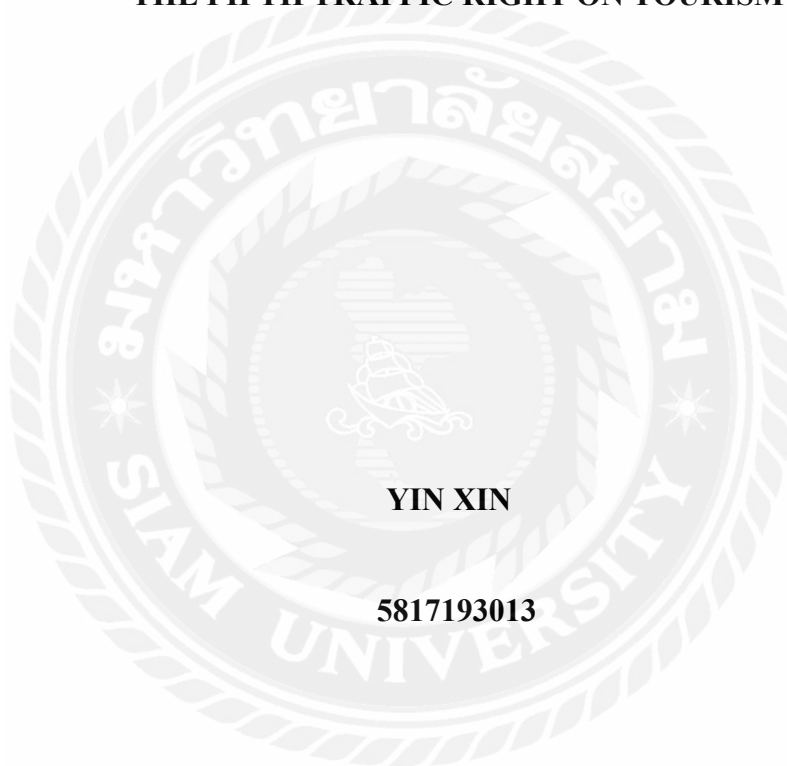STUDY ON THE INFLUENCE OF

THE FIFTH TRAFFIC RIGHT ON TOURISM

YIN XIN

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AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT

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FIC RIGHT ON TOURISM

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To

YIN XIN

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of Independent Master of Business Administration in International Business

Management

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ABSTRACT

Title: Study on the influence of the fifth traffic right on tourism

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This article mainly studies whether the policy change of the Fifth Traffic Right has any impact on the tourism of the cities that has already implemented traffic rights and surrounding regions in China, and whether the impact of the Fifth Traffic Right varies on their tourism as to different types of cities; related policy suggestions are proposed in the end.

Since the Chinese government initiated the opening principle of "positive, progressive, orderly and guaranteed" officially in 2003, the Fifth Traffic Right has been under pilot implementation in Haikou, Shanghai and Nanjing, etc. Till now, opening experiences for more than ten years have been concluded in many cities. Meanwhile many cities such as Xi'an and Urumqi are also applying for opening traffic rights. However, whether the policy of opening traffic rights is suitable for wide promotion, whether its implementation will have positive influence on industries closely related to aviation (such as tourism), and in what way? In former studies on the economic outcome of the opening of traffic rights, most researchers have inferred that industries closely related to aviation will benefit from the policy of opening

Acknowledgement

A year of graduate study has passed and campus life has left a deep impression on me. In this year, my mentor has been giving a lot of help for both my life and learning.

The teacher devoted a lot of care and effort for many detailed and patient guidance of my writing from the beginning of this article, including collect information, the use of statistical methods, write the first draft. This article has been changed several times after finalizing. More specifically, the teacher spurred me forward, so I could get rid of impetuous to devote them to study and obtain preliminary research results. The rigorous attitude of the teacher, the meticulous work style, the unique insights into the academic, and the spirit of diligence and truthfulness will benefit all my life. In such a case, I would like to express my most sincere thanks for my teacher.

At the same time, I also greatly appreciated for my classmates to give me the support and encouragement in life and learning aspects, so I could insist to complete the report on time.

Due to the limitation of time, personal knowledge and other objective factors, the research of the essay needs to be further studied. Some of the arguments are still very shallow and there are many shortcomings. Please do feel free to comment, criticize and correct.

Contents

Chapter 1
Introduction

1.1 Research background

Since 2003, China has allowed the Hainan to pilot the fifth naval power for the first time. There are 14 cities to develop the fifth right so far, of which 12 cities have the fifth passenger transport rights. Chengdu, Urumqi, Kunming and many other cities had been actively applying for the opening of the fifth right. The fifth right of navigation is for bilateral agreements of two States, allowing the parties to exercise their right to transport in a third country in an agreement between two countries. To open the fifth right on a reciprocal basis in the respective cities between the two countries could greatly enhance the degree of internationalization of the city and promote the acceleration development of the industry associated with air transport, but it also has negative effects on local protected child care industry. Therefore, the scope and timing of the opening of air rights should go through scientific and careful research.

1.1.1   The origin of air rights and the opening process of international air rights

Air traffic - "Traffic rights" refers to the power of transnational air transport. Its legal basis came from that United States invited a total of 52 countries to attend the meeting held in Chicago in 1944, the International Civil Aviation Conference adopted the provisions of the Agreement on International Traffic Transit (commonly known as the "two free trade agreements") and the International Air Transport Agreement (commonly known as the "Five Freedom Agreements"), which is the origin of the first five types of traffic rights. With the development of the world economy and globalization, in addition to the above "five air freedom", it has also developed into

"sixth, seven, eight kinds of freedom", and even "ninth freedom" (see Appendix 1). The focus of this article is one of the most economic significance and it is also the focus of the fifth freedom rights protection of all countries.

The fifth air rights entitlement means that the carrier discharge the cargo carried from the third country to the licensed state or to carry the cargo from the country to the third country. It is divided into the fifth passenger transport rights and fifth cargo rights. As the main body of tourism is human, and the main discussed in this paper is the relationship between the passenger rights and tourism, the cargo right is not the main point of this article.

As the development of the aviation industry is conducive to stimulate the development of the national economy and create employment opportunities to get rid of the economic downturn, the United States had begun to advocate the implementation of "Air rights open" in the world based on virtue of economic globalization, the development of rally and strong aviation strength in the early 90s of last century. The United States has reached an agreement with about 50 countries around the world on the opening of air rights so far, which will make to minimize the business restrictions in two cities between both parties of airlines. In Europe, the member states can operate the airlines company in other EU countries since the mid-90s of the last century. It has been increasing the degree of aviation liberalization and the degree of openness between Europe and the United States.

In the new century, Asia has also been required to open the air rights by the liberalization of developed countries. Singapore, Brunei, Malaysia, South Korea, Taiwan, China and some oil exporting countries joined the air rights earlier. In Hong Kong, nearly 70% civil aviation partners gained the fifth right by the end of October 1999 to benefit its international airports. In addition, Macao reached a reciprocal agreement with Britain in January 2004.

At the present time, aviation globalization becomes an important part of economic globalization and means of realization, which is an irreversible trend. The

United States and EU benefit from it. China goes a step further to strengthen the degree of opening, especially the requirement of strengthening the "interconnection" under the background of the "the Belt and Road". To carry out the traffic right has great significance for the influence and role in research of relevant economic industries.

1.1.2   China's air rights opening process and the current situation

The process of China's air rights began with "Sino-US Civil Air Transport Agreement" signed by China and United States in 1980. It allowed two airlines each of both sides to operate agreement flight on the specified route.

With the rapid development of China's economy, although the Sino-US Civil Air Transport Agreement has been revised for many times, it was still unable to meet the growing demand for shipping market, so a higher level of air rights exchange agreement has been brought on the agenda. The Singapore Air Cargo company Boeing 747-400 freighter arrived at Xiamen Airport successfully on 22nd of May 2003, which meant Singapore as the third country to open a China-US direct flight at the first time. It was the first time that the Chinese government opened its first fifth air rights to the foreign airlines. In 2004, China further expanded the scope of the fifth air rights, allowing foreign airlines through Meilan Airport in Haikou and Sanya Phoenix Airport to fly to the other cities in China. The most economic and substantive significance for the fifth Airline's open policy is considered to be the most representative step in opening China's aviation industry.

During 2003 to 2005 three years, China has formed an upsurge of the openness of the navigation right. The three first-tier cities in Beijing, Shanghai and Guangzhou also opened the fifth navigational power for some countries except Haikou, Sanya and Xiamen. Nanjing, Chongqing and Tianjin were immediately opened. Most of these early liberalization rights cities tried to speed up the city's

internationalization by the openness of the air rights. By relaxing air traffic control, to open up foreign markets for emerging industries and pillar industries that are closely linked with air transport.

1.1.3 The assessment and influence of Social-economic for air rights openness

In the past, the government, business and scholars were more optimistic by judging the economic effect of the liberalization of air rights. It was believed that the opening of air rights could promote the formation of the airport economy circle, increase the employment opportunities, promote the optimization of regional industrial structure and meet the long-term interests of regional economic development. A study in the United States showed that in Chicago - Beijing route, if it adds more than a new flight each week, it will bring their cities up to 200 million US dollars in revenue.

At the same time, some researchers also have pointed out that the opening of air rights has positive effect on economic, nevertheless there has a certain degree of negative impact for some industries. It could be demonstrated by the following examples. The openness of air rights for Philippines to the United States led to the Philippine domestic civil aviation industry suffered heavy losses. China's air right opening "bidding tide" was criticized "excessive opening of air right" by domestic airlines during 2003 to 2005, because the domestic companies competitiveness lags behind the foreign airlines in the same route, which led to bleak business. Although the fifth air right in Hainan Sanya was opened early, the data statistics showed that the utilization rate of the fifth air rights was very low, and they did not pay an active role in anticipation.

Therefore, the opening of air right has both advantages and disadvantages for a city and region. We should not only see its bright side, but also should pay attention to its potential threat for the implementation of open policy.

1.2 Issues raised and research objectives

To evaluate the advantages and disadvantages of air traffic rights on economic effect, the industry generally believes that the opening of aviation rights could impact on the domestic childish aviation industry, the aviation industry will suffer some losses, but the losses should be remedied by the tourism industry or some other related industries. A very real problem is that the airline industry loss can be compensated by other industries, it could not be accurately answered by simple qualitative judgement and speculation, but it should be measured by specific investigating how the airline industry impact on other industries and what kind of way and means to in-fluent.

In the context of this study, the main study is to know how much of the openness of the fifth passenger transport rights impact on the tourism industry and whether the openness of air rights has different influence for the cities which has different economic base and location factor.

Based on the above considerations, the main objectives of this paper are:

1. Does the opening of the fifth passenger traffic rights have an impact on the tourism industry for openness cities and surrounding areas?

2. If there is an impact on the local tourism industry, what ways and methods to show and whether there are different types of influenced.

3. For different types of cities, how to choose the timing and scope of fifth passenger transport rights can play the best driving effect on the development of its tourism industry

4. To maximize the role of the fifth passenger transport to promote the role of tourism, it should optimize and implement the policy of how to form a combination of policy together.

1.3 Research significance

The results of this study have certain theoretical and practical significance for revealing the relationship between the open policy of traffic rights and tourism:

1.3.1 To sort out the status duo of China's air rights liberalization

Since 2003, China has gradually opened the third, fourth, fifth navigation rights in Hainan. By the end of 2015, there were fourteen cities have opened fifth navigation rights successively, but the domestic research on the air traffic rights was less. Most of the previous studies have conducted one-sided discussion of policy and influence from the qualitative point of view and the specific empirical research for the policy effect on the openness of the fifth rights were very rare. What is the status quo of air rights opening in China? What are the specific cities at what time to open a number of navigation rights and what are the applied routs. These problems have not been answered by previous studies through the literature review. Therefore, the author firstly sorts out the status duo from the relevant literature, historical data and government public documents, which could be the foundation for the subsequent empirical research.

1.3.2 Suggestions on the classification of open cities in China

In the combing of domestic and foreign literature, the author has found that the empirical study on the effectiveness of liberalization policy and the impact on the local tourism industry were generally in the past, which aimed at the region or country where the tourism was the main economic expenditure, such as Andrea's Papatheodorou (papateodorou. A. 2008) and SotiroulaLiasidou on the study of Cyprus. Cyprus, an island country at the junction of Europe and Asia, is located in the eastern

Mediterranean and one of the most popular tourist destinations in the Mediterranean. According to the World Travel and Tourism Council (WTTC), the total revenue generated by tourism and related industries were about one-fourth of the total national economy.

However, the situation of domestic cities is different from Cyprus, and the development level of tourism industry is also different. We cannot copy the foreign experience to infer the influence of the opening policy of aviation rights on China's tourism industry. At the same time, the level of development, infrastructure construction, tourism reception level also has very big difference between the cities and traffic right opening time is different as well. If all cities are put together for research, the conclusion is likely not accurate enough or do not have the policy reference value for other cities. Therefore, this paper intends to use cluster analysis of ten cities in the classification, and then for different types of cities are quantitatively analyzed in order to get more scientific and reasonable results.

1.3.3 Policy recommendations for different types of air rights in China

Through the classification study found that China's air rights open city can be divided into two categories, these two cities in the air rights liberalization of this policy had different economic effects. For the A-type cities (Nanjing, Wuhan, Haikou, Yinchuan, etc.), the opening of air rights had a direct and significant promotion effect on tourism. The tourism income of the city and the number of days for foreign tourists to stay were obviously increased after the opening of passenger air traffic rights. For the B-type cities (Beijing, Shanghai, Guangzhou), the impact of air rights liberalization was not direct and driven. The place located in a class of cities around the tourist city, received a lot of Class B cities' transfer passenger flow from the openness of air rights, and benefit from the liberalization of air rights policy.

Therefore, for different types of cities, air rights liberalization policy should

be different. For Class A cities should focus on to develop the main tourist city, while improving the tourism industry supporting policies and basic implementation of the construction to meet the growing passenger flow and tourism needs. For Class B cities, we should continue to expand the scope of air rights, increase the number of countries to open the navigation right, and maximize its driving impact on the surrounding cities.

