

Film Trade Deficit Control Measures between China and USA based on Gravity Model

Yu Chen*¹, Baoming Zhang²

¹* College of Business, University of Shanghai for Science and Technology, Shanghai, China.

² College of Business, University of Shanghai for Science and Technology, Shanghai, China.

Email: yuyu77_7@hotmail.com

Abstract-Based on the extension of traditional gravity model the paper is to study the Chinese take control policy for the film trade deficit between China and U.S. The study shows that: outside-oriented control policy does not have a positive effect on the deficit. Instead of, the government of China should pay more attention to the inside-oriented regulatory policies of the film trade deficit, and to take measures to increase the activity of the domestic film and products, namely establishing the specification, maintenance control policies of the competition in order to provide a better trading platform. It is significant for Chinese film trade.

Keywords-Gravity Model; Control Policy; Film Trade; Trade Liberalization

1. Introduction

Traditional international trade theory is that, in the course of opening to the outside world, the full liberalization of trade will undoubtedly bring a maximum open interest. However, the film product as part of a cultural product, has the following characteristics, resulting in control measures appear to be essential for solving the deficit: First of all, has a more serious oligopoly, some of the cultural industry in the United States and other developed countries has made rapid dissemination of culture today great gains, which undermine the revenue generated by the liberalization; Second, the attribution of the film rights, in order to protect the reasonable use of copyright control policy implementation is extremely important. It is in this context, is particularly important role in the

movie liberalization process in the degree of economic liberalization and regulatory measures and conflict studies.

2. Theory Review

The basic idea of the trade gravity model (Trade Gravity Model) derived from physics in Newton's "law of attraction". According to the law of gravitation, the mutual distance between two objects gravitational with their respective proportional to the mass, and is inversely proportional to the distance between them. Trade gravity model was first in the early 1960s by Tinbergen (1962), and Boyi He can (1963) simultaneously and independently proposed empirical study based on the flow of international trade and traffic problems. This

model: the scale of bilateral trade flows between the two countries or regions and their economic size of the plot is related negatively correlated with the distance between them. Since then, the trade gravity model is often applied to the international trade of gradually become a popular tool for empirical studies of the bilateral trade amount.

Then, there are many scholars through the study population, policy, history, culture and other factors affect trade flows and flow scale model to further improve and amendments. These studies are as the main direction of the explanatory variables in the model expansion and Empirical Study. 60-70's 20th century mainly in terms of extension of the model variables, the introduction of new explanatory variables corrected gravity model matures, so that the form. Research trends in the 1980s gradually biased in favor of the empirical test of the model. After follow-up to the introduction of the variable can be roughly into two categories: one is able to influence trade endogenous variables, such as Linnemann 1985 introduction of the population of this variable, Bergstrand introduced in 1985 the per capita income and exchange rates, and multiple variables; another type restrictions on trade policy, preferential trade agreements, integration organization this dummy variable. Explanatory variables and constantly enrich the trade gravity model more suited to the needs of the actual trade analysis.

Tiandong Wen (2005) in trade gravity of the base model of Timbergen based on adding to the population and factors, the study of a sample of 18 countries, including China, quality inspection of bilateral trade flows. Article conclusion in line with the basic empirical assumptions, that is, the larger the size of the state population the greater the number, the greater the likelihood of domestic trade. The article also examined Trade Gravity Model Results will not reduce the strength of the Chinese trade data sample. This article provides a theoretical basis. [1]

Meng Ying Wa (2011) on the basis of the development of trade in services through the role of trade liberalization in the services control policy research, 27 services exporter and 30 service imports KMT-CPC 810 observation data. Draw a "trade liberalization" and "deregulation" is not the same point of view. The liberalization of trade in services is a need to control. Also provides a theoretical basis for this study. [2]

3. Model, Variables, and Data

The original form of trade gravity model is expressed as:

$$T_{ij} = \frac{AG_iG_j}{D_{ij}}$$

Where, T_{ij} refers to the bilateral trade volume between the i country (or region) and j (or regions), G_i and G_j refers to the national income of country i and j , is usually replaced by a country's GDP. D_{ij} refers to the distance between i and j , A is a constant. Economists usually use a gravity model to discuss the problem of the trade flows between countries. This model indicates that the bilateral trade volume between the two countries or regions and is proportional to the total economy of the two countries or regions, the distance is inversely proportional to the space between the two countries. This is the trade gravity model. The use of trade gravity model is rich. In addition to the original total bilateral economic and distance, usually adding other endogenous and exogenous variables, and examine the role of these variables, and constantly improve the model itself. With the deepening of the application of changes in the environment and research work, the settings of the exogenous variables gradually evolved into the exogenous variables continue to expand and extend the series. Some of the basic variables are included in each of the gravity model. Other exogenous variables under study purpose, or take the appropriate numeric variable based on its economic implications to describe some changes or the use of dummy variables describing a selection model scientific structure.

