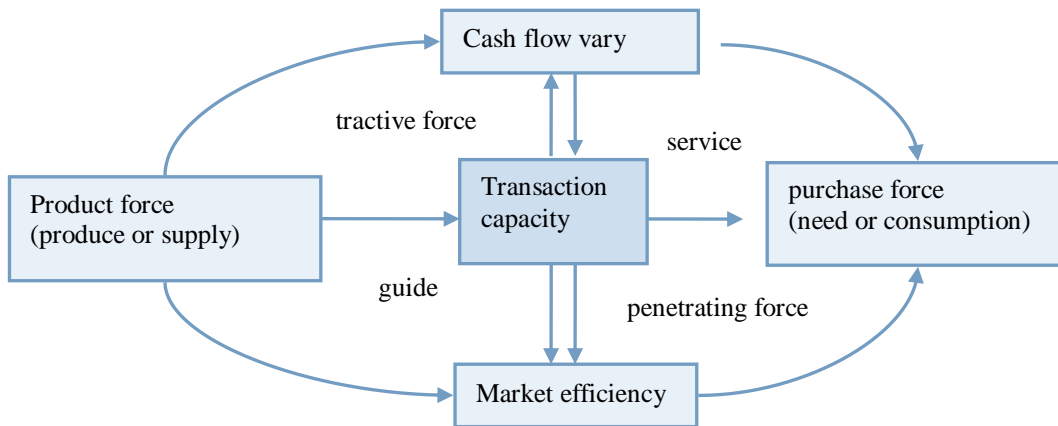


Fig. 1 The Definition of Transaction Capacity

Human resources theory hold that human resources are more powerful to drive economic growth than material resources; among human resources, knowledge, experience and skill play a very significant part to increase the growth of the economy. Endogenous growth theory, even think knowledge has been the source of economic growth since world war II, built a model called learning by doing, explain the economic growth by marginal decreasing effect in knowledge exchange or use, in contrast, as time goes by, there is marginal increasing effect and spillover effect in knowledge exchange or use. However, economic growth is the result of a lift of a firm's transaction capacity.

Philosophically thinking, there are many factors that influence transaction capacity. From the viewpoint of structure, all the exchange is made of transaction subjects (persons or firms), transaction objects (goods, services or currency), payment way (contract or payment condition) and transaction surrounding (including social institution and natural environment), take two transaction subjects as an example is shown in figure 2.

The transaction takes place between subject A and subject B; they exchange with transaction object through certain payment way, under some restrictive conditions of transaction surrounding.

So that transaction capacity is determined by transaction subject A and B (employers or firms), transaction object like goods, service and currency, payment way such as online or offline, transaction

surrounding including policy, time and space etc. That is the general idea for how to uplift transaction capacity.

However, this paper answers this question from a different viewpoint of two aspects, one intellectual property is the basic reason to lift the transaction capacity of firms; in other words, the more intellectual property exchange, the higher transaction capacity lift, they are significantly positive correlative, another is an exchange of intellectual property lift the transaction capacity of firms through both the technological readiness and business sophistication.

Here we take both transaction tool and organization structure as the embody of transaction capacity, so the exchange of intellectual property uplifts the level of technological readiness, and the lift of technological readiness not only reduces the time and cost of the transaction but also increase the efficiency and ability of the market. Apart, the exchange of intellectual property enhances the business sophistication of firms through multiplying the cluster of business and exchange structure of firms, so that higher the transaction capacity of firm and market.

According to the above conception, this paper provides a research frame as shown in figure 3:

In this research frame, intellectual property influences the transaction capacity through both technological readiness and business sophistication, and technological readiness significantly push forward the business sophistication. The hypothesis is below:

H1: exchange of knowledge (the level of intellectual property transaction) is significantly positive correlative with transaction capacities of firms;

H2: exchange of knowledge (the level of intellectual property transaction) is significantly positive correlative with technological readiness;

H3: The level of intellectual property transaction is significantly positive correlative with business sophistication

H4: the technological readiness is significantly positive correlative with transaction capacities of firms;

H5: the business sophistication is significantly positive correlative with transaction capacities of firms;

H6: technological readiness is significantly positive correlative with business sophistication.