1.4 The framework of the report system

The whole paper is divided into the following five chapters, the first chapter is the introduction, to explain the background of the topic, meaning, air rights and the openness of air rights' relevant theoretical basis, which will pave the way for the following empirical study, including the origin and concept of air rights, the international and domestic air rights liberalization of the implementation of the status quo, as well as the assessment of the economic effect of air rights.

The first chapter is domestic and foreign literature review. This paper focuses on the research on the impact of loosening aviation regulation on aviation industry and regional economy at domestic and foreign and the relevant empirical research on the impact of air rights on tourism industry.

The third chapter introduces the research method and the ideas and process of the research design, introduces the model design, the selection of samples and variables in the empirical research, and puts forward the hypothesis of this paper.

In the fourth chapter, based on the empirical data, in-depth analysis of the tourism and aviation-related data for the openness of air rights of ten cities, to find the connection between them, and put forward specific measures to deal with the problems.

The fifth chapter summarizes the main conclusions and shortcomings of this study, and puts forward the fields and problems that need further study. At the same

time, on the basis of the influence of the opening of the right of navigation to the tourism in the previous chapters, this paper puts forward some suggestions on the opening policy of aviation rights in line with China's national conditions, and forecasts the economic effect of opening.

Chapter 2

Literature Review

The tracking research for the social and economic influence on the traffic right openness was carried out by the domestic and foreign scholars in the late 90s of last century. The scholars focused on the economic efficiency of the opening policy of passenger traffic right, and there were mainly low-cost air transportation, regional economic development and cross-border tourism research perspective.

2.1 Review of the impact of traffic right on aviation industry

The most direct effect of air rights liberalization is manifested by the air transport industry and the airport. The early scholars' studies focused on observing the impact of this policy on aviation enterprises, airports and passengers, and the corresponding research results was the most abundant. Many domestic and foreign researchers have carried out a more in-depth study from the qualitative and quantitative perspective.

2.1.1 Air rights open up new routes, bringing new customers and benefiting passengers and airports

Robert W. Poole, Jr. and Viggo Butler of MIT and Pepper dine University in the study of US aviation policy have found that air rights liberalization was a huge policy advance that benefited all aspects of the aviation industry. (Robert, W., Poole, J.R., & V. Butler.1998) It has made most Americans can often travel by plane and passengers had also benefited from the opening of aviation rights for more choice in the system. For example, more new routes have brought point-to-point services, so the

original many independent short-haul routes and small city routes were successfully opened. The more price combinations and convenient choice could be selected, which had high-quality services and low-cost people's services.

For cities, aviation hub cities and small cities can benefit, the aviation hub city will reduce the route congestion, delays and the cost of waiting and shorten the flight time. Meanwhile, to open a direct flight with other cities, the price competition will be more intense. While small cities will receive point to point new route and direct flights to major central cities and other small cities.

At the same time, as the policy barriers to airport construction are reduced and the number of airports has increased, newer and shorter routes will benefit. As the airports gradually turn to market oriented models, they use the existing number of gateways to serve more passengers, thereby increasing economic benefits with less cost.

The study also found that the aviation industry as a continuing expansion of the industry had created thousands of jobs, but there were still some of these non-market factors affecting aviation's economic achievements, for example, some bad policy was often used to control and constraint airlines flight time and place. The starting point of these measures was good to improve the competitive situation of the airline, but due to the lack of understanding of the real market situation often played a bad effect. The inspiration for us is that we should carry out scientific research and judgment in the design of the policy of opening the right of navigation in our country, so as to formulate effective system and means to meet the market demand effectively.

Fre'de'ric Dobruszkes studied the opening of air rights in Europe, and he argued that the European air rights opened to bring unprecedented freedom for the local airlines. The market competition brought by the openness of air rights led to the emergence of a number of new routes operated by a single company, benefiting passengers in major European cities and those in the northern part of Western Europe who received major passenger routes from major cities based on the geographical

distribution and location entropy point of the quantitative analysis.

Roberta Pier martini and Linda Rousovácollected samples from 184 countries, using bilateral passenger traffic to establish a gravity model to explain the impact of liberalization of aviation market liberalization on air passenger flow.(Roberta P. & Linda R. 2008) They found strong evidence of the positive correlation between air passenger traffic and the degree of liberalization of the aviation market. The degree of liberalization increased from 25% to 75%, which made the air passenger flow directly to increase by around 30% between the countries. The extent of the different liberalization and the use of different assessment techniques, the results are significant.

When Hainan applied the third, fourth and fifth air rights in 2003, Civil Aviation Administration of China International Division Director Wang Ronghua said that "to open air rights, is the development of China's civil aviation industry needs, and to actively support the aviation hub port by used the national air resources, to facilitate staff communication and mobility, to speed up the turnover of goods and to develop modern logistics industry, thereby expanding the air market and improving passenger and freight volume".

Yang Yuanyuan, the Civil Aviation Administration of China said that: "we fully believe that an open air freight market is more conducive to the rational allocation of air resources, convenient to airline operations, providing consumers with more choices, meeting the development of the national economy and the needs of international trade. We also fully believe that foreign enterprises to enter the Chinese cargo market will bring advanced management concepts and management methods, by improving the domestic enterprise's market competitiveness, and ultimately to win the market opening challenge".

Baiyun International Airport economist PengRongguo pointed out: "the implementation of air rights liberalization policy, our neighboring countries and regions have established international and regional aviation hub, diversion of our

international goods. If we still remain at the level of the airline as the main basis of liberalization process, it may restrict the development of China's civil aviation industry, which will affect the development of national economy, trade, tourism and other industries. Therefore, we should conform to the trend of liberalization of air transport actively, progressively, orderly and securely to implement the international air transport liberalization and the liberalization policy of air rights, accelerate the liberalization of market access, seize the benefits of liberalization opportunities, and promote China's air transport enterprises to fully participate in international competition, accelerate the construction of international aviation hub"[1].

Xiang Jiying thought that the opening of aviation rights had a profound impact on the aviation industry, including promote the continuous innovation of air transport services, force the airlines to adopt new competition strategy, adjusted their route structure (such as spokes route structure to replace the city on the route structure), management innovation (such as computer revenue management system development), reduce the operating costs (such as optimizing fleet structure and reducing the labor cost), strengthen market development (such as frequent flyer program) and establish the airline alliance (such as code sharing plan) (Xiang, J. Y. 2010)

Thus, the early research on the impact of aviation rights liberalization on aviation industry mainly tends to positive evaluation. It is also less aware of its negative impact and the driving role for related industries.

2.1.2 The opening of air rights promotes the raised of low-cost airlines

After the air right was opened, the low-cost airline (LCA) has been rapidly rising. In this regard, Keith Mason   pointed out that the previous charter flights in the cost of controlling did very well, so they were most likely to successfully transit to

low-cost airlines. (Qiu, Y. 2004)But in some tourist attractions (such as to the Mediterranean route), charter companies still dominated the advantage. Therefore, after the opening of the air rights, charter companies faced two options, one was to re-determine the scope of the market, and then stick to their positions; the second was the transformation of low-cost airlines.

Graham Francisa and Nigel Dennisb and other scholars in the study of low-cost airlines in the United States found that since the United States began with mufti-national to open the air rights and loosened the air traffic controlling, many low-cost airlines began to enter the market and successful in the 1970s.(Graham, F. & Nigel, D. 2007) One of the reasons was that large-scale traditional airlines focused on more long-distance and international routes by used the openness of air rights, so that many low-cost small airlines aimed at domestic short-haul routes were gradually raised. Two different levels airlines in their respective markets can benefit from more liberalization of market competition. With the experience of low-cost airlines on short-haul routes, they began to compete with traditional airlines on long-haul routes, and the difference between low-cost airlines and other airlines was becoming increasingly blurred. Companies were beginning to use low-cost model elements, so low-cost airlines in long distance markets would have to adopt elements of some traditional business models. To maintain the cost advantage, airlines needed to find innovative ways to gain a competitive advantage continually, thus promoting the increase of social public welfare.

Fre'de'ric Dobruszkes studied the opening of European air rights, also found that the opening of the fifth air rights exacerbated the positive competition between traditional airlines and low-cost airlines, including alternative markets ("geography Variables "competition" and competition in their "natural" international markets (such as the Dutch and Lufthansa air in the Amsterdam-Munich market competition), they have been competing to the market share of operating airlines under the third and fourth air rights since ancient times.

2.1.3 The opening of air rights promotes the formation of aviation capital mergers and acquisitions and aviation alliances

J.P. Hanlo (J. P. Hanlo. 2001) mentioned that with the relaxation of government aviation control policies and the exchange of rights in other countries, some national flagship airlines have been strategically transformed to an oligarchy from transnational or international companies. Although small airlines were continually established, but in the long run, it was likely that only big player could survive.

Nigel Evans   in the study of the aviation alliance inferred that with the loosening of air traffic control and the opening of air rights, the air transport market competition was changed more and fiercer. (Nigel, E. 2001)This situation has promoted to the development and expansion of the aviation alliance, especially a lot of small and medium-sized airlines, in order to ensure the interests and routes, have chosen to join a different aviation alliance.

Ian B. Thompson   in the open study of France found that, although the early opening of the air rights, the new airline company surge, to tap the small and medium-sized airport to provide more opportunities, but the French Airlines did not affected by these increased competition.(Ian, B. T. 2002) The company had swallowed up a number of small airlines that challenged its dominance to become a semi-monopolized airline, especially after AOM-Air Littoral-Air Liberate, the only competitor suffered the financial breakdown.

2.2 Review of the impact of traffic rights on regional economy

With the deepening study on the liberalization of air rights policy, the scholars have begun to find that the impact of air rights policy was not limited to the aviation industry, more worthy of attention and full of practical economic significance research should turn to the air rights' effect on the openness cities and regional economy.

The earlier study of the opening and distribution of air rights was AislingJ.Reynolds-Feighan et al. (Aisling, J. & Feighan, R. 1995), who affirmed the results of the ECAA (European Common Aviation Zone) in the early literature, but noted that the role of air rights liberalization was very complex, which may result in a small island nation that was highly dependent on tourism and lost its competitiveness in future development and in the face of a more complex market environment.

Likewise, Robert W., Poole.J.R. , also had conservation attitude for the air rights liberalization impact of the regional economic, and he argued that air rights liberalization would need to take into regional economic maturity account for air rights, and that if the market did not have a corresponding capacity, it was likely that Airline liberalization policy cannot play its intended role.(Robert, W., Poleole. J. R. 1998)

In the late 1990s, K.Raguramanzbegan to try the development of metering navigation rights and models and method of openness net economic influence. (K. Raguraman. 1997) This model was used to predict the potential economic influence for the aviation liberalization impact of air rights area. David Gill-en et al. (David, G.& Holger, H. 2001) evaluated the impact of international aviation bilateral agreements on Hamburg's tax revenue, local economic income, employment and tourism through a four-stage model. These models and methods enrich the policy-making technology, so that the decision-making of air rights openness from relying on intuitive judgment to scientific prediction, which can provide a technical

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reference for the reformation and implementation of China's air rights open policy.

In general, the study of the impact of liberalization on the regional economy started earlier abroad and was basically synchronized with the liberalization process. It has been shifted from simple policy research to comprehensive impact research and developed a series of predictions tools and models for policy design, compared to the domestic air rights research has a greater degree of lead.

Wang Xuelin talked about the impact of air rights on industrial restructuring and he believed that the direct impacts of air rights were economic and social development in the two countries' openness cities. This effect was further manifested for the openness city as the regional economic center changing. From the perspective of industrial optimization, the industrial structure adjustment has brought by air rights has satisfied the high value characteristics of new industries in backward areas. New enterprise evolution and cluster development were ultimately to achieve the scale and sustained growth, to complete the process of regional industrial structure optimization [1].

Yang Zhiyuan proposed that the opening of air rights was beneficial for the country and regional economic development, but it was a huge challenge and pressure for the domestic aviation enterprises. Although the air rights bilateral was equal, but the strength of air transport enterprises would eventually lead to the fact of inequality. (Yang, Z. Y. 2010)This inequality may endanger the security of the openness countries' air transport enterprises at a disadvantage. Yang Shengguianalyzed the impact of the opening of air rights from the aspects of production safety, industrial structure security and institutional environmental security on regional economic security. In order to maintain regional economic security, we should pay attention to the analysis area the essential factors of the economy and the structure of elements.(Yang, S. G. 2009)

Li Xiaojinthrough the study of the fifth right of navigation in Hainan Province concluded that, the opening of the fifth right was one of the important

measures for the government to adapt to the reform of the civil aviation system and promote the economic development of Hainan and the whole country provided the free competition stage for enterprises. (Li, X. J. 2003) Meng,Jianli supported this view, he proposed that the development and utilization of the fifth right, regardless of the construction of Hainan International Tourism Island, to achieve a comprehensive well-off society in the strategic objectives, or the introduction of competition, to achieve the Hainan Special Economic Zone to the " Sky Zone "upgrade, was important.(Meng, J. L. 2010)

It can be seen that the government, the aviation industry and the academia generally agree that the opening of air rights has a positive role in promoting the air transport industry, and thus related industries, which has a close relationship with the air transport industry and the international trade also play a very big role in promoting [7].

2.3 Summary of the impact of traffic rights on tourism

Among the many industries are associated with the opening of air rights, tourism is the object of everyone's focus, from the early stage through the change of air traffic policy on the impact of tourism destination traffic, and gradually to the rise of low-cost aviation on the impact of passenger and aviation tourism, and further into the tourism industry to explore the impact of the various elements.

2.3.1 Impact of air rights on traffic in tourist destinations

Turtonet analyzed the relationship between Zimbabwe's aviation services industry and the development of its overseas tourism industry, pointing out the contradiction between the nationalization of aviation industry and the privatization of accommodation and the catering industry. (Turton. B. J. 1996) It also analyzed the

role of the national airlines in promoting the development of their own tourism.