3.1 Gravity Model Improvement

Chinese film trade analysis using gravity model needs some improvement, enrich and improve the model on the basis of the original. These improvements are mainly focused on two aspects of the extended model variables and an empirical test of the model: the extension of the model variables by introducing two types of variables, a class of affecting trade between the endogenous variables, such as population, the Index of Economic Freedom market regulation index; other dummy variables, such as whether to belong to the same language. This article will be on the basis of previous scholars, according to the characteristics of Sino-US bilateral trade, improve trade gravity model to study China in the process of development of the film trade with the United States,

whether it should exercise control over trade measures to promote the development of trade.

Model explanatory variables are extended, the introduction of the total population, belong to the same "Index of Economic Freedom", "product market regulation index" three new endogenous variables with the exporting country and importing countries common border and whether language "as two dummy variables. The total population is an important factor to affect the total amount of consumer demand. In international trade, the domestic population will affect their imports. Trading nation in population will affect their exports. Bilateral population is therefore important factors affect the bilateral trade volume between the general model would have to consider. "Index of Economic Freedom" is an indicator of a more far-reaching impact of trade, this indicator includes ten factors (business freedom, trade freedom, fiscal freedom, government spending, monetary freedom, investment freedom, financial freedom, property rights, corruption-free and labor freedom.) Open economic freedom, will have a higher long-term rate of economic growth. Product market regulation index product market regulation index (Product Market Regulations Index, PMR) released by the Bureau of the OECD Economic Research. PMR index system is constituted by the 16 basic indicators and 16 indicators were reflected in the implementation of control policy on a particular area (industrial or behavior) can be calculated by assigning different weights, low-level indicators control indicators aggregated to a higher level, and ultimately achieve the highest level of product market control index PMR, it is mainly used to describe differences in product market regulation policy, OECD countries, which, PMR next level indicators including inner guide type control policy and foreign-oriented regulatory policies are two, and both policy happens to represent the behavior of control within the government of a country's services sector, outside activities. Which, outside-oriented regulatory policies mainly refers to a country's trade with other countries, the government this implementation control policies (such policies constitute the main barriers of trade in services and investment, such as foreign services company holding ratio requirements, discriminatory provisions on foreign service companies, etc.), this policy is more reflected in multilateral or bilateral trade negotiations issues and

commitment to open markets tables being submitted by States; within-oriented control policy mainly refers to the control policy of one country on the territory of the operations of the service sector, such as the regulation of the commercial operation of the service product prices and service, competition policy, transparency in the regulatory policies, such policies rarely appear in multilateral or bilateral trade negotiations in. This article will export Mandarin importing country are the same language as the dummy variable, film products as a cultural product category, in the import and export trade, because of cultural discount and other factors lead to changes in the volume of trade. Language is an important factor to measure the cultural discount. Exporting countries and importing countries common border "in describing the distance of the bilateral trade between countries on the basis of factors such as cultural discount is reflected. [3]

3.2 Data Selector

In this paper, empirical test selected panel data econometric analysis. Empirical analysis of past scholars multi-sectional data, the data sample will be extended to the two-dimensional, including the two dimensions of time and space, compared to past research, the results obtained are more comprehensive and stereo.

1) Index of Economic Freedom

Index of Economic Freedom, published by the Wall Street Journal and the Heritage Foundation's annual report, covering 155 countries and regions around the world, is one of the world's authoritative evaluation of Economic Freedom, the higher the score on one indicator, the Government the higher the level of interference in the economy, and therefore the lower the degree of economic freedom. The summation of the average of the individual indicators can be calculated overall coefficient. Calculation made by the main indices gives different weights, the Economic Freedom Index: legal structure and protection of property rights; convenience sound money; freedom to trade internationally; regulation of business, labor and business; political rights.

2) Product market regulation index

According to the selection criteria of the national product market regulation index, combined gravitational model, selected film trade with China in 13 countries in the OECD database 2000-2010 trade, statistics. Market regulation aimed trade protection, in some countries, such as France, Australia and Canada. Several film industry intervention measures the usual content regulation (quota), direct subsidies or supply, tax cuts. [4] about the intervention and control by the government to support their film, "outside interests" of the movie is usually considered the most compelling reason. Hoskins and other scholars have pointed out that, "outside interests" of the movie is one of its unique features. It refers to the "of movie product for people other than the producers, viewers interests. [5]

3) Other relevant data

GDP, population data derived from the UN National Accounts Statistics database. Bilateral services trade data from the OECD statistical databases. Through the selection of the data, following through the use of a gravity model of economic freedom, the effects of trade in services, the services sector regulatory policies (PMR) empirical research.

