Measurement of Economic Contribution of Small and Medium Airports and Its Enlightenment to Region Economic Development

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Abstract—Based on the study of the influence mechanism of airports on regional economic development, this paper empirically analyzes the interaction between small and medium-sized airports and regional economic development by using the data of Mianyang Nanjiao airport from 2002 to 2017, in order to provide measurement methods and theoretical support for local governments to encourage and promote the development of local airports. In the part of empirical analysis, firstly, this paper constructs the air transport scale index system of small and medium-sized airports and the evaluation index system of regional economic development. Then, the entropy method is selected to select the key factors of the airport, so as to obtain the airport transportation capacity equivalent, and the principal component analysis method is used to extract the high load index of the regional economic system. Finally, this paper establishes the SVAR model of airport transportation capacity and regional economic relationship, carries out structural impulse response and variance decomposition analysis, draws the conclusion that small and medium-sized airports have a positive impact on regional economic development, but not significant, and analyzes the reasons.

1. INTRODUCTION

As the main infrastructure of air transport, the airport makes the production links of various industries in the hinterland of the airport closely linked by gathering production factors, so as to promote the upgrading of regional industrial structure and the high-speed operation of regional economy. With the completion of the capital construction of China’s large hub airports, the planning and construction of small and medium-sized airports is an important starting point to improve the layout of China’s airport network. Up to now, China’s small and medium-sized airports with annual passenger throughput of less than 5 million have accounted for more than 3/4 of the total number of airports in the country, and are mainly distributed in the third and fourth tier cities in East China and southwest China. Local governments need air transport for foreign trade and passenger and cargo distribution. However, whether the small and medium-sized airports can achieve a positive interaction with the local economy needs to find appropriate model methods for accurate analysis. Mianyang Nanjiao Airport, one of the fastest growing small and medium-sized airports in Southwest China, is selected for empirical analysis, which is of strategic significance for the construction and layout of small and medium-sized airports in southwest, northwest and even all regions of China.
2. RESEARCH STATUS AT HOME AND ABROAD
China has only begun to study the airport and regional economy issues late, and the focus has been on
the relationship between civil aviation transportation and the national economy. Button, Taylor (2000) [1]
On the basis of economic theory, by studying the air transport management systems of various
countries, and using a non-linear regression model to conduct empirical research on various regions in
the United States, it is concluded that air transport is a regional economy. The conclusion that there are
diminishing marginal returns in employment and employment. Michael Ka-Yiu Fung (2006) [2] used the
value-added method to calculate the total economic benefits brought by the civil aviation industry to
Hong Kong’s economic GDP. Luan Di (2015) [3] analyzed the interactive relationship between the air
transport industry and the regional economy through a comparative study of Shanghai and Beijing.

There are few papers about the relationship between airport and regional economy considered by
domestic scholars, most of which are from the perspective of quantitative analysis. Xueni Liu (2007) [4]
and Xiaojin Li (2015) [5] both chose to use the modern causality test of modern econometrics to conduct
causality tests on the impact of airports on regional economies. The indicators are different. Tang
Ligang and Chenn Yan (2009) [6] established a fuzzy hierarchical model to evaluate the comprehensive
benefits of civil aviation airport construction projects, which improved the accuracy of the
comprehensive benefits evaluation of airport construction projects to a certain extent.

At present, there are few evaluation models and methods about the contribution of airport to regional
economic and social development, and no perfect index system has been established to consider the
economic benefits of airport to local areas. Therefore, based on the current situation of the development
of small and medium-sized airports, taking Mianyang Nanjiao Airport as an example, this paper intends
to determine the dynamic relationship between small and medium-sized airports and economic
development through the empirical analysis of the impact of Mianyang Nanjiao Airport on regional
economy, in order to provide reference for the coordinated development of small and medium-sized
airports and urban economy.

3. THE IMPACT MECHANISM OF SMALL AND MEDIUM AIRPORTS ON REGIONAL ECONOMIC
DEVELOPMENT

3.1. Space agglomeration effect of small and medium airports
The agglomeration effect refers to the economic effects produced by the concentration of various
industries and economic activities in space, and the centripetal force that attracts economic activities
closer to a certain area. The agglomeration effect can bring economies of scale and scope to enterprises,
promote division of labor and cooperation between industries, and bring regional brand advantages.