Raguraman, K. studied the relationship between tourism and accessibility in India, pointing out that the relatively slow development of tourism was due to the poor accessibility of air traffic and the introduction of a series of new routes through air rights liberalization, thereby to improve the accessibility of tourist destinations. (Raguraman, K. 1997)

Ruwantissa analyzed the importance of air transport to island-like tourist destinations. He believed that air transport was the most important mode of transport for island-type tourist destinations, compared to land transport and water transport for the comfort, convenience, accessibility effect, which had an unparalleled advantage. Air rights liberalization policy can effectively promote the development and maturity of passenger aviation and contribute to the further development of island-like tourist destination.

At the level of tourism and transportation, some scholars in China have studied the relationship between tourism and transportation and tourism economics. Chen Yinghui Wei JieDu Xiaokaiand He Xiaoxia utilized the main mining gray correlation method, analytic hierarchy process and SWOT analysis of the economic network, tourism network and traffic network to quantify the relevance quantitative and qualitative analysis, and comprehensive evaluation of regional tourism traffic and tourism development adaptability.(Chen, Y. H. 2002)(Wei, J. 2003)(Du, X. K. 2003)(He, X. X.(2007)

2.3.2 Impact of air rights on travelers' travel mode

Andreas Papatheodorou and PavlosArvanitis tracked the data changes in the Greek airport passenger traffic from 1978 to 2006, from the period when Greece's aviation policy was very protectionist until its gradual liberalization of the aviation market and became a member of the European Common Airspace (ECAA). He found

that, despite the high degree of liberalization of air transport in Greece, the concentration and asymmetry of tourists' space flow remained high and did not decline significantly over time. He believed that the main reason was that Greece also lacked low-cost airlines to enter the market generated the air traffic flows, especially the outside airport of the major cities. He believed that if low-cost airlines decided to enter the Greek market, it was possible to further disperse the diversify traffic flows the outside of the main cities, which would cause many of the travel potentials to be released that was limited by the price of the ticket. Policymakers should carefully consider these issues and promote the development of tourism destinations through effective external policies.

Kenneth Button studied the liberalization of air rights in the United States and Europe, and argued that the travel community benefited from the gradual liberalization of international air transport to a large extent, but also increased competition in the air transport market. (Kenneth, B. 2009)He argued that the agreement between the United States and the European Union was still one-sided and conditional, and that a framework acceptable to both sides should be established to allow both sides to liberalized policy from a simple, product-based approach to a fully open market that reflected the flow of production factors.

VladoBalaz and Allan Williams found a series of direct effects on the liberalization of air rights in the study of the European aviation market, with the most notable being the promotion of low-cost air travel growth. The impact of these changes on local productivity levels those were difficult to quantify, which would lead to changes in labor migration trends, trade (including tourism), investment and knowledge.

Due to the late start of China's air rights liberalization process, there are few literatures on the direct relationship between the opening of air rights and the tourism industry. Most scholars from the aviation industry will analyze the impact of their development on tourism. Such as Yang Guishan thought that air travel and passenger

aviation should be coordinated development from the industrial chain, the object of the target, the target market from different perspectives, analysis of the relevance of aviation and tourism; Sun Hong's research focused on reducing air transport travel costs method, the travel cost model was proposed to quantitatively describe the passenger's choice behavior (Sun, H. 2002).

On the basis of gravity model, XuanGuoFu et al. established a spatial model based on the tourism passenger space of airway corridor with air fares as economic distance indicators to analyze the spatial behavior characteristics of tourists in Sanya (Xuan, G. F. 2004) . He believed that Sanya city tourists should be flying and driving-based, it was recommended to establish a tourism air fare adjustment fund in Sanya City to reduce aircraft fares, the tourist traffic threshold and to promote the increasing of tourist traffic.

2.3.3 Impact of air rights on tourism industry and tourism revenue

Andreas Papatheodorou has a certain representation on the study of the relationship between the opening of passenger traffic rights and the tourism industry . He began to explore the opening of European passenger air rights from 2001 onwards. He suggested that policymakers should integrate tourism, traffic geography and industrial economics on the basis of industrial economics and island traffic geography to establish a viable tourism strategy to enrich the existing deregulation framework in the study of the rights of the Mediterranean Islands. His study of European civil aviation management systems and leisure travel focused on the discussion of the relationship between passenger aviation and tourism (papatheodorou, A. 2001). The paper explored what changes had taken place in the aviation policy for leisure and tourism products, and the significance of these changes (papatheodorou, A. 2002). In the empirical study of aviation and tourism in Cyprus after deregulation (S. Liasidou 2004), he proposed three stages of the EU liberalization process (papatheodorou, A.

2008), focusing on the application of the "third stage" liberalization process in small business application.

SotiroulaLiasidou was also concerned about the impact of Cyprus's liberalization on tourism. He argued that as Cyprus's aviation market access thresholds were reduced with the openness of air right, low-cost airlines were able to offer lower-priced air tickets, thereby reducing the travel costs of tourists and increasing the number of visitors (Liasidou, S. 2004). For example, the application of fifth air rights, opened the Stockholm-Athens-Crete route, so that a significant was increased in Greek tourists, with the increase in the number of tourists, Greece and Cyprus Airlines would also open the Larnaca - Athens route. In addition, the impact on the tourism industry also included reducing the burden of tourism, increasing revenue, raising the number of independent tourists and the development of different forms of tourism. At the same time, he also mentioned that the opening of air rights would bring about 25% of the negative impact of the tourism industry, such as the destination would bring more and local social and cultural values of public tourists in conflict with the local culture and the environment may be destroyed. And by low fares to attract backpackers, they took up the tourism resources, but more tourism income could not be provided.

Many scholars pay attention to the close relationship between the air transport industry and the tourism industry. Xiao Yun found that the development of the aviation industry affected the development of tourism, the number of tourists, the number of air travel, the tourist airports and the tourist routes increased.(Xiao, Y. 2012) Aviation enterprises and tourism hotels, travel agencies, travel sites also had more relevance. Passenger air provided a convenient access to tourist spots and created new air travel products.

Su Jianjunfound that there was an equilibrium relationship between tourist traffic and traffic passenger volume by using the relevant statistics from 1985 to 2008 and the cross-sectional data of 30 provinces and regions in China from 2006 to 2007,

using co-integration analysis and Granger causality test method (Su, J. J. 2012). There was one-way Granger causality relationship between the inbound passenger traffic flows and air passenger traffic.

Yan Li also used Granger test and correlation analysis to study by taking the samples from Beijing and Xi'an found that there had significant correlation between the civil aviation passenger traffic and tourism revenue at 0.01 level, furthermore, there was significantly related between the civil aviation passenger traffic and the total income of foreign exchange tourism at 0.05 level (Yan, L. 2015).

Li Mei based on the opening of ASEAN international route in Guangxi to analyze the expansion of tourism market in Guangxi ASEAN tourism market, and found that with the opening of ASEAN route, the increased of the entry volume of ASEAN countries was obvious (Li, M. 2013).

Rao Yong [Rao, Y. (2012)] used the tourism statistics of Hainan Sanya from 1994 to 2010, using dynamic measurement model to analyze and explain the impact of the openness of air rights on the development of tourism, he believed that the rights and visa and other consumer movement barriers to the opening process should be compatible with the level of development of export-oriented services, rather than "the sooner the better, one on the spirit". When the export-oriented service industry was still in the initial stage of extensive development, the early implementation of a comprehensive open policy may lead to the low-end development of the source market structure, the enhanced circulation of the extensive development mode and the decline of the international division of labor in the industry. Therefore, the optimal decision of the opening of air rights should be based on the process of industrial factor upgrading and management system reform advance gradually, orderly and gradually to open.

It can be seen that many scholars at domestic and abroad have realized that there are a lot of links between air transport and tourism, and some qualitative and quantitative research has been carried out, but they have failed to answer positively

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whether the opening of traffic rights has an impact on the tourism industry as well as the ways to affect.

From the above literature can be seen in the study of the tourism industry, many researchers have adopted the tourism income as an important indicator of the development of tourism to analyze, this article will continue this idea, learn from the previous study. The author explores the relationship between the opening of air rights and the income of tourism through the empirical research, and further explores the influence of the liberalization policy of air rights on the development of tourism in China.
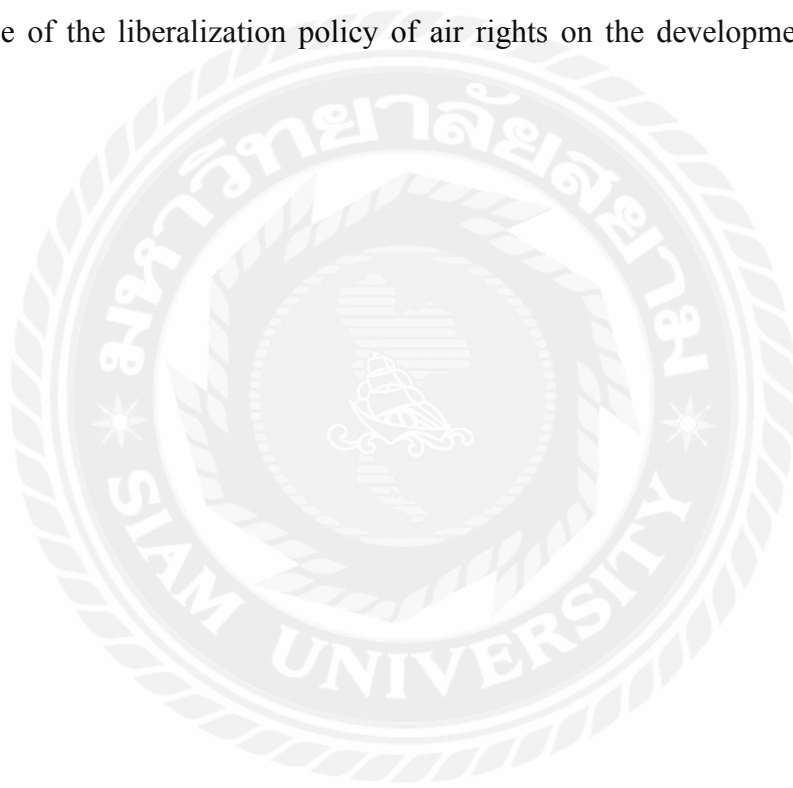
Chapter 3

Study Design

This paper chooses 10 air rights open cities as samples for total of 20 years of panel data. The total income of tourism is used as a representative indicator of the development of tourism. The independent variables include airport passenger throughput, per capital consumption of overseas tourists, the number of international travel agencies, the number of hotels for foreign tourists, the total number of days of overnight visitors and the opening of air rights. Through the regression analysis and other methods to study whether the openness of air rights has influence on tourism and how the impact is achieved through the way, and to make assumptions and test for the possible existence of traffic right of different influences in different cities.

3.1 Research methods

The analysis of the literature is based on a large number of relevant historical documents, materials, on the basis of air rights, the basic theory of tourism and other scholars' research results in the past, analysis of reference to the ideas and methods of predecessors. To make their own ideas and assumptions on the questions those have not been answered in previous studies and verify them. At the same time, the relevant information documents such as tourism statistical yearbook, city statistical yearbook and airport traffic data are collected, summarized and analyzed to obtain information about the development status of domestic tourism.

The empirical research method is based on the investigation of the research object, observes the data and materials (including the second-hand data), analyzes the model, and concludes the relationship between the variables and the evolution of the research methods. Through this research, we can get the countermeasures to transform

the object. After the literature search and analysis, the author finds that the air rights as an exogenous institutional variable may have the influence on the tourism industry. Therefore, this paper uses the multiple regression analysis method to study the relationship between the air right and the tourism industry. The six independent variables in the regression model of the variable income of tourism income are divided into a 10 sets of cities for 20 years of panel data regression analysis, trying to draw the corresponding results to verify the hypothesis.

Statistical analysis is done by calculating the sample mean of the characteristics of the study object, variance or percentage, to study the relationship between the eigenvalues of the samples and the maternal eigenvalues, and to study the relationship between the variables, so as to find out the development of the subjects or to verify whether the hypothetical conclusions are true. In this paper, the descriptive statistics of the selected variables are analyzed, and then the different manifestations of each sample city are analyzed, and the regularity and difference are found, and further subdivided into different types to study.

Comparative research refers to an analysis method that compares two or more things or objects to find the similarity and difference between them. Social science research commonly used comparative method is divided into two types of comparative method and historical comparison method. The former belongs to the horizontal comparison and the latter belongs to the longitudinal comparison. This paper by used the statistical analysis divides the openness of air rights cities into different types of comparative studies to get the different effect on the passenger air traffic rights liberalization policies in different cities and regions, and then, to put forward the differentiated policy implementation recommendations for the different types of urban air rights openness policy effect.

3.2 Sample selection

Since the opening of the fifth air rights in China in 2003 at the first time, so far (before 2016) a total of 14 cities have opened the fifth air rights, in order to more clearly show our air rights opening process, now the status quo of China's openness air rights cities as follows:

Table 3-1 List of the fifth air rights in the domestic city

City name	Open year	Passenger right / freight right	on behalf of the route (fly the airline)
Beijing	2003	passenger / cargo	Abu Dhabi - Beijing - Nagoya：Etihad aviation Tokyo - Beijing：Pakistan International Airlines Bangkok - Beijing: Ural Airlines
Shanghai	2005	passenger / cargo	Tokyo - Shanghai: Delta Airlines Mumbai - Shanghai - San Francisco: Jetta, India
Guangzhou	2004	passenger / cargo	Nairobi - Bangkok - Guangzhou: Kenya Airways Colombo - Bangkok - Guangzhou: Sri Lankan Airlines Bangkok - Guangzhou: Madagascar Airlines
Tianjin	2005	passenger / cargo	Singapore - Nanjing - Tianjin - Los Angeles: Singapore Airlines
Sanya	2003	passenger /	no goods

		cargo	
Haikou	2003	passenger / cargo	Haikou - Singapore - Perth: Star Asia
Xiamen	2003	passenger / cargo	Singapore - Nanjing - Xiamen - Chicago: Singapore Airlines
Nanjing	2003	passenger / cargo	Singapore - Nanjing - Xiamen - Chicago: Singapore Airlines
Wuhan	2008	passenger / cargo	Wuhan - Pattaya - Singapore: Singapore Airlines
Yantai	2010	passenger / cargo	Los Angeles - Yantai - Incheon: Asiana Airlines Yantai - Anchorage - Chicago: Emerald Airlines
Chongqing	2004	cargo	Male - Chongqing - Tokyo: Meijia Airways
Yinchuan	2011	passenger/cargo	Dubai - Yinchuan - Zhengzhou: Emirates Yinchuan - Kunming - Dubai: Emirates
Zhengzhou	2015	cargo	Luxembourg - Zhengzhou - Chicago: Lu cargo aviation
Harbin	2015	passenger/cargo	Ekaterinburg - Harbin - Bangkok: Ural Airlines

From this table, we can see that in the 14 open cities of the fifth right of navigation in China, 12 cities have fifth passenger and freight rights at the same time. Chongqing and Zhengzhou have only fifth right to transport cargo. The focus of this study is the impact of the fifth passenger rights on the development of tourism, so Chongqing and Yinchuan are not included in the scope of the sample.