4. Econometric model set

In this paper, the different target variable for the study on the basis of the gravity model, we first define the basic gravity model in this paper:

$$\begin{aligned} \text{Log}(\text{IMPORT}_{ij}) &= C_{ij} + \\ \text{Log}(\text{GDP}_i \cdot \text{GDP}_{jt}) &+ \\ \text{Log}(\text{POP}_i \cdot \text{POP}_{jt}) &+ \\ \text{Log}(\text{DIST}_{ij}) &+ \text{LANG}_{ij} + \varepsilon_{ij} \end{aligned}$$

For the impact of the film trade after the introduction of different variables, respectively, define the following gravity equation:

1) The degree of liberalization for the Chinese film on the film trade impact set up the equation as follows:

$$\begin{aligned} \text{Log}(\text{IMPORT}_{ij}) &= C_{ij} + \\ \text{Log}(\text{GDP}_i \cdot \text{GDP}_{jt}) &+ \\ \text{Log}(\text{POP}_i \cdot \text{POP}_{jt}) &+ \\ \text{Log}(\text{DIST}_{ij}) &+ \text{LANG}_{ij} + \\ \text{Log}(\text{Freedom}_{jt}) &+ \text{Log}(\text{BORD}_{ij}) + \varepsilon_{ij} \end{aligned}$$

2) For the Chinese government policy on film import controls, the establishment of the equation as follows:

$$\begin{aligned} \text{Log}(\text{IMPORT}_{ij}) &= C_{ij} + \\ \text{Log}(\text{GDP}_i \cdot \text{GDP}_{jt}) &+ \\ \text{Log}(\text{POP}_i \cdot \text{POP}_{jt}) &+ \\ \text{Log}(\text{DIST}_{ij}) &+ \text{LANG}_{ij} + \\ \text{Log}(\text{Freedom}_{jt}) &+ \text{Log}(\text{BORD}_{ij}) + \\ \text{Log}(\text{PMR}_{jt}) &+ \varepsilon_{ij} \end{aligned}$$

3) For the implementation of China's foreign-oriented control policies on film import, set up the equation as follows:

$$\begin{aligned} \text{Log}(\text{IMPORT}_{ij}) &= C_{ij} + \\ \text{Log}(\text{GDP}_i \cdot \text{GDP}_{jt}) &+ \\ \text{Log}(\text{POP}_i \cdot \text{POP}_{jt}) &+ \\ + \text{Log}(\text{DIST}_{ij}) &+ \text{LANG}_{ij} + \\ \text{Log}(\text{Freedom}_{jt}) &+ \text{Log}(\text{BORD}_{ij}) + \\ \text{Log}(\text{OUTPMR}_{jt}) &+ \varepsilon_{ij} \end{aligned}$$

4) Oriented control policy in the implementation of China's film import, set up the equation as follows:

$$\begin{aligned} \text{Log}(\text{IMPORT}_{ij}) &= C_{ij} + \\ \text{Log}(\text{GDP}_i \cdot \text{GDP}_{jt}) &+ \\ \text{Log}(\text{POP}_i \cdot \text{POP}_{jt}) &+ \\ \text{Log}(\text{DIST}_{ij}) &+ \text{LANG}_{ij} + \\ \text{Log}(\text{Freedom}_{jt}) &+ \text{Log}(\text{BORD}_{ij}) + \\ \text{Log}(\text{INPMR}_{jt}) &+ \varepsilon_{ij} \end{aligned}$$

4. Empirical Analysis of estimated results

Trade gravity model of bilateral movie selection of the panel data from 2000 to 2010, involved the target countries, including the United States, Germany, France, Japan, Korea, India and other 13 countries, a total of 120 observations. Using the variable intercept the unchanged coefficient of model is form of the equation of the above five, respectively, of the regression analysis. EGLS

method for the return of the individual differences of the sample smoked obey random distribution may be more appropriate.