At the beginning of the construction and operation of the airport, the airport mainly attracts and
maintains aviation industries such as aviation materials and the construction industry. As the airport
enters the mature period of rapid development, it has formed a number of fixed routes, forming an
accessible regional transportation network, Reduce the time of goods transportation and reduce the cost
of transportation time. This has attracted upstream and downstream related industries such as logistics
and service industries to gather around the airport, forming an industrial agglomeration effect, and
intensifying the pulling effect on the rapid economic growth of the region.

3.2. Radiation effects of small and medium airports
With the rapid development of the airport and entering the mature operating period, passenger and
freight traffic has steadily increased. On the one hand, the agglomeration effect of the airport can
catalyze the upgrading of the local industrial structure and promote regional economic growth; on the
other hand, as the airport scales up, its radiation capacity And the radius of the radiation range has also
expanded outward, thereby increasing the business scope of the airport market.

The development of regional economy is accompanied by the improvement of people's living
standards, and the consumption of aviation services has gradually upgraded. Small and medium-sized
airports are the "nerve ends" of the existing trunk and branch route network system. When they enter
the mature operating period, that is, when they form a connection with the trunk airports, they can connect to the area's radiant and attractive capabilities by connecting regional ground transportation. The range will also expand outward. Therefore, while improving the travel efficiency of local residents, the airport can also attract aviation passenger and cargo from a larger area, which will stimulate the economy of a larger area.

4. EMPIRICAL ANALYSIS OF SMALL AND MEDIUM AIRPORTS AND REGIONAL ECONOMIC DEVELOPMENT

4.1. Evaluation index selection of Mianyang Nanjiao airport system and regional economic system

4.1.1. Selection of evaluation indexes for the production capacity system and regional economic system of Mianyang Nanjiao Airport.

Considering the availability of the data, this paper selects the airport air transport scale data of Mianyang City from 2002 to 2017, that is, the passenger throughput, the cargo and mail throughput, and the number of takeoffs and landings, a total of 3 characteristic indicators, to comprehensively measure the airport development. The scale of air transportation reflects the level of airport's transportation business, the development potential and trend of the airport. The specific indicators are shown in Table I.

| Airport production capacity system | First level indicators | Secondary indicators |
|-----------------------------------|------------------------|----------------------|
|                                   | Production scale        |                      |
|                                   | Passenger throughput    |                      |
|                                   | Cargo throughput        |                      |
|                                   | Takeoffs and landings   |                      |

The above relevant data are from Sichuan statistical yearbook, Sichuan statistical bulletin and civil aviation from statistics.

Throughout the domestic and international research experience, the construction and operation of small and medium-sized airports will inevitably have a huge impact and impact on the local economy, mainly including economic development, industrial structure, urban spatial distribution, and economic and cultural exchanges. This article selects three first-level indicators of economic scale, employment structure and people's living standard, with a total of 10 characteristic indicators, to evaluate the impact of the airport on the regional economic system. Specific indicators are shown in Table II.

| Economic system | First-level indicators | Secondary indicators |
|-----------------|------------------------|----------------------|
|                 | Economic scale         | GDP                  |
|                 |                        | General public budget revenue |
|                 |                        | Financial institution deposits |
|                 |                        | Investment in fixed assets |
|                 |                        | The total retail sales of social consumer goods |
|                 | Employment structure   | Number of employees in the primary industry |
|                 |                        | Number of employed persons in the secondary industry |

TABLE I. MIANYANG Nanjiao Airport System Evaluation Index System

TABLE II. Mianyang City Economic Evaluation Index System
4.2. Quantification of airport air transportation scale

Passenger and cargo transportation is the main business of small and medium airports, and the degree of airport development is reflected in the airport's transportation capacity. This paper takes airport air transportation scale as an important input for measuring the contribution of airports to the regional economy. Therefore, it is necessary to quantify airport air transportation scale. According to the existing literature, there are few methods for quantifying airport air transportation scale, and the standards have not yet been unified. And due to the low availability of some data, it is difficult to quantify the air transportation scale. Therefore, based on the above considerations, this paper refers to relevant literature at home and abroad, and uses the following steps to quantify.