In 2003, Hainan Province opened the Haikou and Sanya's third, fourth, fifth air rights, so that Hainan has become the highest degree of freedom in China at the same time. Unfortunately, in a very long period of time in Hainan, the fifth option is

not high utilization rate, especially in Sanya, although it was early to get the fifth of India's rights, India Jet Airways once wanted to open (Guangzhou - Haikou - Mumbai) this route, after a number of reasons for the abolition, resulting in Sanya has never really had a passenger application of the fifth route of the route. In view of this, the empirical study of the sample selection should be consistent with the principles of the truth, this article will be excluded from the sample in Sanya.

In addition, due to the late opening time of Harbin air rights (2015), the corresponding travel data and aeronautical data after the opening of the air rights have not yet been counted, and it is not convincing to study the data before the opening of the air right, therefore, it is not included as a sample range.

Based on the above situation, this article finally selected China's 14 fifth air rights open city, except the above four cities should not be as a sample, the other 10 cities are Beijing, Shanghai, Guangzhou, Tianjin, Nanjing, Xiamen, Wuhan, Haikou Yantai, Yinchuan as a sample of empirical research in this paper. All samples were spanned from 1994 to 2013 for a total of 20 years.

3.3 Model design and variable selection

3.3.1 Model design

The empirical analysis of the influencing factors of tourism in China needs to construct a suitable tourism income function model firstly. The model construction of this paper is based on the research of scholars in the past.

In the study of the relationship between the aviation industry and the tourism industry, Chen Yinghui used the partial least squares regression method to make the regression results, which was more reliable and the integrity of the stronger (Chen, Y. H. 2002). He Xiaoxia (He, X. X.2007) with a gray correlation model was used to

construct the correlation model of tourism and air transport in China. Su Jianjun et al. [Su, J. J.(2012)] intercepted the relevant panel data for 23 years, using co-integration analysis and Granger causality test to analyze the relationship between air traffic passenger volume and passenger flow rate. Yan Li et al (Yan, L.2015) studied the correlation between civil traffic volume and tourism index by using Granger causality test and correlation in Beijing and Xi'an. Rao Yong (Rao, Y. 2012) used OLS regression analysis method to study the air rights policy effect by used the total tourism income of Sanya in 1994-2010 as the dependent variable and the number of domestic tourism and the number of inbound tourists and the openness of air rights as an independent variable.

Combining with the previous research methods and ideas, taking into account the practical problems to be discussed in this paper, the least squares (OLS) regression model is proposed for data modeling. The data used in this paper is 20 years of panel data in 10 cities. Because of the difference between the statistical caliber and the standard of the statistical data, all the data are logarithmic-ally processed in order to facilitate the study, which can eliminate the heterogeneity and the data sequence is more likely to stabilize, so this model is set to:

$$\ln y_{it} = \alpha_0 + \alpha_1 * \ln X1_{it} + \alpha_2 * \ln X2_{it} + \alpha_3 * \ln X3_{it} + \alpha_4 * \ln X4_{it} + \alpha_5 * \ln X5_{it} + \alpha_6 * \ln X6_{it} + C$$

($i = 1,2,... N$; $t=1,2... T$)

Among them, i is the city, t is the time, X1, X2, X3, X4, X5, X6, respectively represent the airport passenger throughput, the average per capita consumption of overseas tourists, the number of international travel agencies, the number of foreign-related hotels, the total number of overnight visitors overnight and the openness of air rights. C represents a random error term.

3.3.2 Variable selection

(1) Variable X1 airport passenger throughput

Wu Tiehong, Zhang Jiein the study of China's inbound tourism development level concluded that the airport passenger throughput was one of the significant factors influencing the development of inbound tourism. The accessibility of tourism destination was the prerequisite and necessary condition for the development of tourism (Wu, T. H., Zhang, J.2009) . The influencing factors of entry tourism mainly included port and traffic factors. Port was the basic prerequisite for the development of inbound tourism, which played an important role in the gathering of inbound tourism flows. Especially, the passenger throughput of airports was an important index in the case of overseas tourists' entry and exit.

According to the latest inbound tourism situation published by the State Administration of Taxation (see Table 3-2), the total number of inbound tourists were 65.36 million from January to June in 2015, the total number of passengers enter a country arriving by plane accounted for 15.4% and 58.2% by hovering. Among them, 75% of Hong Kong and Macao compatriots, almost all of the ground traffic to immigrate (Hong Kong and Macao air transport market continued to decline); Taiwan compatriots and foreigners accounted for 4% and 28.9%, more than 60% to enter through air transport. This means that if you do not consider Hong Kong, Macao, such as regional tourists, China's main inbound travel mode of transport is airline, and through the Hong Kong transit ground entry for the auxiliary entry. It also illustrates from another perspective that airport passenger throughput can be an important measure of the level of development of an inbound tourism in a city or region.

Table 3-2 China's inbound tourism situation from January to June 2015

Inbound tourists		Compare items	The proportion of transportation				
Number (million)	Proportion		Ship	Plane	Train	Car	Hiking
6536	100.0%	Overall	3.3%	15.4%	0.9%	22.1%	58.2%
3917	59.9%	Hong Kong compatriots	1.4%	2.3%	1.0%	30.8%	64.5%
1119	17.1%	Macao compatriots	0.5%	0.4%	0.0%	6.3%	92.9%
264	4.0%	Taiwan compatriots	15.0%	62.6%	0.4%	8.7%	13.3%
1236	18.9%	Foreigners	9.2%	60.4%	1.8%	12.1%	16.6%

（ource: National Tourism Administration website[1]）

(2) Variable X2 per capita consumption of overseas tourists

According to the current "tourism survey system"[2] (the following referred to as "the system") provides:

Urban tourism income x = city international tourism (equivalent to local currency) income x1 + domestic tourism income x2,

x1 = City Day Tour International Travel Revenue x11 + City Tour Overnight Tour $y = X1iy$ International Travel Income x12,

x11 = the number of tourists visiting the city day tour k11 × day tour of overseas tourists in the city's per capita consumption r11,

x12 = the number of days to stay in the city to visit the number of overseas tourists k12 × overnight travel overseas tourists in the city's daily consumption r12,

From this "system" seems the per capita consumption of overseas tourists is of great significance to measure the income of inbound tourism and the level of tourism development. Therefore, this paper chooses the per capita consumption of overseas tourists as one of the independent variables.

(3) Variables X3 number of international travel agencies and variables X4 number of foreign hotels

According to Pearce Douglas , attraction, transportation, accommodation, support facilities and infrastructure were the five spatial elements that affect the supply of regional tourism (Yang, X. J.,& Ma X. L.2004). The last four factors directly reflect the tourism reception capacity, so the author chooses the number of hotels for foreign tourists[3]as independent variable for measuring the development level of urban tourism industry.

(4) Variable X5 reception immigration number of days visitors

According to the previous research found that the measurement of development status of inbound tourism development includes two categories the tourists' scale and foreign exchange income. Some scholars selected tourism foreign exchange indicators to study , some scholars chose the number of inbound tourists as an indicator (Sun, G. N., Zhang, Y.,& Xue, J. 2011), and some scholars also selected the number of inbound tourists and tourism foreign exchange two indicators to study(Ge, D. M.,& Jiang, L. 2011).

To measure the scale of tourists also include the number of inbound tourists, the number of people and the number of days. The number of days of inbound tourists is more accurately than the previous two indicators to reflect the development of inbound tourism (Wan, X. C.,& Wu, F. R. 2011). Because the tourism foreign exchange income and the size of inbound tourists is into a significant positive

correlation. At the same time, the tourism foreign exchange earnings data is estimated, and the estimated ways and caliber is vary, the accuracy of the tourism foreign exchange income data is not as good as the tourists 'scale. Based on the above points of view, this paper chooses the number of days of reception stay overnight visitors as an independent variable to measure the development level of tourism.

(5) Variable X6 air rights open

Through the search of a large number of literature and data, the author summarizes the current situation of the city and the opening time of the city's air rights (see Table 3-1). In the empirical analysis below, the openness of air rights as an exogenous institutional variable (dummy variable), and the year from the beginning of the air rights as "1", previous yearis "0", to examine the fifth passenger traffic rights on the impact of urban tourism revenue.

3.3.3 Data sources

This paper selects 10 sample cities for 20 years of panel data to be studied. All data sources are described as follows:

1. Total tourism income, data from the "China Tourism Statistical Yearbook" (1994-2013), by the People's Republic of China National Tourism Administration prepared.

2. Airport passenger throughput, data from the "National Airport Production Statistics Bulletin" (1994-2013), issued by the China Civil Aviation Administration.

3. Per ca-put consumption of overseas tourists, the data from the "China Tourism Statistical Yearbook" (1994-2013), by the People's Republic of China National Tourism Administration prepared.

4. The number of international travel agencies, part of the city data from the "China Tourism Statistical Yearbook" (1994-2013), by the People's Republic of China

National Tourism Administration prepared. Another part of the city data from the city's "City Yearbook" (1994-2013), issued by the City Bureau of Statistics.

5. The number of foreign hotels, part of the city data from the "China Tourism Statistical Yearbook" 2005 (1994-2013), by the People's Republic of China National Tourism Administration prepared. Another part of the city data from the city's "City Yearbook" (1994-2013), issued by the City Bureau of Statistics.

6. Number of days to receive overnight visitors, the data from the "China Tourism Statistical Yearbook" (1994-2013), by the People's Republic of China National Tourism Administration prepared.

3.4 Make assumptions

Based on the above literature and theoretical analysis, this paper presents the following five assumptions and test:

Assumption I: Passenger fifth air rights open policy has an impact on the tourism industry in all open cities. Because of the wide distribution of China's openness air rights cities, and the economic development level and infrastructure conditions of the cities are very different. From the above analysis, it is also seen that the development level of tourism in cities is very uneven, accordingly:

Assumption II: the openness of air rights has different degree and way impact for different city tourism and can be carried out on the classification of open cities. Due to the considerable differences between the airport infrastructure and the opening routes in our country, some of the central cities and transport hub cities are far ahead of some small and medium-sized cities, with the exception of airborne waterways or land traffic are more developed, accordingly:

Hypothesis III: there is a class as direct travel destination air rights openness city and its tourism industry is directly and remarkable affected by the openness of air rights

Hypothesis IV: there is another type of landlocked city that plays a major role as a transit hub, and its tourism industry is not directly affected by the opening of air rights.

This type of hub city is usually in the heart of China's major economic circles, surrounded by a lot of small and medium-sized cities that do not have their own airports but are rich in tourism resources. Many inbound tourists are traveling through cross-boundary tourism. Aviation to reach these central cities and transportation hub city, and then take the other means of transport to reach the tourist destination for tourism activities, accordingly:

Assuming V: as a transit hub city, has a significant impact on the liberalization of air traffic rights, but its air rights liberalization policy has a radiation effect that can drive the development of urban tourism around the hub of traffic.
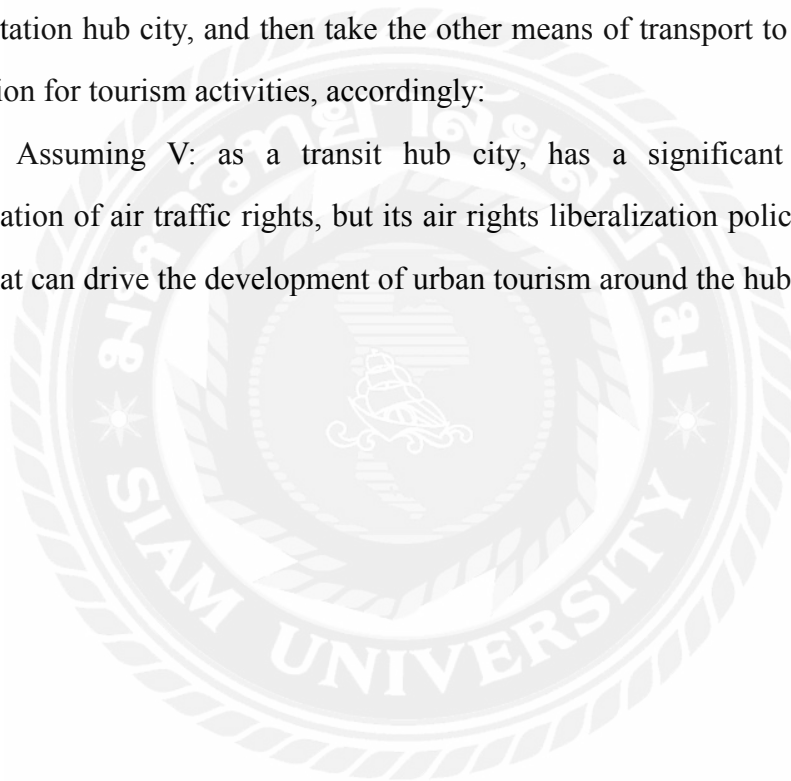
Chapter 4

Empirical analysis on the impact of traffic-right on Tourism

Based on the analysis of the literature and theory in Chapter 2, this paper establishes the measurement model of the influence of the opening air rights as the control variable on the total tourism income and in the third chapter put forward the hypothesis, multiple linear regressions to test the above assumptions.