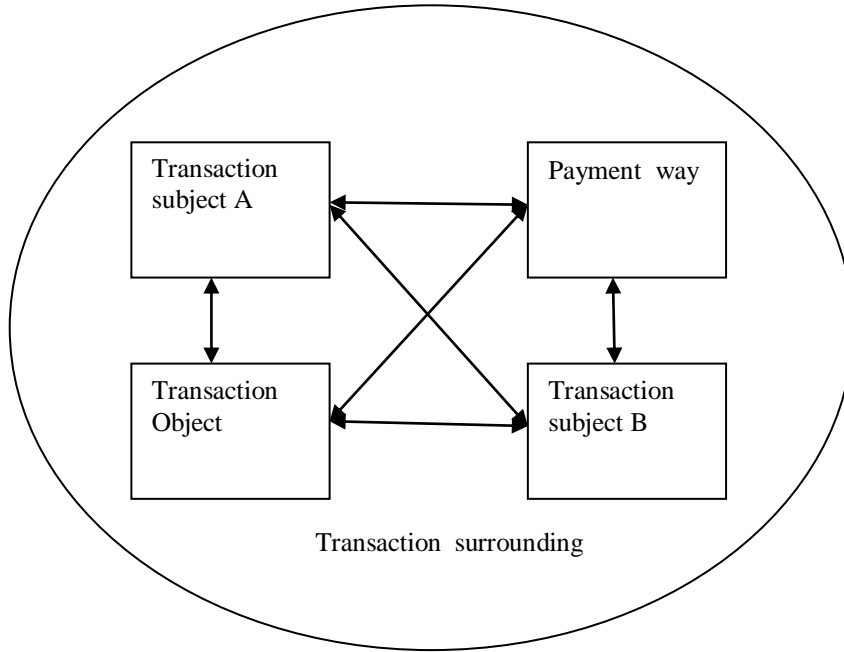


Fig. 2 Influence Factors Of Transaction Capacity

III. METHOD: INDEX SYSTEM, DATA SOURCES AND DATA DEALING

We take the empirical method to analyse the exchange of knowledge goods influence on the transaction capacity based on the analysis frame and hypotheses above. The first step is to choose the index system, including data source and data dealing, then testing variables stationarity to avoid fake regression, next to build equation to regress and finally check and explain the result of regression.

This paper uses the index system like Table 1.

From the definition of transaction capacity above, the transaction capacity index is made of 3 parts, cashability index, financial capacity index and transaction support system index for the labour force, alternatively. In practice, we use goods market efficiency to present cashability, take financial market development level as financial capacity and regard labour market efficiency as a transaction support system for the labour force. Index1 is made from the geometric mean of all index2.

