Agricultural structure change: Geographic feature and performance discrepancy  
(A comparison based on three sample counties in 1982 - 2012)

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ABSTRACT

Agricultural production owns strong regionalism. Landform and regional conditions directly impact initial resource endowment state of agricultural production. This study analyzes and compares agricultural structure change process, trend and performance of mountaneous county Neixiang, plain county Zhengyang and suburban plain county Yuanyang from 1982 to 2012. The results of the study show that agricultural structure changes at county level are closely related to local terrain, resource endowment and region. Differences in landform and region influence the county's response to the technology. The plain county can adapt to technical changes in time. The mountainous county reflects slowly to technical changes. Location factor has differences in the degree of element flow. In the region close to the city, labor mobility has advantage and also imposes effects on agricultural structure changes.

Key words: Agricultural structure change, geographic feature, performance discrepancy.

INTRUDCTION

Since the reform and opening up, China's agricultural industrial structure has experienced many adjustments and gradually tends to optimization. Because agricultural production largely depends on local natural resources, basic differences of different regional resources will result in diverse optimal crop selection and cultivation modes as well as different responses to specific technologies and inventions (Maylor, 1988). Meanwhile, with economic development deepens, the distance to central market and conditions of transportation have direct impacts on the sale of agricultural products in different regions. Therefore, regionalism of agricultural production, characteristics of its effects on agricultural structure change and evolution path deserve inspection and thinking. Deep analysis and comparison of geographic features of agricultural structure change have important significance for driving optimization and adjustment of agricultural industrial structure.

With regard to geographic variation of agricultural industrial structure, scholars carry out many theoretical and empirical explorations (Von Thunen, 1826; Schultz, 1953). Their researches lay an important theoretical foundation for effects of geographical factors on agricultural industrial structure. In recent years, researches on agricultural structure change in different regions have gained tremendous achievements. Hayami and Ratan (2000) compares the features of agricultural industrial structure of 21 developed countries and 22 under-developed countries in 1960-1980 and indicated that resource endowment advantage and agricultural technology are important sources of agricultural development diversity in each country. Zhigang et al. (2001) point out obvious difference in comparative advantage of crop production in diverse regions. Such difference is reflected in the diversity of crop production cost and production capacity in diverse regions. Lauder (2006) analyzes the constant transformation of the agricultural
sector in Swiss mountain regions and takes path dependencies as a crucial feature. Jeangros and Geoghegan (2001) found that land-use options in the mountain region mainly consist of grassland use rather than arable fodder crops. Hennessy et al. (2006) develops an integrated modeling to analyze the economic viability and the changing structure of Irish farming. Zijun and Zhanqiang (2013) indicates that agricultural land on the plain of suburbs reduces rapidly and non-agriculturization trend of agricultural labor force is obvious; the plain of suburbs becomes the main production area of grain, animal by-products and vegetables; mountainous area is a main production area of traditional forest and fruit. Existing researches rarely involve comparative study of agricultural structure change among different regions. As such, this study uses Neixiang County, Yuanyang County and Zhengyang County, which are main agricultural counties of China and have different geographic features, as the objects of the study and compares the geographic features and performance differences of agricultural industrial structure in the three regions in 1982-2012.