4.1 The statistical results description

The description of the statistics is to sort out, categorize, simplify, or plot the data from the study to describe and summarize the relationship between the characteristics of the data and the variables, so that the problem can be further explored to present and propose the hypothesis. In this paper, six indicators were descriptive statistics though Eviews7.2 except the openness of air rights, the results of the statistics are as follows:

Table 4-1 Total Tourism Income Description Statistical Results

Provinces and cities	Mean	Median	The maximum value	The minimum value	Standard deviation
Beijing	14.99931	14.93764	15.71983	13.65098	0.527571
Shanghai	14.61932	14.54724	15.72438	13.51212	0.670865
Guangzhou	14.75381	14.72393	15.41279	14.03246	0.414404
Tianjin	12.64678	12.70749	13.38119	11.88015	0.42159

Nanjing	13.18919	13.15155	14.00816	12.43266	0.503517
Xiamen	12.25554	12.17449	13.41756	11.37863	0.579975
Yantai	13.85779	13.79614	15.20807	12.63291	0.804018
Wuhan	12.43587	12.46346	13.37356	11.60777	0.575022
Haikou	12.20298	12.33025	12.99062	11.30954	0.533509
Yinchuan	12.34544	12.32451	13.37347	11.19468	0.586905

It can be seen from Table 4-1 that: firstly in the ten provinces and cities selected in this paper, the highest level of tourism income in Beijing is about 14.999, while the level of tourism income in Haikou is the lowest, the average is around 12.203. Ten provinces and cities tourism income level to the mean, from high to low followed by Beijing, Guangzhou, Shanghai, Yantai, Nanjing, Tianjin, Wuhan, Yinchuan, Xiamen, Haikou. Secondly, from the table data, we found that the maximum appears in Beijing, while the minimum appears in Yinchuan. We can roughly infer that: the level of tourism income with the level of economic development has certain relevance, usually, the higher the level of economic development, the higher the level of tourism income. Thirdly, according to the standard deviation analysis, we can see: Yantai tourism income standard deviation is the largest, indicating greater fluctuations in tourism income; the corresponding standard of tourism in Guangzhou, the minimum standard deviation, indicating that the data fluctuation is small, the tourism income situation is more stable.

Table 4-2 Airport Passenger Throughput Description Statistical Results

Provinces and cities	Mean	Median	The maximum value	The minimum value	Standard deviation
Beijing	17.32413	17.24238	18.18083	16.61188	0.559761
Shanghai	16.72861	16.60535	17.38785	16.08685	0.408694
Guangzhou	16.82988	16.70821	17.62307	16.29199	0.482942

Tianjin	14.62964	14.47522	16.12167	13.56864	0.945148
Nanjing	15.32315	15.17711	16.38614	14.56126	0.678518
Xiamen	15.58117	15.40367	16.5728	15.03339	0.533996
Yantai	13.84987	13.67519	14.75062	13.19621	0.558529
Wuhan	15.27517	15.14577	16.3382	14.2907	0.716183
Haikou	15.56995	15.71295	16.18544	14.90127	0.428265
Yinchuan	13.70218	13.78693	15.26192	11.91813	1.13604

According to Table 4-2, we have obtained the following: firstly, in the ten provinces and cities, Beijing's airport has the largest throughput, the average is about 17.324; Yinchuan Airport's throughput is the smallest, about 13.702. According to the airport throughput level from high to low sort, followed by: Beijing, Guangzhou, Shanghai, Xiamen, Haikou, Nanjing, Wuhan, Tianjin, Yantai, Yinchuan. Secondly, from the data in the table, it can be found that the maximum value appears in Beijing, about 18.181, and the minimum appears in Yinchuan, about 11.918.3. By analyzing the standard deviation of the data, we get the smallest change in throughput the city is Shanghai (0.409), the largest change in throughput of the city is Yinchuan (1.136).

Table 4-3 Per ca-put consumption of overseas visitors' statistical results description

Provinces and cities	Mean	Median	The maximum value	The minimum value	Standard deviation
Beijing	5.459982	5.479192	5.544357	5.326127	0.068731
Shanghai	5.44337	5.558024	5.194622	0.095151	15.72438
Guangzhou	4.971921	4.911829	5.209045	4.834216	0.125889
Tianjin	5.210452	5.236016	5.346727	4.583075	0.164615
Nanjing	5.227079	5.279379	5.376481	4.481324	0.217614
Xiamen	5.110221	5.11814	5.285181	4.516736	0.186071

Yantai	5.190532	5.225234	5.354792	4.217324	0.265158
Wuhan	5.099651	5.122644	5.286042	4.136622	0.26663
Haikou	5.026278	5.044988	5.189952	4.286001	0.204172
Yinchuan	4.84341	4.873134	5.070852	4.067897	0.229174

From the table 4-3 can be drawn: firstly, in ten provinces and cities, Beijing's overseas tourists per ca-put consumption of the highest (5.460), Yinchuan overseas tourists per ca-put consumption of the lowest (4.843), according to per ca-put consumption level, from high to low sort Followed by: Beijing, Shanghai, Nanjing, Tianjin, Yantai, Xiamen, Wuhan, Haikou, Guangzhou, Yinchuan. Here is a phenomenon, Guangzhou as a first-tier cities, the per capita consumption of overseas tourists is lower, even lower than Yantai and Tianjin. Secondly, the per capita consumption level of overseas tourists, the largest value in Beijing (5.544), the smallest appears in Shanghai (0.095), rather than in other western or central cities. Thirdly, By comparing the standard deviations of the data, we can conclude that the standard deviation of Beijing is the smallest, so the average per capita consumption level of overseas tourists is the most stable, and the standard deviation of per capita consumption level of overseas tourists in Shanghai is the largest (15.724) Higher than the normal value, indicating that in 20 years, Shanghai's overseas tourists per capita consumption level changes greatly.

Table 4-4 Number of international travel agencies results description

Provinces and cities	Mean	Median	The maximum value	The minimum value	Standard deviation
Beijing	5.439903	5.111988	6.939254	4.691348	0.716944
Shanghai	4.253906	3.713572	6.917706	3.496508	1.183255
Guangzhou	4.255422	4.051747	5.521461	3.713572	0.601232

Tianjin	3.527142	2.944439	6.642487	2.639057	1.205309
Nanjing	3.753246	3.258097	6.144186	2.833213	1.17536
Xiamen	2.992962	2.602003	4.969813	2.302585	0.935114
Yantai	3.19016	2.740319	5.802118	1.609438	1.373337
Wuhan	3.469813	3.177185	5.575949	2.302585	1.090339
Haikou	3.858357	3.637586	5.267858	3.091042	0.695746
Yinchuan	3.665892	3.295837	5.808142	2.944439	0.93331

According to the data in Table 4-4, we can draw the following conclusions: firstly, the number of international travel agencies in Beijing is the largest (5.434), while the number of international travel agents in Xiamen is the lowest (2.993), and the number of travel agents is sorted by high to low: Guangzhou, Shanghai, Haikou, Nanjing, Yinchuan, Tianjin, Wuhan, Yantai, Xiamen. The number of travel agencies with the city's economic development level has a great relevance. According to the standard deviation analysis, it can be seen that the number of international travel agents in Yantai has the largest change (1.373), but in general, the number of international travel agencies has changed to a certain extent.

Table 4-5 Numbers of foreign hotels Description Statistical results

Provinces and cities	Mean	Median	The maximum value	The minimum value	Standard deviation
Beijing	6.30707	6.374698	6.728629	5.652489	0.315273
Shanghai	5.503538	5.685208	5.902633	4.70953	0.421626
Guangzhou	5.4235	5.389072	5.777652	5.135798	0.199215
Tianjin	4.476615	4.56386	4.795791	3.663562	0.292288
Nanjing	4.763232	4.757882	5.192957	4.454347	0.193252

Xiamen	4.225897	4.226594	4.51086	3.806662	0.161896
Yantai	4.666991	4.653734	5.26269	3.951244	0.39111
Wuhan	4.561775	4.672436	4.85203	3.931826	0.277916
Haikou	4.189672	4.262581	4.584967	3.496508	0.276641
Yinchuan	4.064061	4.166395	4.718499	3.367296	0.469859

According to Table 4-5 data, we analyze the number of foreign hotels. It can be seen that one is the largest foreign-related hotel in Beijing (6.307), Yinchuan, the largest number of foreign-related hotels (4.064), according to the number of foreign hotels from high to low, followed by: Beijing, Shanghai, Guangzhou, Nanjing, Yantai, Wuhan, Tianjin, Xiamen, Haikou, Yinchuan. Secondly, according to the standard deviation analysis, we found that the number of foreign-related hotels in Xiamen changed at least (0.162), and the number of foreign-related hotels in Yinchuan changed the most (0.470), while the standard deviation of the number of foreign-related hotels in Beijing was also large.

Table 4-6 Total numbers of days of stay in overnight visitors Description of the results

Provinces and cities	Mean	Median	The maximum value	The minimum value	Standard deviation
Beijing	16.40276	16.38419	16.90003	15.87985	0.315855
Shanghai	16.23832	16.25246	17.06409	15.40286	0.576327
Guangzhou	16.13436	16.06443	16.81574	15.45591	0.409529
Tianjin	14.69741	14.53408	16.28649	13.47832	0.911549
Nanjing	14.72426	14.84806	15.74052	13.25057	0.799197
Xiamen	14.75615	14.61645	15.70305	14.17738	0.506225
Yantai	13.33764	13.20062	14.61619	12.03399	0.769433

Wuhan	13.68631	13.62448	14.91097	12.72535	0.62295
Haikou	12.42305	12.40313	12.99392	11.77148	0.311572
Yinchuan	9.606517	9.52028	10.91611	8.657783	0.55886

From the data in Table 4-6 we can find: firstly, Beijing is still the largest number of visitors to stay overnight (16.403), Yinchuan received the least number of visitors overnight entry (9.606), follow the number of overnight arrivals from high to low Beijing, Shanghai, Guangzhou, Xiamen, Nanjing, Tianjin, Wuhan, Yantai, Haikou, Yinchuan. 2. The maximum value of overnight arrivals did not appear in Beijing, but in Shanghai, while the minimum appeared in Yinchuan. (0) According to the standard deviation of the number of visitors to stay overnight, we can see that Tianjin has the largest change (0.912) for overnight tourists, while Haikou has received the smallest change (0.3116) for overnight tourists, indicating that Haikou, Beijing, Guangzhou, Xiamen and other cities on the tourists have a strong and sustained attraction, the number of tourists is more stable.

According to the above six indicators for analysis, we can see that Beijing is in the forefront of the indicators, including airport passenger throughput, the per ca-put consumption of overseas tourists, the number of international travel agencies, the number of foreign hotel and other indicators are the first. There is no doubt that Beijing as economic development center attractiveness. And Yinchuan due to its location and economic level constraints, its indicators are on the lower level of tourism development, but its tourism income level is not the lowest. The lowest level of tourism income Haikou, although its indicators, but not the lowest, indicating that its lack of tourism income, in the economic level is still a great development and expansion of space. According to the analysis of the standard deviation, we can find that, in general, cities with higher economic development have a sustained and stable appeal to tourists, so their indicators have a lower range of changes. Accordingly,

cities with lower levels of economic development have a greater degree of volatility due to their investment development late and influenced by policies or emergencies, so their attractiveness to tourists will fluctuate to a greater extent, and therefore, the magnitude is larger.

In general, the level of development of the 10 cities that have opened the fifth route of passenger transport is very uneven, and the differences caused by this imbalance are brought about by the opening of air rights and need further analysis and verification.

4.2 Variable correlation test

4.2.1 Variable correlation analysis

In order to further investigate the relationship between the independent variables and the dependent variables, we also consider the correlation between the dependent variables and the independent variables, taking into account the test of multiple col linearity problems. The results are shown in Table 4.7:

Table 4-7 Variable Correlation Coefficient Matrix Table

	Y	X1	X2	X3	X4	X5	X6
Y	1						
X1	.652**	1					
X2	.473**	.421**	1				
X3	.637**	.638**	.391**	1			
X4	.846**	.663**	.499**	.559**	1		
X5	.682**	.682**	.568**	.424**	.699**	1	
X6	.469**	.584**	.237**	.520**	.328**	.487**	1

** Significant correlation at .01 level (bilateral).

From Table 4-7, the results show that at the 1% significance level, the total variable travel income and airport passenger throughput, the number of overseas tourists per ca-put, the number of international travel agencies, the number of foreign tourists, the total number of overnight visitors' right openness are significant and have a positive direction. The total coefficient of tourism revenue and the number of foreign-related hotels are the largest coefficient, the value of 0.846. Total income of tourism and airport passenger throughput, per ca-put consumption of overseas tourists, the number of international travel agencies, the total number of days to receive overnight visitors were 0.652,0.473,0.637,0.682. From the perspective of the opening of air rights and the total income of the tourism industry, it can be seen that the opening of air rights is positively related to the total income of tourism, indicating that the opening of air rights may promote the growth of tourism revenue. From the explanatory variables, we can conclude that there is a positive correlation between the explanatory variables at the 1% significance level, where the correlation coefficient between the airport passenger throughput and the total number of overnight visitors is the largest. The maximum correlation coefficient is 0.682.

The magnitude of the correlation coefficient between the explanatory variables can be inferred that there is a strong correlation between the variables. In general, if the simple correlation coefficient between the two explanatory variables is high, it can be considered that there are more serious multiple-col linearity, but in more than two explanatory variables, it is possible that the lower simple correlation coefficient. There may also be multiple-col linearity, so it cannot simply rely on the correlation coefficient to determine whether there is multiple-col linearity. Multiple-col linearity can lead to the inaccurate parameter estimation and the increase of the variance of the parameter estimation. Therefore, this paper makes a multiple-col linearity test on the data to find out and eliminate the multiple-col linearity to prevent errors in the results to ensure the accuracy of the results.