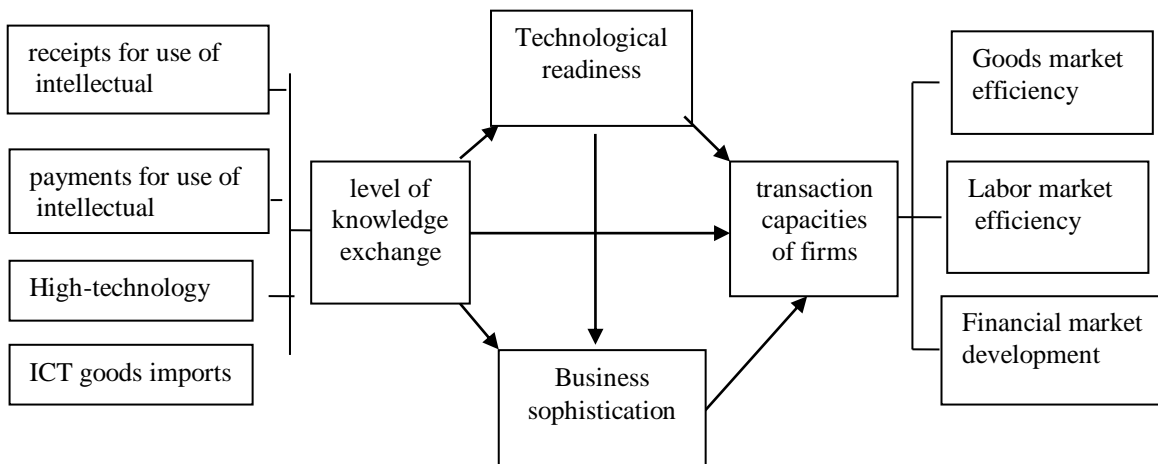


Fig. 3 Research Framework

Table1. Index System

| Index1 | Index2 | Index3 |
|------------------------------------|--|--|
| Transaction capacity | cashability (Goods market efficiency) | Intensity of local competition |
| | | Extent of market dominance |
| | | Effectiveness of anti-monopoly policy |
| | | Extent and effect of taxation |
| | | Total tax rate, % profits* |
| | | No. procedures to start a business* |
| | | No. days to start a business* |
| | | Agricultural policy costs |
| | | Prevalence of trade barriers |
| | | Trade tariffs, % duty* |
| | | Prevalence of foreign ownership |
| | | Business impact of rules on FDI |
| | | Burden of customs procedures |
| | | Imports as a percentage of GDP* |
| | | Degree of customer orientation |
| | Buyer sophistication | |
| | Transaction support system/capacity (Labor market efficiency) | Cooperation in labor-employer relations |
| | | Flexibility of wage determination |
| | | Hiring and firing practices |
| | | Redundancy costs, weeks of salary* |
| | | Pay and productivity |
| | | Reliance on professional management |
| | | Brain drain |
| | Women in labor force, ratio to men* | |
| | Financial capacity (Financial market development) | Availability of financial services |
| | | Affordability of financial services |
| | | Financing through local equity market |
| | | Ease of access to loans |
| Venture capital availability | | |
| Soundness of banks | | |
| Regulation of securities exchanges | | |
| Legal rights index, 0–10 (best)* | | |
| Technological readiness | Availability of latest technologies | |
| | Firm-level technology absorption | |
| | FDI and technology transfer | |
| | Individuals using Internet, %* | |
| | Broadband Internet subscriptions/100 pop.* | |
| | Int'l Internet bandwidth, kb/s per user* | |
| | Mobile broadband subscriptions/100 pop.* | |
| Business sophistication | Local supplier quantity | |
| | Local supplier quality | |
| | State of cluster development | |
| | Nature of competitive advantage | |
| | Value chain breadth | |
| | Control of international distribution | |
| | Production process sophistication | |
| | Extent of marketing | |
| Willingness to delegate authority | | |
| Level of knowledge Exchange | Charges of pure intellectual property | receipts for the use of intellectual property (current US\$) |
| | | payments for the use of intellectual property(current US\$) |
| | Charges of Materialized intellectual property | High-technology exports (% of manufactured exports) |
| | | ICT goods imports (% total goods imports) |

The level of knowledge exchange is made of rough two parts, exact four parts, and one is charges for the use of pure intellectual property, including receipts and payments for the use of the intellectual property (current US\$) another is charges of materialized intellectual property, including High-technology exports (% of manufactured exports) and ICT goods imports (% total goods imports).

For the convenient reason, the Level of knowledge exchange is equal to the geometric mean made from receipts and payments for the use of the intellectual property (current US\$), High-technology exports (% of manufactured exports) and ICT goods imports (% total goods imports). It's logic and mach the research frame.

Technological readiness index is made from Availability of latest technologies to Mobile broadband subscriptions/100 pop.* and business sophistication is made from Local supplier quantity to Willingness to delegate authority like shown in table1. The way of index1 is made from index2 can be seen in the yearly Global Competitiveness Report, through the year 2009 to 2017.

An index of the level of knowledge exchange, data of receipts and payments for the use of the intellectual property (current US\$), High-technology exports (% of manufactured exports) and ICT goods imports (% total goods imports) comes from the world bank website, transaction capacity data, technological readiness data and business sophistication data all come from yearly Global Competitiveness Report, through the year of 2009 to 2017, covered 40 main countries or economies.