	方程1	方程2	方程3	方程4	方程5
C_{ij}	-5.2 (-2.65)	-6.78 (-2.44)	-12.72 (-2.12)	-10.01 (-2.89)	-14.37 (-3.6)
$Log(INPMR_{ij})$	—	—	—	—	1.52 (3.82)
$Log(OUTPMR_{ij})$	—	—	—	1.02 (0.13)	—
$Log(PMR_{ij})$	—	—	1.34 (2.19)	—	—
$Log(Freedom_{ij})$	—	1.87 (3.92)	2.52 (2.7)	2.24 (2.51)	3.46 (4.84)
$Log(DIST_{ij})$	-1.12 (-6.38)	-1.23 (-7.21)	-1.01 (-5.91)	-1.24 (-5.77)	-0.94 (-7.01)
$Log(GDP_i \cdot GDP_j)$	1.87 (17.42)	1.52 (18.23)	1.62 (16.61)	1.5 (17.15)	1.37 (18.81)
$Log(POP_i \cdot POP_j)$	-0.5 (-8.13)	-0.52 (-8.01)	-0.64 (-7.38)	-0.58 (-7.92)	-0.61 (-15.21)
$LANG_{ij}$	0.24 (3.42)	0.21 (3.00)	0.26 (4.59)	0.23 (4.16)	0.28 (3.14)
$Log(BORD_{ij})$	0.49 (1.22)	0.45 (1.37)	0.43 (0.95)	0.44 (0.84)	0.41 (1.51)
修正后的 R^2	0.54	0.52	0.55	0.54	0.55

Figure 1. Regression Results

Regression results from the above table, we can see that the construction of the control variables of the gravity model in line with the significant test and achieved the expected results. Among them, the import and export of the country's GDP, a common language, common border variable have a positive impact on China's film import and export, but the distance of the population and economic center of China Film Import & Export is a negative role.

It can be seen on the table of variables, Eq (2) enhance openness of economic freedom in China is conducive to the development of trade, which, as we expected, the 1% increase economic freedom, film products, imports increased by 1.87%; As can be seen from the equation three, and control of the implementation of China's domestic market and did not affect the import of the products before we want to achieve the opposite effect of the control, to promote the import of the product. Control policies to strengthen and film products imports increased by 1.99%; visible, control measures within-oriented and foreign-oriented equation V regression results from Equation 4, the two control measures for film products the import is different, when the implementation of China's foreign-oriented control policy and will not cause any impact, more will not make a reduction in imports, mitigation deficit. Similarly, if the implementation of the

control measures of the within-oriented but will promote China's film import.

5. Conclusion

Mainly discussed in the context of the Sino-US the movie trade deficit of whether the Chinese government should take economic non-free trade and implementation of regulatory policies to mitigate the trade deficit. Through trade gravity model, we study the above problem. The results show that:

Economic Freedom of the first Chinese film products with their imported directly proportional to a country's economic freedom every 1% increase in imports of film products increased by 1.87%. Similarly, if the government wants to slow down the deficit, it should be appropriate to the Economic Freedom of the products from the American Film limitations.

Second, the Chinese film products implement control policies did not produce the expected trade barriers, contrast, control policies to further expand economic freedom, and so promote the effect of imports of the product. Control policies to further refine the third conclusion.

Third, China implemented its own foreign-oriented regulatory policies will not have to affect the import of their movie. Within-oriented control, however, would make imports increase, you want to suppress the deficit reduction control measures within oriented. To take measures to increase domestic film product activity, to promote the development of trade.

In summary, in film trade liberalization and opening up of the process, the control policy as a trade barrier is one-sided, some control policies can promote the film product imports, does not help to curb the deficit. December 15, 2011, the State Council announced "the Film Industry Promotion Law draft, the government will lower the threshold to reduce the administrative examination and approval, taxation, financing and land support to support the film industry, film production side support key. "Draft" of six chapters 162 and according to the film-making, filming, distribution, screening and other aspects of the provisions of the system, and provides specific safeguards and liability. "Draft" general idea: follow the three general ideas: First, reduce market access barriers, facilitate the types of market players, social capital into the film industry. Second, by taking the

finance, taxation, finance, land use, and other measures to support and encourage enterprises, individual industrial and commercial households and individuals engaged in the film events. Third, strengthen supervision and management, and standardize the market order, and promote the healthy development of the film market. In addition, the strengthening of the film public service to meet the residents of rural areas, low-income urban residents and migrant workers, minors watch movies basic cultural needs. The form of law is regulating the better development of the film industry. At the same time, the government of a country regulate their services, should pay attention to the effect of the within-oriented regulatory policies of the film trade, to take measures to increase domestic film product activity, that is, to establish norms, maintain the order of competition control policy, offering better trading platform, which is significant for the movie trade liberalization significance.

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Yu Chen, Master candidate in International Trade, College of Management University of shanghai for science and technology, Shanghai, China.

Baoming Zhang, postgraduate tutors, university of shanghai for science and technology, Shanghai, China.