4.2.2 Multiple Collinearity Test

Experiences in the past studies have shown that the occurrence of multiple col-linearity may occur in the following cases: observe the simple correlation coefficient matrix between explanatory variables, and if there is a large correlation coefficient for some explanatory variables, there may be serious. When the F-test can be passed at high salient level and the goodness of fit R^2 is also large, but the t-test of the coefficients of the explanatory variables is not significant, which is likely to have serious muti col linearity; Increasing or deleting a variable, or changing an observed value, the coefficient of the regression equation will change significantly, and there may be a serious multiple col linearity; When the regression coefficient of the interpreted variable is large, it indicates that there may be serious Muti-col linearity, the expansion of the confidence interval will result in an increase in the probability of receiving a hypothesis that should have been rejected. Although these methods of judgment are simple, but not accurate enough, there are some limitations, not a very reliable method. In the following, we will test whether there is a linear correlation between each independent variable and the other independent variables by statistical test.

One of the commonly used muti-col linearity test methods is the Variance Inflation Factor (VIF) diagnostic method. X_j is used as the dependent variable to perform additional linear regression on the other independent variables, and the determinable coefficient is denoted by R_j^2. Then the variance expansion factor of the independent variable X_j is expressed as. $VIF_j = \dfrac{1}{1 - R_j^2}$ Since R_j^2 depicts the

degree of correlation between X_j and other independent variables, the larger of the R_j^2, the greater of the VIF_j, indicating that the more col linearity is more serious.

Another method of multiple col linearity testing is the Tolerance method. Tolerance is the reciprocal of VIF_j, Chen Xiru according to experience derived that when the tolerance value of an independent variable is less than 0.1 ($VIF_j \geq 10$), there may be a col linearity problem that affects the result of the least squares estimation. According to the results of the auxiliary regression equation, the tolerance value can be obtained from R_j^2, and then the variance expansion factor can be obtained. Combining the tolerance value and the variance expansion factor can be used to determine the col linearity problem between explanatory variables. We calculated by SPSS 21.0 software, the specific results shown in Table 4-8.

Table 4-8 explains the tolerance values of the variables and the VIF indicators

Explanatory variables	X_1	X_2	X_3	X_4	X_5	X_6
Tolerance value	0.224	0.62	0.453	0.389	0.259	0.593
VIF	4.473	1.613	2.209	2.568	3.855	1.686

According to the table, the tolerance values of all explanatory variables are greater than 0.1 and the VIF index is less than 5, much lower the above criteria, indicating that there is no serious muti col linearity problem between explanatory variables, so that the least squares regression analysis is carried out for the next step.

4.3 Cluster analysis

Based on the previous assumptions, this paper mainly studies the different effects of air traffic rights on different types of cities. Therefore, 10 cities are classified by cluster analysis, and SPSS 21.0 software is used.

(1) Sample data selection and variable settings

For the sake of simplicity and improvement of research efficiency, the indicators we use for clustering analysis include the total income of tourism Y, the variable capacity of the airport passenger throughput X1, the per ca-put consumption of overseas tourists X2, the number of international travel agencies X3, the number of foreign hotels X4, The total number of visitors X5 (see Table 4-9). As the unit of measurement of different indicators, in order to eliminate the difference between the original data dimension, but also need to standardize the data processing, as shown in Table 4-9.

Table 4-9 Characteristic variables of provinces and cities and their interpretation

variable	Interpretation
Y^{ij}	The total avenue of the i city of the j year
X_1^{ij}	The airport passenger throughput of the i city of the j year
X_2^{ij}	Per ca pita consumption of overseas tourists of the i city of the j year
X_3^{ij}	Number of international travel agencies of the i city of the j year
X_4^{ij}	Number of foreign hotels of the i city of the j year
X_5^{ij}	Total number of overnight visitors of the i city of the j year

i=1,2···10,j=1,2 ···20

(2) Clustering results and analysis

Cluster Analysis (Cluster Analysis) is a study of multiple samples or indicators of the classification of multivariate statistical methods. Through the cluster analysis can be achieved in order to merge the system. Clustering analysis is one of the most commonly used. The basic idea is to think of each indicator as a coordinate

axis in the dimension space, treating the sample as a point in the dimension space. Initialize a sample as a class, each class contains a sample; then the nearest two categories into a new class, and calculate the distance between the new class and other classes, and then by the minimum distance criteria and class; reduce the class until all the samples are merged into a class. In this paper, the distance between the classes is defined as the sum of squares between groups. The distance between samples is the most commonly used method of Squared Euclidean distance, and the clustering spectrum is drawn respectively. The results are shown in Table 4-10 and Figure 4-1.

Table 4-10 Ten Cities "Cluster Members" table

City	Cluster 4	Cluster 3	Cluster 2	City	Cluster 4	Cluster 3	Cluster 2
Beijing	1	1	1	Yantai	3	3	2
Shanghai	1	1	1	Xiamen	4	3	2
Guangzhou	1	1	1	Wuhan	4	3	2
Yinchuan	2	2	2	Nanjing	4	3	2
Haikou	2	2	2	Tianjin	4	3	2

As can be seen from Table 4-10, when the numbers are the same, they are expressed as a class. When all provinces and cities are divided into two categories, Beijing, Shanghai, Guangzhou as a class, the rest of the city as a class; all provinces and cities are divided into three categories, Beijing, Shanghai, Guangzhou as a class, Haikou, Yinchuan Class, the rest of the city as a class; all provinces and cities into four categories, Beijing, Shanghai, Guangzhou as a class, Haikou, Yinchuan as a class,

Yantai as a class, the rest of the city as a class; North of the broad poly as a class, the remaining provinces and cities together for a class.
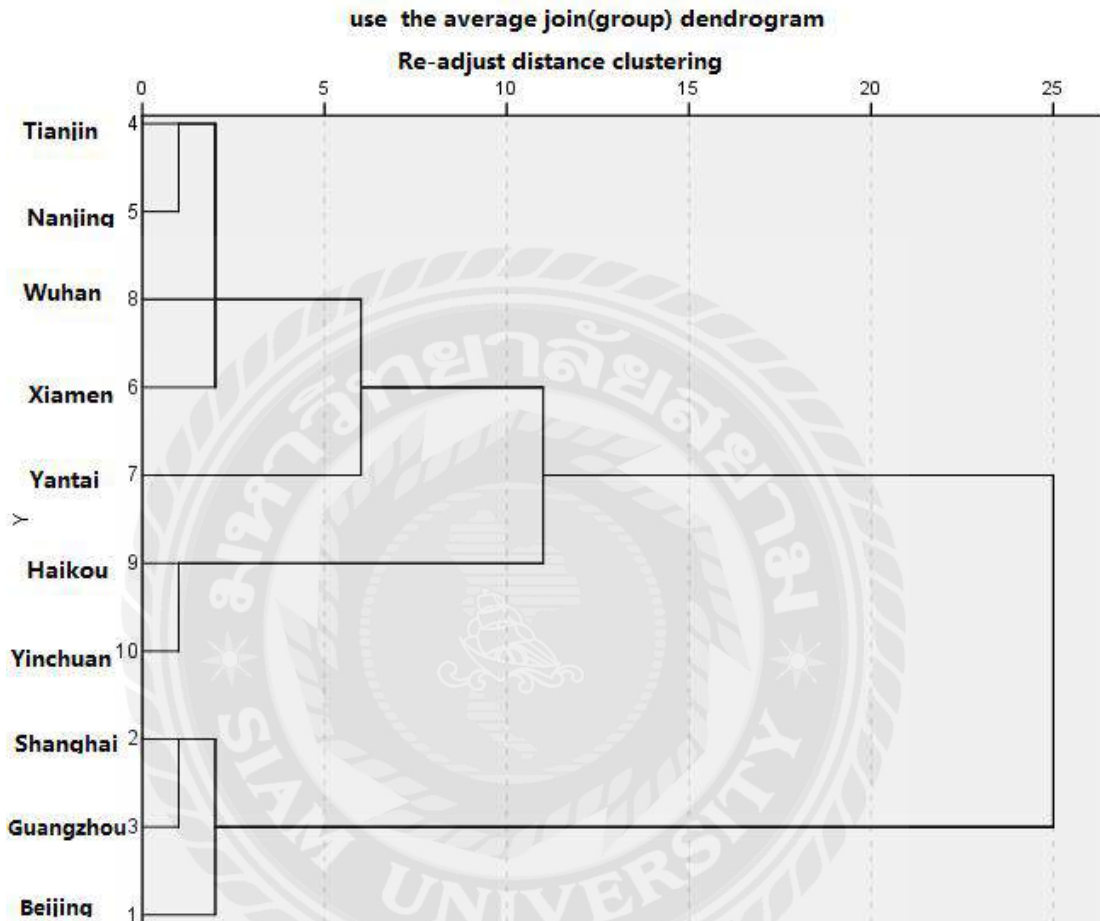

Figure 4-1 System tree diagram of 10 provinces and cities data system cluster

According to the clustering results of Table 4-10 and Figure 4-1, in order to facilitate the study, Beijing, Shanghai, Guangzhou are divided into one category (for example, category B), and remaining cities into one category (recorded as one category). This classification is different from the usual idea that the role of air rights on the big cities is more significant. This can be interpreted from an economic point of view: the three major cities in the north of China's economic center are usually surrounded by a large number of small and medium-sized cities, but also answered the

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previous hypothesis II.

4.4 Regression analysis

4.4.1 Overall regression analysis

(1) Data analysis results

　　Based on the above model setting, the OLS regression analysis is carried out on the panel data of 10 cities, and the output of Eviews 7.2 is as follows:

Table 4-11 Analysis results of ten city panel data regression analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.188545	0.069057	-2.730302	0.0071
X2	-0.205300	0.211308	-0.971566	0.3328
X3	0.234328	0.053992	4.340044	0.0000
X4	1.233818	0.097378	12.67042	0.0000
X5	0.112624	0.042496	2.650251	0.0089
X6	0.282323	0.113091	2.496425	0.0136
C	8.708434	1.143458	7.615876	0.0000

R-squared	0.797316	Mean dependent var	13.38655
Adjusted R-squared	0.789315	S.D. dependent var	1.196159
S.E. of regression	0.549042	Akaike info criterion	1.681744
Sum squared reside	45.82000	Schwarz criterion	1.816853
Log likelihood	-126.6986	Hannan-Quinn criter.	1.736610
F-statistic	99.65579	Durbin-Watson stat	1.580056
Prob(F-statistic)	0.000000		

As can be seen from the output, the equation has good fit, and the F statistic is significant at the 5% significance level. Variables lnX1, lnX3, lnX4, lnX5, lnX6 t statistic were significant at the 5% significance level. The tourism development equation is:

$\ln y_{it} = 8.7084 - 0.1885 * \ln X1_{it} - 0.2053 * \ln X2_{it} + 0.2343 * \ln X3_{it} + 1.2338 * \ln X4_{it} + 0.1126 * \ln X5_{it} + 0.2823 * \ln X6_i$

（7.6158）（-2.7303）（-0.9715）（4.34）（12.67）（2.6502）（2.4964）

Among them $R^2 = 0.797$, $F = 99.656$, $DW = 1.58$

Note: within the t statistic

(2) The interpretation of the results of data analysis

From the perspective of the flexibility of the airport passenger throughput index, the elasticity is -0.1885, which is negatively related to the airport passenger throughput from the economic sense of inspection. This can be achieved by using the airport passenger throughput that includes both passenger inflow and outbound tourists.

From the number of international travel agencies, the number of foreign tourists, the total overnight visitors overnight, the flexibility of open targets, flexibility were 0.2343,1.2338,0.1126,0.2823, these indicators are positively related to tourism income, including foreign hotels The number is an important factor influencing the income of the tourism industry, which shows that the important source of income in the tourism industry is dependent on the passenger's consumption of the accommodation. Compared to the number of foreign hotel indicators, the international travel agency quantitative indicators of the elasticity is much smaller, for this phenomenon can be interpreted as the number of international travel agencies, although the response to the reception capacity, but not an important factor affecting tourism revenue, because there is a large number of self-guided travel activities in the form of existence. It can also be seen from the results that the tourism rights also has a significant impact on the tourism revenue, as well as an answer to the hypothesis

raised in Chapter three. Based on this prerequisite, the following is a study of the different effects of air traffic rights on different types of cities.

4.4.2 Class A urban regression analysis

(1) Data analysis results

X1, X2, X3, X4, X5 as control variables, the regression analysis of the opening of air right to the total income of the tourism industry in the provinces of category A and B provinces. The results of OLS regression in category A provinces are as follows:

Table 4-12 Analysis results of A-type city panel data regression analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.420005	0.062015	-6.772662	0.0000
X2	0.677061	0.205306	3.297821	0.0013
X3	0.235195	0.047851	4.915169	0.0000
X4	0.859119	0.137298	6.257325	0.0000
X5	0.053264	0.037186	1.432386	0.1949
X6	0.938567	0.117987	7.954853	0.0000
C	10.36008	1.199665	8.635814	0.0000

R-squared	0.700701	Mean dependent var	12.74680
Adjusted R-squared	0.683434	S.D. dependent var	0.765100
S.E. of regression	0.430477	Akaike info criterion	1.213142
Sum squared reside	19.27231	Schwarz criterion	1.384013
Log likelihood	-60.32939	Hannan-Quinn criter.	1.282460
F-statistic	40.57986	Durbin-Watson stat	1.728105

As can be seen from the Eviews 7.2 output, the goodness of the equation is good and the F statistic is significant at the 5% significance level. Variables lnX1, lnX2, lnX3, lnX4, lnX6 t statistic were significant at 5% significance level. The tourism development equation is:

$$\ln y_{it}=10.36-0.42*\ln X1_{it}+0.6771*\ln X2_{it}+0.2352*\ln X3_{it}+0.8591*\ln X4_{it}+0.053264*\ln X5_{it}+0.9386*\ln X6_{it}$$

（8.6358）（-6.7727）（3.2978）（4.9152）（6.2573）（1.432386）（7.9549）

Among them $R^2 = 0.7$, $F = 40.58$, $DW = 1.728$

Note: within the t statistic

(2) The interpretation of the results of data analysis

Unlike the B-type cities, the number of overseas tourists per capita, the number of international travel agencies, the number of foreign-related hotels, the opening of air rights and the tourism revenue of Class A cities are positively correlated. Among them, the per ca-put consumption of overseas tourists, the number of foreign-related hotels and the opening of air rights are important factors influencing the income of tourism.