IV. REGRESSION MODEL AND RESULT ANALYSIS

By the research frame and hypothesis, we build the regression model below:

$$TECHREADINESS = \beta_0 + \beta_1 \Delta int\ ellreception + \beta_2 \Delta int\ ellpayment + \beta_3 hitech\ export + \beta_4 ictimport + \varepsilon_1 \quad (1)$$

$$BUSINESSSOPH = \phi_0 + \phi_1 \Delta int\ ellreception + \phi_2 \Delta int\ ellpayment + \phi_3 hitech\ export + \phi_4 ictimport + \varepsilon_2 \quad (2)$$

$$BUSINESSSOPH = \psi_0 + \psi_1 TECHREADINESS + \varepsilon_3 \quad (3)$$

$$TRANSCAPACITY = \varphi_0 + \varphi_1 \Delta int\ ellreception + \varphi_2 \Delta int\ ellpayment + \varphi_3 hitech\ export + \varphi_4 ictimport + \varepsilon_4 \quad (4)$$

$$TRANSCAPACITY = \gamma_0 + \gamma_1 TECHREADINESS + \gamma_2 BUSINESSSOPH + \varepsilon_5 \quad (5)$$

Here *TECHREADINESS*, *BUSINESSSOPH*, *TRANSCAPACITY* stand for technological readiness, business sophistication and transaction capacity, respectively, *intellereception*, *intellpayment*, *hi-tech export* and *ictimport* present for receipts and payment for the use of intellectual property, high technological products export rate and ICT goods import rate respectively.

Before regression analyses, we test the stationarity for variables in panel data, and the results are shown in table2 below.

By the five stationarity test methods of Levin, Lin & Chu t*, Breitung t-stat, I'm, Pesaran and Shin W-stat, ADF - Fisher Chi-square, PP - Fisher Chi-square, the method of Levin, Lin & Chu t*, apart from Breitung t-stat accepts null hypothesis, showing there is no existence of homogeneous unit-roots, Im, Pesaran and Shin W-stat, ADF - Fisher Chi-square and PP - Fisher Chi-square methods refuse the null hypothesis, tell us there are heterogeneous unit roots in the panel data. Generally speaking, there are unit roots in the panel data, which means variables in panel data is stationary; almost all the variables are 0 order stationarity except payment and receipt for use intellectual property. The stationarity of variables in panel data paves the way for regression analyses, avoiding spurious regression.

From the panel data, by taking advantage of statistics software, the result of regression are shown in table3 below. From the result of the table3, we draw the conclusion:

Model 1 is suggested to use fix-effect model by Hausman test, the rate of high-technology export put forward the technological readiness at 0.95 confidence level, this conclusion match the theory expect, because the payments of intellectual property enrich the knowledge base and higher the degree of the intelligentization for the market subject (such as individuals, corporations and economies), this kind of knowledge and intelligence is materialized as technological readiness, lift the technological level and knowledge add-values, and promote the technological readiness itself, this is one side. Another side, if the technological readiness of the economy is higher, the probability of buying the hi-technology of the economy is higher, that is to say, the hi-technology export quantity or hi-technology rate occupied the export goods will climb up as the level of technological readiness is uplifted, so that hi-technology goods export and the technological readiness are influenced with each other, they help each other, are mutually cause and effect, this kind of help is obvious.

Yet beyond expect, the ICT goods imports are negative correlative with technological readiness at about 0.99 confidence level, which means the lift of technological readiness is not based on ICT goods imports; ICT goods imports don't play the role to promote technological readiness. The reason is the long-run effect of ICT goods imports. For the sake of uplift technological readiness for the market, economies import large amounts of this kind of ICT goods at the beginning, carry on the infrastructure building, meet the need of uplift of the technological readiness, but once the uplift for the technological readiness is successful, because the long-run effect of the ICT goods imports, economies will reduce this kind of import as time goes by, and choose the higher-

technological ICT goods instead, in spite of the price is more expensive. So that is occurred the uplift of technological readiness in one side, another side the ICT goods imports step by step reduced, in other words, they are significantly negative correlative linear.