4.2.1. Weight calculation of airport air transport scale index Airport.

Taking into account the differences in the availability of various indicators of the airport air transport scale and the uneven economic significance, this article refers to existing research literature when quantifying airport air transportation scale. This article will use the entropy method to determine passenger throughput, traffic. The key factors that can quantify the airport air transportation scale are selected from the three indexes of mail and cargo throughput and takeoff and landing times. In this paper, the entropy method is selected, and the weights \( Z_j \) of the four indexes can be calculated by using Matlab software programming, as shown in Table I. It can be concluded that the weight of the two indicators of air transport scale, passenger throughput and licensed mail throughput, are relatively high, so this is used as the two key elements of airport air transport scale.

| Index weight table     |
|------------------------|
| Passenger throughput   |
| Licensed mail throughput |
| Takeoffs and landings  |
| \( Z_j \) 0.3223       |
| 0.3654                 |
| 0.3124                |

4.2.2. Multiple regression model of airport air transport scale.

The correlation test shows that the two key indicators of passenger throughput and licensed mail throughput are highly correlated. Therefore, this paper uses the calculation method of indicator equivalent to represent the airport air transport scale. Among the two key index elements that have been selected, one of the elements is selected as the independent variable \( Z_2 \) and the other is the dependent variable \( Z_1 \). The following binomial regression model is established.

\[
Z_1 = \beta_1 Z_2 + \beta_2 Z_j^2 + \mu
\]

In the formula, \( Z_j \) represents the key index elements of the airport transportation capacity, and \( Z_j \) represents the equivalent of the index \( Z_i \). \( Z = Z_1 + Z_1 \), then calculate the airport transportation capacity equivalent \( Z \) to represent the airport transportation capacity.

SPSS23.0 software was used to perform multiple regression analysis on the data used, with passenger throughput \( Z_1 \) as the dependent variable, and cargo and mail throughput as the independent variable \( Z_2 \). The specific regression model is as follows:

\[
Z_1 = 0.106Z_2^2 - 452.86Z_2 + 55859
\]

Coefficient of the regression equation \( R^2 = 0.92 \), anova available F=72.1, P<0.05. The regression equation is significantly effective. Taking the passenger throughput from 2002 to 2017 into the regression equation (2), the airport air transport scale equivalent can be calculated. The calculation results are shown in Table IV.
### TABLE IV. 2002-2017 Airport Related Data Sheet

| Years | Cargo throughput (10,000 tons) | Passenger throughput (10,000 people) | Passenger-line mail cargo throughput equivalent (10,000 people) | Airport transportation capacity equivalent (10,000 people) |
|-------|-------------------------------|--------------------------------------|---------------------------------------------------------------|----------------------------------------------------------|
| 2002  | 0.231                         | 11.629                               | 7.794                                                         | 19.422                                                   |
| 2003  | 0.151                         | 8.906                                | 11.682                                                        | 20.588                                                   |
| 2004  | 0.252                         | 16.108                               | 9.074                                                         | 25.182                                                   |
| 2005  | 0.225                         | 13.030                               | 7.640                                                         | 20.669                                                   |
| 2006  | 0.202                         | 14.634                               | 7.634                                                         | 22.267                                                   |
| 2007  | 0.298                         | 23.027                               | 15.039                                                        | 38.066                                                   |
| 2008  | 0.381                         | 20.844                               | 37.048                                                        | 57.893                                                   |
| 2009  | 0.226                         | 28.090                               | 7.640                                                         | 35.731                                                   |
| 2010  | 0.483                         | 57.724                               | 84.643                                                        | 142.366                                                  |
| 2011  | 0.449                         | 62.282                               | 66.322                                                        | 128.603                                                  |
| 2012  | 0.494                         | 68.122                               | 90.527                                                        | 158.649                                                  |
| 2013  | 0.486                         | 91.733                               | 85.906                                                        | 177.639                                                  |
| 2014  | 0.546                         | 108.500                              | 124.883                                                       | 233.382                                                  |
| 2015  | 0.531                         | 154.753                              | 114.458                                                       | 269.211                                                  |
| 2016  | 0.647                         | 217.292                              | 206.153                                                       | 423.445                                                  |
| 2017  | 0.723                         | 354.340                              | 281.994                                                       | 636.335                                                  |

### 4.3. Measurement of airport impact on regional economy

#### 4.3.1. Variable selection of economic system

Since there are still many indicators to express the social and economic systems, and the model requires the number of input and output indicators, the selected indicators must be screened again. This paper selects the economic index data of Mianyang City from 2002 to 2017, and uses SPSS 23.0 for principal component analysis. It can be seen from the analysis that the load matrix of the first principal component in the three primary indexes of the economic system has exceeded 80%. Based on this, the index with high load in the three primary indexes is selected to represent each primary index. The specific results are shown in Table V.
TABLE V. High load indicators of economic systems

| Economic System | First-level indicators | High load index | Data processing method |
|-----------------|------------------------|-----------------|------------------------|
|                 | Economic scale         | GDP(GDP)        |                        |
|                 | Employment structure   | Employed Persons in the Secondary Industry (EMPLOYMENT) | |
|                 | People's living standards | Per Capita Disposable Income of Urban Residents (INCOME) | |

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|-----------------|------------------------|-----------------|------------------------|
|                 | Economic scale         | GDP(GDP)        |                        |
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4.3.2. Svar model identification

4.3.2.1. Adf sequence stationarity test

In order to eliminate the heteroscedasticity of airport air transport scale data and regional economic data, this paper takes the logarithm of the above time series data, and adds LOG_ to the variable after the logarithm change. In order to ensure the stability of the model, the most common ADF test method is selected to test the stability of each variable, and the results are shown in Table VI.