The effect of the total number of overnight visitors to the tourism industry is not very significant, due to the fact that consumption in the A-type cities is generally lower than that of the B-type cities, and the number of days of overnight visitors will not significantly affect the tourism revenue.

In terms of open targets, the flexibility is the largest, reaching 0.9386, which is very different from the results of the B-type cities. This shows that the opening of the air rights has a direct effect on the A-type cities. This can be explained by the fact that Class A cities are more direct destinations for international passenger trips, so opening air rights in Class A cities can have a direct effect on tourism development and also validate the assumptions III above.

4.4.3 Class B urban regression analysis

(1) Data analysis results

      Taking X1, X2, X3, X4, X5 as control variables, the regression analysis was made on the total openness of tourism industry in A and B provinces. The results of OLS regression in category B provinces are as follows:

Table 4-13 Analysis results of B-type city panel data regression analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.398151	0.202633	-1.964886	0.0585
X2	-0.557312	0.281062	-1.982880	0.0541
X3	0.063973	0.085664	0.746790	0.4595
X4	0.652413	0.143938	4.532588	0.0000
X5	0.594787	0.230770	2.577402	0.0136
X6	-0.106051	0.171334	-0.618969	0.5394
C	6.430388	3.751195	1.714224	0.0940

R-squared	0.576966	Mean dependent var		14.86598
Adjusted R-squared	0.515059	S.D. dependent var		0.487840
S.E. of regression	0.339721	Akaike info criterion		0.812654
Sum squared reside	4.731827	Schwarz criterion		1.085537
Log likelihood	-12.50370	Hannan-Quinn criter.		0.915777
F-statistic	9.319818	Durbin-Watson stat		1.897729

| Prob(F-statistic) | 0.000002 |

As can be seen from the Eviews 7.2 output, the goodness of the equation is good and the F statistic is significant at the 5% significance level. Variables lnX4, lnX5 are significant at 5% significance level. The t statistic of the variables lnX1, lnX2, lnX3, lnX6 was not significant at the 5% significance level. The tourism development equation is:

$\ln y_{it} = 6.4303 - 0.398151 * \ln X1_{it} - 0.5573 * \ln X2_{it} + 0.064 * \ln X3_{it} + 0.6524 * \ln X4_{it} + 0.5948 * \ln X5_{it} - 0.106 * \ln X6_{it}$

（6.4304）（-1.964886）（-1.9829）（0.7468）（4.5326）（2.5774）（-0.619）

Among them $R^2 = 0.577$, $F = 9.3198$, $DW = 1.897$

Note: within the t statistic

(2) The interpretation of the results of data analysis

In the B-type cities, the number of foreign-related hotels is still an important factor with a flexibility of 0.6524, indicating that a city's tourism reception capacity to a large extent affects its tourism revenue. However, the airport passenger throughput X1, the number of international travel agencies X3 in such cities on the tourism income is not significant, and the overall regression results and A-type cities class of urban regression results are due to the characteristics of B cities.

Firstly, because the northern states are the leading cities in national economic development with more migrant workers, the throughput of airport tourism is very large, not necessarily for the purpose of tourism. It may be because of business, conferences and other reasons. So it will not significantly affect the tourism revenue.

Secondly, the international travel agencies do not have significant effect on the income of tourism. It can be interpreted as the number of international travel agencies for this phenomenon. Although it reflects the reception capacity, the international travel agency also operates outbound travel, which does not affect the tourism industry income. It is due to the fact that travelers traveling in Class B cities

have opted for more self-help travel rather than travel agents.

Thirdly, the openness of air rights is not significant in the equation, which means that in this type of city, the impact of air rights liberalization on the development of tourism is not obvious. This result responds to hypothesis IV, Section to further analyze the reasons.

4.4.4 Study on the bringing effect of class B urban air rights- Taking Zhongshan and Foshan in Guangzhou as an Example

According to the regression analysis of Class A cities and Class B cities, we can see that there are significant differences in the impact of air rights liberalization on Class A and Class B cities. The impact of air rights on the A-type city is significant and the impact on the city of the second class is not significant, for this phenomenon, we analyze the reasons, make the following assumptions: B-type city, which is more play its leading role, the result of its return is not significant, but the surrounding urban tourism development may be affected by the opening of air rights. In order to verify this hypothesis, we selected two of the B cities in Guangzhou as the representative of the surrounding cities - Zhongshan and Foshan. In 1994-2013, a total of 20 years panel data were transformed into the original model and Guangzhou's rights protection was opened as a dummy variable for verification.

The reasons for choose Zhongshan, Foshan and Guangzhou as the samples of the surrounding cities are:

Firstly, Zhongshan, Foshan, Guangzhou as a medium-sized city around, each with a wealth of tourism resources, attracting a large number of foreign tourists through the Guangzhou transit arrived in Zhongshan and Foshan tourism activities. Such as Zhongshan City is the name of Mr. Sun Wen's hometown and Foshan is the birthplace of much Lingnan culture, which has strong attraction for domestic and foreign tourists.

Secondly, Zhongshan, Foshan airport construction time is late and the airport facilities are simple, while adjacent to Guangzhou, a large air transit city and its own air transport development has been greatly restricted, so the tourists of these two cities use more land and water transport or other types of transport will be used to transmit part of the air traveler by Guangzhou.

Thirdly, Zhongshan, Foshan are closed to Guangzhou, and there have a number of highways, light rail and other land connection between Guangzhou. Zhongshan and Foshan, as a tourist destination for air tourists have a variety of convenient and fast way to transport and the policy effect of the freedom of air rights could be better to reflect B city.

Therefore, in the next analysis, due to the inconsideration of Zhongshan and Foshan and the amount of air passengers, the indicator of the airport passenger throughput will be missing, so the assumption of the model should be set to:

$$lny_{it} = \alpha_0 + \alpha_2 * lnX2_{it} + \alpha_3 * lnX3_{it} + \alpha_4 * lnX4_{it} + \alpha_5 * lnX5_{it} + \alpha_6 * lnX6_{it} + C$$

(1) Data analysis results

Among them, i represents the city, t represents time, X2, X3, X4, X5, X6, respectively represent, the daily consumption of overseas tourists, the number of international travel agencies, the number of foreign hotel, the total number of overnight visitors, air rights openness. C represents a random error term. OLS regression results are as follows:

Table 4-14 Zhongshan, Foshan panel data regression analysis results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X2	-0.768938	0.769935	-0.998705	0.3250
X3	-0.204332	0.102223	-1.998886	0.06072
X4	0.620907	0.192688	3.222345	0.0028
X5	1.788171	0.270760	6.604267	0.0000

X6	0.549745	0.198972	2.762924	0.0092
C	0.686255	4.079628	0.168215	0.8674

R-squared	0.881669	Mean dependent var	4.014495
Adjusted R-squared	0.864267	S.D. dependent var	0.894740
S.E. of regression	0.329640	Akaike info criterion	0.755847
Sum squared reside	3.694516	Schwarz criterion	1.009179
Log likelihood	-9.116945	Hannan-Quinn criter.	0.847444
F-statistic	50.66578	Durbin-Watson stat	1.380179
Prob(F-statistic)	0.000000		

As a result, it can be seen that the goodness of the equation is good and the F statistic is significant at the significance level of 5%. Variables $\ln X4$, $\ln X5$, and $\ln X6$ for t statistic at 5% significant level, the tourism development equation is:

$\ln y_{it}=0.6863-0.7689*\ln X2_{it}-0.204332*\ln X3_{it}+0.6209*\ln X4_{it}+1.7881*\ln X5_{it}+0.5497*\ln X6_{it}$

（0.1682）（-0.9987）（-1.998886）（3.2223）（6.6043）（2.7629）

Among them $R^2 = 0.88$, $F = 50.666.578$, $DW = 1.38$

Note: within the t statistic

(2) The interpretation of the results of data analysis

From the results can be analyzed, after the introduction of the surrounding cities, the tourism income mainly influenced by the number of foreign hotels, the total number of overnight visitors and the influence of openness air rights. Index elasticity was 0.6209, 1.7882, and 0.5497 respectively. The focus of this study is the impact of the opening of air rights on the level of tourism development; therefore, this index is analyzed emphatically.

Compared with the regression results of the first-class cities, the impact of the development of air rights on the income level of tourism has been significantly improved after the introduction of the surrounding cities. The above hypothesis is verified. The opening of air rights in Class B cities affects the development level of regional tourism through economic radiation effect. More and more travelers choose

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B city as a tourist destination, and thus through the opening of the air rights to promote the development of the surrounding tourism. Under normal circumstances, the opening of air rights will increase the tourism revenue for the surrounding cities, thereby to play a positive role in promoting the effect, which is significant. Through the statistical analysis, the original hypothesis V is established.

It can be seen that the impact of liberalization policies in Class B cities is indirect and radiant. Although the air rights liberalization policy has a significant impact on the tourism industry of the B-type cities, it had a positive effect on the tourism industry around the small and medium-sized tourist cities

4.4.5 Class A city representative case – Yinchuan

It can be seen from the above regression analysis that Class A cities are usually used as direct tourist destinations, and the impact of air rights liberalization policy is very significant, and their tourism income is significantly related to the opening of air rights and their respective variables.

(1) Case introduction

In the seven cities of Class A, the level of economic development of Yinchuan is underdeveloped than other cities, which has a huge development potential in all aspects of the western cities, and the opening of air rights as an important driving force accelerate the development of its tourism and other relative industries. It has brought important development, when "the Belt and Road" strategy has proposed. The Ningxia is positioned as an inland open economic experimental zone. Yinchuan is the strategic node of the Silk Road economic zone and coves Mongolia Shan Gan adjacent to the regional central city, which are Yinchuan air rights open policy advantages.

Yinchuan is the only capital city on the Yabrayi route, with excellent airway resources. In the layout of the national integrated transport corridor, Yinchuan is

located at the intersection of "vertical five" and "horizontal two". Eastward docking in the Mongolian and Russian economic belt, west docking New Asia and Europe bridge economic belt, north to direct access to the Inner Mongolia border port, south docking China - South Asia - West Asia Economic Zone and the 21st century Maritime Silk Road, the geographical advantage of north and south has laid the foundation for Yinchuan to open the fifth air rights.

Ningxia as the Hui autonomous region, the national customs of the Hui people could be impacted by the Islamic culture, with the Silk Road economic belt along the country and the people of the region with the same faith, similar customs, and blood connected advantages. In the "the Belt and Road" to build the "people connected" project, Yinchuan has unparalleled human advantages by comparison with other cities. And the similar religious culture and food culture create good humanistic conditions for the opening of the fifth passenger transport rights, thereby to attract the Middle East countries and Islamic tourists.

(2) The status quo and characteristics of the openness of fifth air rights in Yinchuan

The opening of Yinchuan air right began in 2011, compared with other cities in China, the opening time of navigation rights was later, second only to Zhengzhou and Harbin in 2015. Although the opening of Yinchuan navigation power has only lasted less than 5 years, the opening policy of air rights has achieved very good policy results in Yinchuan, and has handed out a satisfactory answer.

Yinchuan air rights to open later but higher degree of openness

In May 11, 2011, "Yinchuan - Kunming - Dubai" application of the fifth air rights of the regular international passenger and cargo routes achieved the first flight. In July 2013, Yinchuan Hedong Airport officially approved renamed Yinchuan Hedong International Airport. A month later, Yinchuan opened the third, fourth and fifth rights to the United Arab Emirates. At the same time, Dubai also opened the third, fourth and fifth rights to China's airlines.

Yinchuan can be described as one step in place to open the air right step by

step gradually by compared with other domestic airline, to open the third, fourth, fifth air right at the same time all of a sudden, and greatly expand the development space of the aviation industry and tourism industries.

Yinchuan rights to open later but the high utilization rate

In 2014, Yinchuan to Kazakhstan cargo charter was opened and the air corridor opened to the west widened was further expanded. Compared to the openness of Sanya's fifth right for many years, there is only a small part of the use of the right for passenger charter flights. Yinchuan's rights utilization is quite high, the third, four-way passenger and cargo charter flights and the fifth Routes are rapidly opened. We can see the potential of its air rights, which is fully released.

In June 11, 2015, the first airline Ningxia freight airline was established in Ningxia history. Ningxia freight airline was born, increased the air transport capacity to mobilize the right to speak and take the initiative to fill the gaps in the operation of Ningxia local airlines.

Yinchuan rights to open later but the rapid development

In 2014, Yinchuan Hedong International Airport passenger throughput reached 466.4 million, an increase of 10%; cargo and mail throughput of 31,000 tons, an increase of 6.96%. Among them, the international entry and exit passengers were achieved more than 70,000 people.

In the first half of 2015, Yinchuan Hedong International Airport passenger throughput reached 242.18 million, an increase of 16.01% over the previous year, cargo and mail throughput of 15,000 tons, up 9.38% over the previous year, of which 35,600 international visitors, an increase of 42%. Up to now, Yinchuan Hedong International Airport has opened Yinchuan to Dubai, South Korea, Thailand, Russia and other international routes.

(3) The impact of Yinchuan open fifth right on tourism

The right to open to the development of tourism in Yinchuan has brought new opportunities, into a new vitality. Yinchuan tourism has become an important

driving force for growth.