Table 2. Balanced Observations for Each Test of stationarity

| Variables | Business sophistication | Technological readiness | Transaction capacity | payment for the use of intellectual property | receipt for the use of intellectual property | Export of high technologic products | Import of ICT goods |
|--|-------------------------|-------------------------|----------------------|--|--|-------------------------------------|----------------------|
| Method | Statistic &P-value | Statistic &P-value | Statistic &P-value | Statistic &P-value | Statistic &P-value | Statistic &P-value | Statistic& P-value |
| Null: unit root (assumes common unit root process) | | | | | | | |
| Levin, Lin & Chu t* | -11.6634 (0.0000) | -23.8113 (0.0000) | -6.70836 (0.0000) | -6.56586 (0.0000) | -27.5716 (0.0000) | -8.92374 (0.0000) | -9.99047 (0.0000) |
| Breitung t-stat | / | -0.04467 (0.4822) | / | / | 1.47964 (0.9350) | 1.82890 (0.9663) | / |
| Null: unit root (assumes individual unit root process) | | | | | | | |
| Im, Pesaran and Shin W-stat | -1.96933 (0.0245) | -1.87025 (0.037) | -1.96373 (0.0248) | -1.939429 (0.0262) | -2.10005 (0.0179) | -0.91769 (0.1794) | -2.21698 (0.0133) |
| ADF - Fisher Chi-square | 121.600 (0.0019) | 151.116 (0.0000) | 113.995 (0.0075) | 108.845 (0.0177) | 145.922 (0.0000) | 122.923 (0.0015) | 119.198 (0.0030) |
| PP - Fisher Chi-square | 102.511 (0.0458) | 165.900 (0.0000) | 193.423 (0.000) | 227.265 (0.0000) | 153.901 (0.0000) | 203.779 (0.0000) | 142.106 (0.0000) |
| Option for Test | Level | Level and trend | Level | Level and trend | Level and trend | Level | Level |
| Conclusion | 0 order stationarity | 0 order stationarity | 0 order stationarity | 1 order stationarity | 1 order stationarity | 0 order stationarity | 0 order stationarity |

V. CONCLUSION AND SUGGESTION

From the analysis above, we draw the conclusion below, as shown in table4:

First, in exchange for the knowledge, the high-technology goods export rate play an important role in the promotion of technological readiness at 0.01 significance level, in the high tech-readiness level of economies, the probability of their high technology goods are bought by other economies is comparatively high, tech-readiness and high-tech goods are mutually cause and effect, they help each other.

ICT goods import rate is negative correlative with tech-readiness at 0.01 significance level, the upgrade of tech-readiness is not on the base of import rate of ICT goods, ICT goods import didn't play it's deserved role in pushing forward the tech-readiness due to long-run effect of the import for the use of ICT goods.

Second, the added value of receipts for the use of the intellectual property is insignificantly negative correlative with business sophistication, and there is protection for knowledge and tech barriers. The export rate of high technological products has no business with business sophistication. The import rate of ICT goods is positive correlative with business sophistication at 0.1 significant level because the import of ICT goods enhanced the communication ability both in and outside of the firms, so that improved the business sophistication.

Third, there is a positive correlation between tech-readiness and business sophistication at 0.1 significant level, the input of tech-readiness and the usage for the tech-readiness greatly improve the business sophistication.

Fourth, the charges of intellectual property(including payment for the use of intellectual property and exchange of materialized intellectual property)was not significant statistical correlative with transaction capacities of firms at the confidence level beyond 90%. They are unable to play their right roles to improve the transaction capacity. If no consider the influence by technological readiness and business sophistication on transaction capacity, the import rate of ICT goods is positive correlative with transaction capacity of firms at 0.01 significant level, because the import of ICT goods enhanced the communicated ability, so that improved the efficiency of goods, labour and finance markets, saved the cost of transaction for firms.

Fifth, business sophistication is positively correlative with transaction capacity; the higher the business sophistication of the economy is, the greater the transaction capacity and efficiency of the market are, the low business sophistication means the weak transaction capacity of both markets and firms. At 0.01 significance level, tech-readiness is negatively correlative with transaction capacity of firms, the reason for the negative correlation lies in the asynchronous, the technological readiness relatively is still, as time goes by, equipment in tech-readiness will be old, decreased in function; however, the transaction capacity will be upgraded quickly due to

the seeking for-profit and competition for markets, the uplift of transaction capacity is always company by the decreasing of tech-readiness when transaction capacity is low, firms intended to pay for the technology and equipment, so that tech-readiness becomes high at the time

when transaction capacity is low, this causes the asynchronous movement between transaction capacity and tech-readiness, they are significantly negative correlative with each other.