TABLE VI. ADF test results

| Sequence         | Trend and intercept | Confide nce value | Critical value under confidence | t-Statistics | P       | result |
|------------------|---------------------|-------------------|---------------------------------|--------------|---------|--------|
| LOG_PRO DUCT     | Intercept           | 5%                | -3.0988                         | 0.5502       | 0.981   | unstable |
| LOG_GDP          | Intercept           | 10%               | -2.6813                         | -1.2109      | 0.640   | unstable |
| LOG_IN COME      | Intercept           | 5%                | -3.081                          | 0.3965       | 0.975   | unstable |
| LOG_EM PLOY      | Intercept           | 5%                | -3.1449                         | -2.8347      | 0.182   | unstable |
| D(LOG_PRO DUCT)  | Intercept           | 5%                | -3.0988                         | -6.1011      | 0.0003  | stable  |
| D(LOG_GDP)       | Intercept           | 10%               | -2.6904                         | -2.8165      | 0.081   | stable  |
| D(LOG_IN COME)   | Intercept           | 5%                | -3.0988                         | -3.3913      | 0.03    | stable  |
It can be known from Table 6 that the ADF values of all original sequences are greater than the critical value and the probability P value is greater than 0.05. The assumption that unit roots do not exist is rejected, and the existence of unit roots of the original sequences is considered to be a non-stationary sequence. In the first-order difference sequence, D(LOG_PRODUCT), D(LOG_INCOME), and D(LOG_EMPLOY) are less than the critical Economic system value of 5%, and the ADF value of D(LOG_GDP) is less than the critical value of 10%. All accepted the original hypothesis. The existence of a unit root means that the first-order difference sequence of the original sequence is a stationary first-order simple integer sequence.

4.3.2.2. Granger causality test

The Granger Causality Test can test whether an endogenous variable can be used as an exogenous variable, that is, whether all the lagging terms of a variable affect the current value of one or several variables.

Table VII shows that GDP, per capita disposable income and employment in the secondary industry of the regional economic system are the Granger reasons for the representative variables of airport air transport scale. The employment in the secondary industry is not Granger reason for the variable of airport air transport scale.

|                          | D(LOG_PROD) | D(LOG_GDP) | D(LOG_INCOME) | D(LOG_EMPLOY) |
|--------------------------|-------------|------------|---------------|---------------|
| LOG_PROD                 | -           | 0.0028     | 0.0021        | 0.095         |
| LOG_GDP                  | 0.703       | -          | 0.9798        | 0.2098        |
| LOG_INCOME               | 0.9972      | 0.0008     | -             | 0.0355        |
| LOG_EMPLOY               | 0.5793      | 0.1621     | 0.2599        | -             |

4.3.2.3. Svar model

Since the number of employees in the secondary industry is not the Granger cause of airport transportation capacity, therefore, for the SVAR model of the relationship between airport transportation capacity and regional economy, first estimate a vector auto regressive model VAR (LOG_PRODUCT, LOG_GDP, LOG_INCOME) containing 3 endogenous variables. According to the selection criteria for the lag length of the VAR model, the optimal choice is 1 Order, the SVAR model is built on the basis of the VAR (1) model. By checking the lag structure of the model, all the inverse values of the characteristic roots are in the unit circle, which indicates that the model is stable.

The structural formula of the SVAR model based on airport air transport scale and regional economic relations is as follows:

$$Bx_t = \Gamma_1 + \Gamma_2 x_{t-1} + u_t$$

(3)

Where the variable and parameter matrix is 1.
is a (3 × 1) dimensional endogenous variable, where PRODUCTIVITY, GDP, and INCOME are the time series of airport transportation capacity, Mianyang’s gross domestic product, and per capita disposable income, respectively. B is a (3 × 3) dimensional simultaneous structural coefficient matrix, and Γ1 is a (3 × 3) dimensional lagging structural coefficient matrix, which reflects the dynamic impact of the variable lag on the current period; \( X_{t-1} \) is the value of \( X_t \) lag 1; \( u_t \) is a white noise vector with a (3 × 1) dimensional covariance as the identity matrix. They are the structural shocks that affect the airport air transport scale, Mianyang’s GDP and per capita disposable income, that is, structural residuals; \( \Gamma_0 \) is a matrix of constant terms.