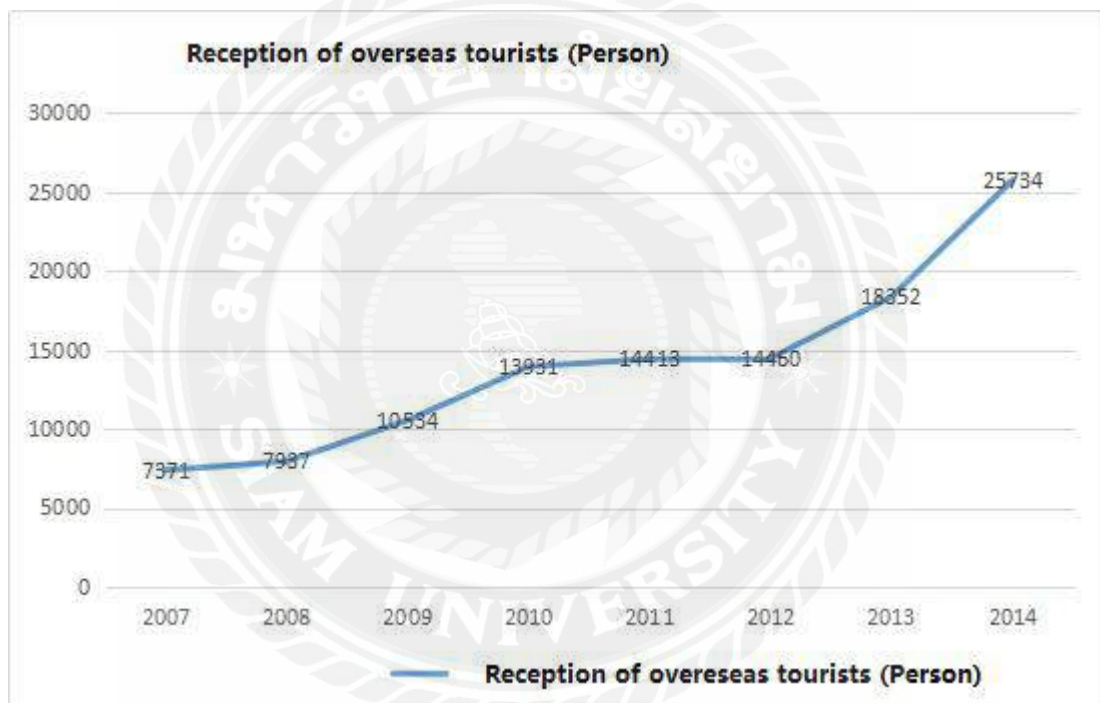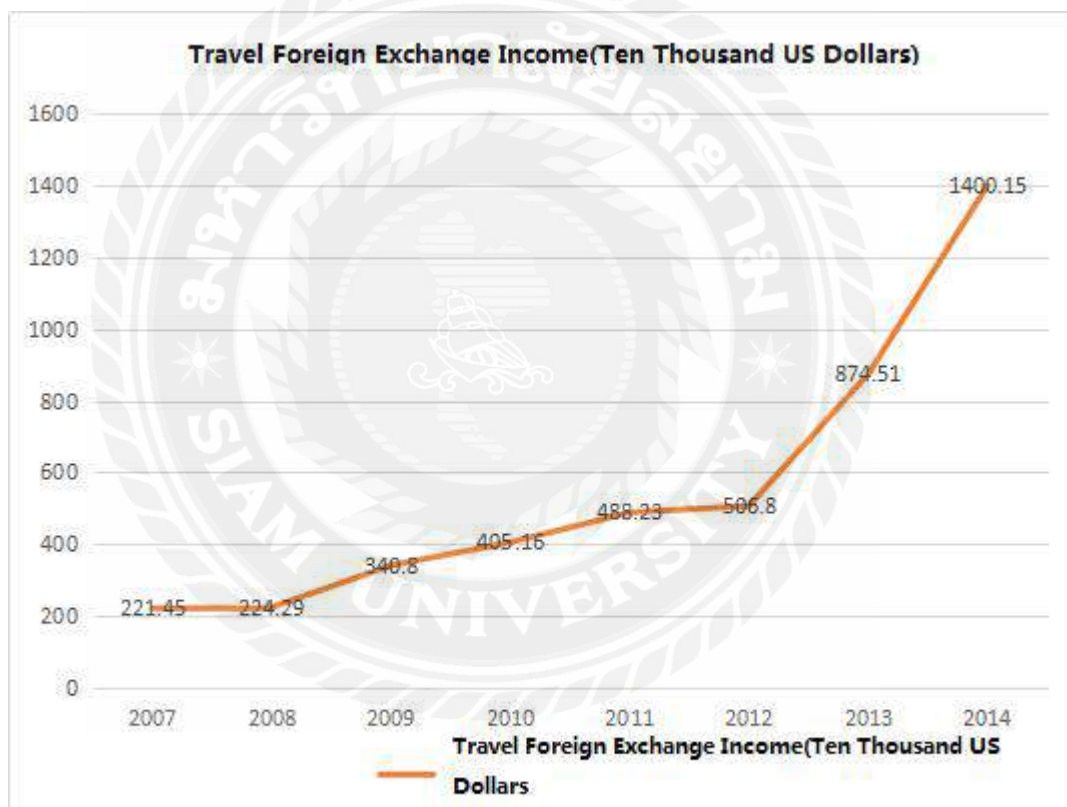Table 4-15 Lists of Overseas Tourists in Yinchuan 2007-2014

Table 4-16 Yinchuan 2007-2014 Travel foreign exchange income statement

From the above two tables can be seen, since 2011, Yinchuan open the fifth air rights, inbound travel has been rapidly developed. In China's overall tourism market inbound travel compared to travel has been deficit and further expansion. Yinchuan can flow upstream, in the number of inbound tourists and tourism foreign exchange earnings are showing a hot situation. Since 2014, Ningxia tourism inbound

tourists increased significantly, more than 30% growth in 2013. Only Taiwan's tourists to Ningxia have been achieved 10386. According to Ningxia Inspection and Quarantine Bureau statistics, in January 2016, Ningxia inbound and outbound flights reached 274 sorties, entry and exit passengers reached 15,200 people, representing an increase of 300% and more than 100%.

The opening of the fifth air rights not only brings the growth of the data for Yinchuan tourism, but also broadens the development platform of Yinchuan tourism. In September 8, 2015, the China Arabia national travel agency conference was opened in Yinchuan. More than 150 government agencies and travel agents from 21 countries including Jordan, UAE, Egypt, Malaysia and South Korea gathered in Yinchuan attended the conference. Through these activities, Ningxia tourism resources will be displayed to foreign travel agents, and Ningxia tourism market will be developed.
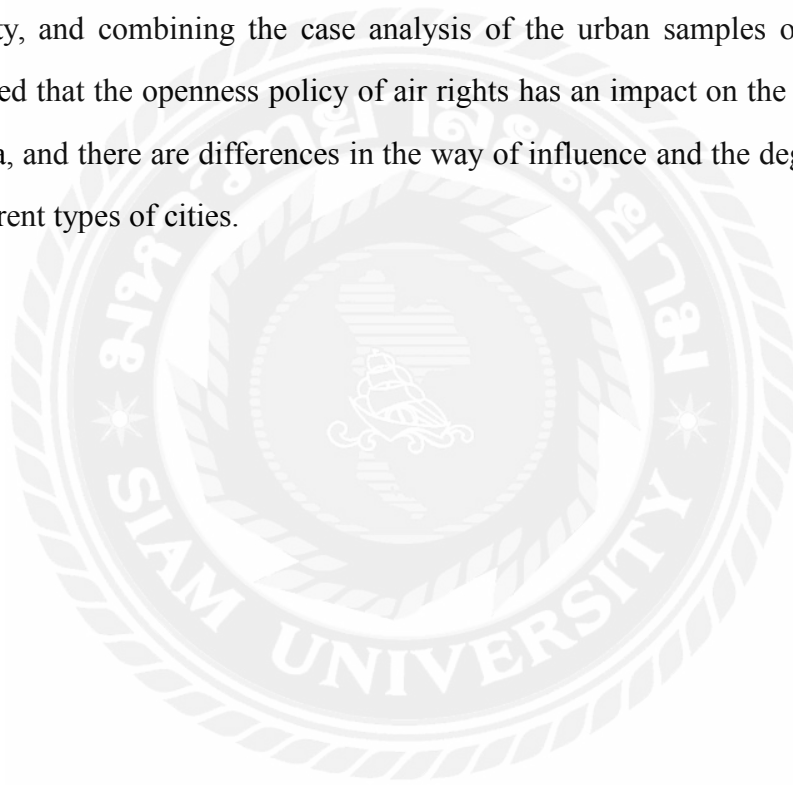
It is understood that the current global Muslim population reached 1 billion 800 million, the number of Muslim people outbound visitors reached 100 million; Islamic countries have become an important tourist market to attract people around the world. In recent years, with the number of Muslim tourists visiting China increased year by year, China also increased to develop the tourism market in Islamic countries. The National Tourism Bureau deputy director Li Shihong said: "Ningxia is the only Hui Autonomous Region in China, which has unique advantage to develop tourism market of Islamic countries. The Sino Arab travel agency conference provides a good opportunity for Ningxia to build up a communication platform between Ningxia and Islamic countries and promote the communication between travel agents."

Yinchuan is only one of the seven cities that have benefited from the liberalization of air rights in Class A cities. The success of Yinchuan has largely encouraged other cities similarities with Yinchuan to continue to actively open the air rights. For example, Urumqi and Chengdu are actively applying to the General Administration of Civil Aviation for the openness of air rights, which can learn from

Yinchuan's experience and fully understand the advantages of air rights liberalization policy and seize the opportunity to enhance the internationalization of their own city.

It can be seen that the effect of the A-type city as a direct tourist destination and affected by the liberalization policy of air rights is very obvious. After the opening of the air rights, the local aviation industry and the tourism industry have made great progress and development.

In this chapter, through the empirical analysis of the relevant data of the open city, and combining the case analysis of the urban samples of A and B, it is concluded that the openness policy of air rights has an impact on the tourism industry in China, and there are differences in the way of influence and the degree of influence on different types of cities.

Chapter 5

Conclusion and Recommendations

This paper mainly studies the influence of the change of the policy system of the fifth passenger traffic right on the development of the tourism industry in China and the surrounding areas. In this paper, we firstly sort out the status quo of China's air rights liberalization, and select 10 of the 13 open cities as the research samples, and intercept the tourism statistics of the 10 cities in total 20 year from 1994 to 2013.The econometric theory was used to select the independent variables and establish the model to carry out the OLS regression as the dummy variable with the change of the exogenous system of the rights and interests, and whether it is positively related to the tourism income. Due to the wide distribution of air rights and open cities, there are huge differences between cities, in order to make air rights open policy more practical significance, but also to provide a scientific reference for the city to open air rights. In this paper, through the cluster analysis, ten open cities are divided into A and B, respectively, to distinguish the different effects of air rights liberalization on different types of cities. Furthermore, it describes the impact of this independent variable on the tourism revenue of two different cities from theoretical and practical aspects, and finally gets a number of conclusions based on empirical results and conclusions to make a number of recommendations.

5.1 Conclusion

This exogenous variable system of the opening of the fifth passenger transport rights on the city's tourism revenue has a significant influence. It

demonstrates that the cumulative increase in the fifth passenger traffic rights intensity and scope has a positive role in promoting the development of China's tourism industry.

According to the actual situation of China's existing air rights open cities, it can be divided into A and B categories by cluster analysis. Class A cities are Nanjing, Tianjin, Xiamen, Yantai, Wuhan, Haikou and Yinchuan City; B cities are Beijing, Shanghai, and Guangzhou.

For Class A cities, the effect of air rights liberalization on its tourism revenue is remarkable. These cities are more direct destinations for international passenger travel, so the air rights liberalization policy has a direct driving impact on the tourism industry of such cities.

For Class B cities, the effect of air rights liberalization on its tourism revenue is not significant. The reason is that these cities are large cities in China, the opening time is the earliest and aviation accessibility is well. The passenger traffic of the existing few air right countries has not contributed much to the development of its tourism industry, but the air rights liberalization policy on the B-class cities around the small and medium-sized tourist city, had an indirect and radiant impact. These neighboring cities' aviation access is poor, because of the absence of airports or lack of international routes and mainly relies on the export of passenger traffic by way of trans-shipment of B-type cities, thus benefiting from the liberalization of air rights policy is obvious.

5.2 Recommendations

Class B cities should strive for open access to more countries while maintaining existing air rights liberalization policies.

Although the fifth passenger traffic rights promote its role in the tourism industry for B type cities, which is not very large and the inbound passenger flow has

been brought by the fifth passenger traffic right may not cause a more significant scale of growth for the city which has their own large tourism industry, the tourist flow is indeed timely for the some small and medium sized tourist city around the B-class cities and provides an important source and motivation for the local tourism growth and development. Therefore B-type cities should maintain the existing air rights liberalization policy at the same time, strive for more countries to open air rights, further open higher-level air traffic rights by reasonable and orderly and provide the policy power for the city in the regional tourism economy development.

Class A cities shall have selective open air navigation rights for the target cities

A-type city as a direct tourist destination, limited by the size and level of its tourism industry, if the scope of air rights are blindly increased, a large influx of incoming passenger flow, may lead to extensive and low-end the development of tourism industry and the decline of tourists' satisfaction, advance the overdraft tourism potential development. This should be based on how well the tourist reception capacity matches the degree of the openness of air rights. In order to promote the sustainable development of the tourism industry, the selective opening of the air right for the key passenger source cities is important.

The air right policy should be implemented in combination with the policies such as "transit visa free" and "departure tax rebate", so as to jointly promote the development of tourism in China.

Due to the limitations of the author's ability, there are still some shortcomings in this paper, such as the study of the relationship between the tourism and air rights liberalization policy by using the 10 openness of air rights cities in 1994-2013 tourism and airport public panel data. The volume of the sample and the change in the statistical caliber of the published data may lead to deviations in the statistical results. Secondly, the fifth passenger transport policy also has a certain impact on the outbound travel, the purpose and scope should be further in-depth

expanded.

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Chapter 5

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