Table 3. Panel Data Regression Result

| model | model1 | model 2 | model 3 | model 4 | model 5 | model 6 |
|---|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------------|----------------------------|
| explained variable | Tech-readiness | | Business sophistication | | Transaction capacity of firms | |
| explaining variable | Tech-readiness | | Business sophistication | | Transaction capacity of firms | |
| constants | 4.87752*** (0.131406) | 4.39237*** (.0481472) | 4.28005*** (.0966694) | 4.34324*** (.0473837) | 2.02565*** (.2247484) | 2.11661*** (.2232025) |
| D(Receipt for use of intellectual property) | 1.06e-12 (5.80e-12) | -1.25e-11** (4.91e-12) | | -1.20e-11** (4.83e-12) | | -6.00e-12 (4.11e-12) |
| D(payment for use of intellectual property) | -2.11e-11 (1.34e-11) | 3.69e-13 (2.13e-12) | | 1.10e-12 (2.09e-12) | | 9.43e-13 (1.76e-12) |
| Export of hi-tech products | .0263054*** (.0084131) | .0009998 (.0030826) | | .0030217 (.0030337) | | .0038648 (.0025969) |
| Import of ICT goods | -.0501074*** (.016449) | .0121534** (.0060269) | | .0088476 (.0059314) | | -.0007212 (.0051561) |
| Tech-readiness | | | .0504791** (0.0201176) | | -.088144*** (.0176695) | -.0535807*** (.0192523) |
| Business sophistication | | | | | .6369732*** (.0486977) | .5664313*** (.0525445) |
| Hausman test | Fixed effect | Fixed effect | Fixed effect | Fixed effect | Fixed effect | Fixed effect |
| R-sq: overall | 0.2728 | 0.0459 | 0.6487 | 0.1946 | 0.4913 | 0.4688 |

Sixth, no consider tech-readiness and business sophistication, the added value of receipt for the use of the intellectual property has a negative relationship with transaction capacity of firms, there is the limited policy for exchange of knowledge or knowledge goods, technology barriers, and knowledge protection still exist.

Seventh, the exchange of pure intellectual property influences the transaction capacity like this: added value of payment for the use of the pure intellectual property is unable to improve the business sophistication and tech-readiness directly, the added value of receipt for the use of intellectual property means the transaction capacity of the firm should be improved. The exchange of materialized intellectual property influences the tech-readiness and business sophistication significantly and complicated, at the same time indirectly impact on the transaction capacity through the tech-readiness and business sophistication; the impact is nonlinear.

There are two findings we have gotten, one is here is the asynchronous effect between technological readiness and transaction capacity, another is here is technological barriers among exchange of technological knowledge readiness, business sophistication and transaction capacity.

From the above analysis, we give suggestions and offer policy below:

- the government and firms should take a long time to make a plan to upgrade their tech-readiness and business sophistication by active transaction for the use of the intellectual property, so that is able to uplift the transaction capacity of firms, avoiding the logged and passive efficiently.
- firms should focus on the improved function of business sophistication on transaction capacity, reasonably control the boundary of the firm. That is mean to control the input and cost, reasonably uplift outside transaction capacity of firms by higher the inside business sophistication, pay more attention to the efficiency and the mean value management among the goods, labour and finance markets, in aspects of

value chain breath, nature of competitiveness advantage, Control of international distribution, Willingness to delegate authority, Extent of marketing and Local supplier quality et al., make them work well among others.

- Economies and firms should upgrade their technological readiness at any time, take advantage of the role tech-readiness played to promote the business sophistication and transaction capacity of firms so that lead the purchase for the use of the intellectual property.
- Economies and firms should pay close attention to transform among the transaction of intellectual property, tech-readiness, business sophistication and

transaction capacity of firms, publish policy to promote the transformability among these four aspects, reduce the transforming time, and avoid the heavy losses caused by the asynchronous of these four aspects.

- Technological and political barriers still exist and do not benefit for technological readiness and business sophistication, even transaction capacity of firms development, so firms and government should take any opportunity to improve the situation by breaking the technological and political barriers.