If B is reversible, the above structural equations can be converted into simplified equations:

\[
X_t = B^{-1}\Gamma_0 + B^{-1}\Gamma_0 X_{t-1} + B^{-1}u_t \quad (4)
\]

When the Var model was constructed, it was determined that the model contains 3 endogenous variables. Therefore, when identifying the SVAR model, \( k(k-1)/2 = 3 \) constraints must be applied to the structural vector autoregressive model to identify it. Structural shock present in the model. In the SVAR model of the relationship between airport production scale and regional economy, this paper applies the following constraints based on common sense, economic theory, and Granger causality test results:

1. The current per capita disposable income of Mianyang City does not respond to changes in the air transportation scale of Mianyang Airport at the current period, which means that the impact of air cargo transportation at Mianyang Airport on the per capita disposable income of Mianyang City is lagging, so \( b_{31} = 0 \);
2. The current airport air transport scale responds to the gross national product in the current period, and the per capita disposable income lags in response, so \( b_{32} = 0 \);
3. The current airport air transport scale responds to per capita disposable income in the current period, and the gross national product lags in response, so \( b_{23} = 0 \).

### 4.3.2.4. Structural impulse response and variance decomposition.

(1) Variance decomposition

Based on the above SVAR model of airport air transport scale and regional economic relationship, Eviews 10.0 software can be used to model and obtain the variance decomposition and structural impulse response diagrams based on the SVAR model.

**TABLE VIII. Variance decomposition of airport air transport scale**

| Period | S.E.     | Shock1 | Shock2 | Shock3 |
|--------|----------|--------|--------|--------|
| 1      | 0.1201   | 85.982 | 0.0241 | 13.994 |
| 2      | 0.1386   | 64.823 | 23.7232 | 11.453 |
| 3      | 0.1699   | 47.765 | 19.662 | 32.572 |
Shock2 and Shock3 in Table 8 correspond to the impact of changes in Mianyang’s GDP and per capita disposable income of residents. The data shows that the changes in GDP and per capita disposable income of Mianyang City have no lag in the interpretation of airport production capacity. The contribution of these two variables to the current changes in the variance of airport production capacity in the current period are 0.024% and 13.99%, respectively. Subsequently, in the second phase, the contribution of Mianyang’s GDP increased, and then increased to about 23% in the fifth phase, and stabilized gradually. The contribution of per capita disposable income increased to 40.47% in the seventh period, and showed a period-by-period growth trend. Per capita disposable income contributes the most to the airport’s production capacity, followed by GDP. This shows that for small and medium-sized airports like Mianyang Airport, the improvement in people’s living standards has prompted citizens to increase their share of aviation travel Affect the expansion of airport air transportation scale.

(2) Structure impulse response analysis

|    |    |    |    |    |
|----|----|----|----|----|
| 4  | 0.1791 | 45.905 | 19.510 | 34.584 |
| 5  | 0.1864 | 42.734 | 23.699 | 37.270 |
| 6  | 0.1942 | 40.038 | 22.692 | 37.271 |
| 7  | 0.2007 | 37.308 | 22.022 | 40.469 |

It can be seen from the corresponding diagram of the structural pulse: Mianyang’s GDP and per capita disposable income have a positive response to the impact of the airport’s production capacity, and they have experienced a shock decline after reaching the highest value. In the first period, the current GDP responded to the current positive impact of the airport’s production scale in a timely manner. The shock caused the GDP to reach a response of about 0.15% in the first period, then fell, and remained stable and positive from the seventh To the trend. The response of per capita disposable income reached the highest in the second period, and the airport’s capacity to explain it reached 0.53%,
then it showed a downward trend and remained stable from the fifth period. The impulse response results of the above structure show that the air transport scale of Mianyang Airport has a positive effect on the economic volume of the regional economy and people's living standards, but not significant.