Table 4. Total Test Conclusion

| hypothesis | content | Test conclusion |
|-----------------|--|---|
| H1 | the level of intellectual property transaction is significantly positive correlative with transaction capacities of firms | Not supported, conclusion partly is opposite (significantly negative correlative) |
| H2 | the level of intellectual property transaction is significantly positive correlative with technological readiness; | Partially supported |
| H3 | the level of intellectual property transaction is significantly positive correlative with business sophistication | Partially supported, even conclusion partly is opposite |
| H4 | the technological readiness is significantly positive correlative with transaction capacities of firms | Not supported, significantly negative correlative, conclusion opposite |
| H5 | the business sophistication is significantly positive correlative with transaction capacities of firms | supported |
| H6 | the technological readiness is significantly positive correlative with business sophistication | supported |
| Findings | there is asynchronous effect between technological readiness and transaction capacity | |
| | There is technological and political barriers among exchange of knowledge goods, technological readiness, business sophistication and transaction capacity | |

REFERENCES

[1] Acemoglu, Daron, Endogenous Technological Change. Introduction to Modern Economic Growth. Princeton University Press. (2009) 411–533.

[2] PIGOU A., The Economics of Welfare [M].London: Macmillan. Quarterly Journal of Economics, symposium: Time in Economic Life. Quarterly Journal of Economics, November, 87(4) (1920) 75-672

[3] Allen, Douglas, Transaction costs. In Encyclopedia of law and economics, volume I: the history and methodology of law and economics, eds. Boudewijn Bouckaert, and Gerrit de Geest. Cheltenham: Edward Elgar, (1999) 894-926.

[4] Barro, Robert J.; Sala-i-Martin, Xavier, One-Sector Models of Endogenous Growth. Economic Growth (Second ed.). New York: McGraw-Hill, (2004) 205–237.

[5] Carlino, Gerald ., A., Business Review Knowledge Spillovers: Cities' Role in the New Economy. Q4 (2001).

[6] Coase’s transaction cost theory: Coase, Ronald. The nature of the firm. *Economica*, 4 (16) (1937) 336-405.

- [7] Coase, Ronald. The nature of the firm: influence. In *The nature of the firm: origins, evolution, and development*, eds. Oliver Williamson, and Sydney Winter. Oxford: Oxford University Press, (1993) 61-74.
- [8] Douglass C. North & Robert Paul Thomas, *the rise of the western world: A New Economic History*, 8 (1973).
- [9] Farmer, Roger E. A., *Endogenous Growth Theory. Macroeconomics (Second ed.)*. Cincinnati: South-Western. (1999) 357–380.
- [10] Margaret Sherrard Sherraden, *Financial Capability: What is It, and How Can It Be Created?*, the University of Missouri – St. Louis Center for Social Development, CSD Working 10 (2010).
- [11] Jaffe, Adam B.; Trajtenberg, Manuel; Fogarty, Michael S. *The American Economic Review Knowledge Spillovers and Patent Citations: Evidence from a Survey of Inventors. Papers and Proceedings of the One Hundred Twelfth Annual Meeting of the American Economic Association*, 90(2) (2000) 215-218.
- [12] Lucas, R. E., *On the mechanics of Economic Development (PDF)*. *Journal of Monetary Economics*. 22 (1988).
- [13] Ortigueira, Salvador; Santos, Manuel S., *On the Speed of Convergence in Endogenous Growth Models. American Economic Review*. 87 (3) (1997) 383–399.
- [14] Rebelo, Sergio. "Long-Run Policy Analysis and Long-Run Growth". *Journal of Political Economy*. 99(3) (1991) 500.
- [15] Romer, David, *Endogenous Growth. Advanced Macroeconomics (Fourth ed.)*. New York: McGraw-Hill. (2011) 101–149.
- [16] Shannon P. Pratt, Alina V. Niculita, *Valuing a Business, The Analysis and Appraisal of Closely Held Businesses*, 5th ed (New York: McGraw Hill, (2008) 39.
- [17] Yang Xiu-gang: *A Research On Transaction Institution of Intangible Assets[D]*, Zhongnan University of Economics and Law (Chinese version), 9 (2013) 70-96.
- [18] World bank: *Financial Capability Surveys Around the World-- Why Financial Capability is important and how surveys can help*, p1