5. CONCLUSION AND ENLIGHTENMENT

5.1. Correlation analysis of air transport capacity and regional economy of medium and small airports.

According to Granger's test results, there is only a one-way causal relationship between the scale of air transportation at Mianyang Airport and regional economic growth and the improvement of people's living standards, and no causal relationship with the employment structure. The results of variance decomposition show that regional economic growth and the improvement of people's living standards have a significant effect on the scale of airport air transportation. Among them, the people's living standard has the most obvious effect on the airport's transportation capacity. The result of structural impulse response shows that the expansion of airport air transport scale has a certain pulling effect on the development of regional economic system, but it is not significant, which is basically consistent with Granger's test results.

As an investment in infrastructure and leading industries, the airport should have promoted the development of the local economy and promoted the rapid development of the surrounding area with the airport as the core and related supporting industries. However, after empirical research in this paper, Mianyang Airport has certain influence on regional economic development, but the positive impact is not significant. This is basically consistent with Granger's test results.

China's small and medium-sized airport construction has not reached a certain scale of business during the initial period of operation. On the one hand, it can only absorb some traditional construction industries, auxiliary industries and basic supporting service industries, and the maintenance, passenger transportation, freight and other business activities are relatively small. These operations can be completed by relying on the internal operations of the airport, and the airport's aggregation effect on time-sensitive industries cannot be fully utilized. The spillover function of the airport industry is not strong and the promotion effect on the regional economy is not obvious; The scale of investment is huge, which occupies the amount of investment in other economic sectors and weakens the contribution of other sectors to economic growth. The airport operation itself is also in its early stages. Its operating capacity cannot meet the needs of regional economic development. Various economic sectors have caused pressure on regional economic growth. In addition, some non-economic factors will also cause a negative impact on the regional economy of small and medium-sized airports. China's border areas, southwest, northeast and other regions are sparsely populated but the economic development level is low, but their political and military status is significant. The economic activity of such areas is small, and naturally the demand for air transportation is not sufficient, so the growth of the airport for the regional economy in most periods is not obvious.

5.2. Countermeasures and suggestions for the construction of small and medium-sized airports to promote regional economic development.

5.2.1. Reasonable planning of airport layout.

According to the released layout plan of civil transport airports, 74 new civil airports will be built in China by 2020. Under the premise that the network layout of hub airports has been basically completed in the first and second tier cities, most of the potential new airports will be built in county-level cities or counties in the future, and they are all small and medium-sized airports. Therefore, the preliminary planning must be realistic, clear airport positioning, and conform to the actual situation of local economic development. Excessive construction ahead of schedule or blind expansion of airport scale will lead to the increase of infrastructure investment and cost, while the local economic development...
level can not provide enough tourists for it, which will cause the airport construction to violate the market mechanism, a large number of idle airport resources, and bring huge pressure for the airport development. In addition, the reasonable layout of the route network of small and medium-sized airports, connecting the "branch line" and "trunk line", attracting and creating the demand for passenger and cargo transportation are also important ways to improve the profitability of the airport.

5.2.2. Improve airport operation level.
The income of small and medium-sized airports in China mainly comes from aviation, and the proportion of non aviation income is relatively low. Especially in the early stage of operation, the passenger and cargo flow of the airport is smaller, and the air revenue is not enough to make up the capital depreciation expense and labor expenditure, so the subsidy of local government is needed to maintain the route operation. Therefore, it is very important to increase the non aviation operation content of the airport to improve the operation capacity of the airport. The airport manager shall fully develop the resources in the terminal and increase the revenue by collecting rent or operating Commission, so as to make the use of ground facilities, catering, ground service revenue, advertising, parking lot and maintenance revenue become the new growth point of the airport revenue. The key measures to improve the economic impact capacity of small and medium-sized airports are to cultivate advanced management concepts and improve management level.

5.2.3. Attract surrounding industries to gather
Although the infrastructure construction of our country's roads and railways has been gradually improved in recent years, its characteristics of long path and long time-consuming are not matched with time sensitive products, so it is very easy to produce product loss in the transportation process and reduce the producer's income. Small and medium-sized airports are the effective means of transportation to reduce the links of goods circulation, improve the speed of goods supply and reduce the cost of goods circulation. Therefore, small and medium-sized airports can effectively improve the level of logistics, tourism and high-tech industries. Air transport can shorten the distance between the production area and the consumer market, enhance the mobility of production factors and products, and make the industrial layout take the airport as the center of the agglomeration structure, and move towards the regional and large-scale industrial clusters. We should make use of the airport and route resources, pay attention to the connection of the regional industrial chain behind the route network, optimize the industrial structure, accelerate the industrial upgrading and develop the exhibition, finance, entertainment and catering and other related service industries, so as to boost the local economic growth.

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