CASE STUDY REGIONS

The sample counties

China owns vast territory, and however, there are great differences in natural conditions, regional situations and economic development level in different regions. County-level agricultural structure is a microcosmic constituent of China’s agricultural structure. This study chooses three counties in main grain production counties in Henan Province as the analysis samples which owns different landform and regional features. Yuanyang County belongs to plain topography with fertile land, rich water resource, agricultural acreage of 72000 ha and total population of 727000, with agricultural acreage of 0.49 acre and convenient traffic network. Besides, it is only 68.7 km away from provincial capital and owns developed traffic network. Zhengyang County belongs to plain topography, with adequate sunlight and water quantity. It is far away from provincial capital (287.7 km), with agricultural acreage of 14000 ha, rural per-capita agricultural acreage of 0.49 acre and convenient traffic conditions. Neixiang County belongs to mountainous topography. Mountainous land area accounts for 72% of the total land area in the whole county; the area of hilly region accounts for 21%; agricultural acreage is 47000 ha and the total population is 708000; rural per-capita agricultural acreage is 0.24 acre. The traffic is convenient and it is 325.4 km away from provincial city. Thus, the three sample counties can be classified into three types in accordance with geographical and regional differences. Yuanyang County is a suburban plain county; Zhengyang County is an outer-suburban plain county; and Neixiang County is an outer-suburban mountainous county.

DATA

The collected data of this study mainly includes: output value of farming, forestry, animal husbandry and fishery; yield of major farm crops and livestock products; labor force; cultivated land; crop sowing area; total power of agricultural machinery; other production condition for agriculture of Yuanyang, Zhengyang and Neixiang County in 1982-2012. The data of 1982-2005 are from Rural Statistical Yearbook of Henan Province and Data Sharing Infrastructure of Earth System Science; the data of 2006-2012 are from Investigation Yearbook of Henan Province.

AGRICULTURAL STRUCTURE CHANGES OF SAMPLE COUNTIES

Gross output of agriculture, animal husbandry and fishery of sample counties in 1982-2012 achieves substantial growth. Yuanyang County grows to 2.43597 billion Yuan from 129.97 million Yuan. Zhengyang County grows to 4.48795 billion Yuan from 2.93018 billion Yuan from 140.03 million Yuan. Neixiang County grows to 2.93018 billion Yuan from 129.48 million Yuan. The rising range reaches 18.7, 32 and 22.6 times, respectively. With the raise of agricultural productivity, agricultural production value of sample counties grows rapidly. Yuanyang County grows to 1.44926 billion Yuan from 102.41 million Yuan. Zhengyang County grows to 2.56231 billion Yuan from 97.34 million Yuan. Neixiang County grows to 1.72494 billion Yuan from 80.598 million Yuan. The rising range reaches 14, 26 and 31 times, respectively. Figure 1 shows overall trend of the proportion of farming output value to the agricultural gross output value of sample counties in 1982-2012. The proportion of agricultural output value of Yuanyang County continuously drops and declines sharply to 60.3% from 87% after 1995. The proportion of agricultural output value of Zhengyang County tends to decline to 57% from 72% in fluctuations. Neixiang County experiences two obvious declining stages: 1982-1992 and 2000-2008, but agricultural output value changes little on the whole, decreasing to 58.9% in 2012 from 62% in 1982. In general, agricultural industry of sample counties gain rapid development, but the proportion of agricultural output value in farming, forestry, animal husbandry and fishery drops. Besides, change rate and range differ significantly in sample counties.

However, there are significant differences in Agricultural structure changes of sample counties in 1982-2012. Table 1 shows changes in the proportion of main crops to total sowing area of sample counties in 1982-2012. Overall changes in agricultural structure of Yuanyang County can be divided into two stages. Before the middle stage of 1990s, the proration of grain crop in crop sowing area drops
slowly, and the proration of commercial crop rises gradually. After the middle stage of 1990s, the proration of grain crop gradually increases, while the proration of commercial crop declines continuously. The change range is milder than that before 1990s. Generally, the mean proportion of grain crop to total sowing area of agricultural crop is 83%, and the mean proportion of commercial crop is within 20%, while the mean proportion of other crops is only 3-5.3%. Agricultural structure changes of Yuanyang County are not obvious. Contrary to Yuanyang County, agricultural structure changes of Zhengyang County are large. The proportion of gain sowing area is on the decrease, down 25%. Meanwhile, sowing area of commercial crop rises rapidly, up to 24%. The proportional relation becomes nearly 6:4 in 2012 from 8:1 in 1982. The cultivation area of other crops changes a little. Agricultural structure of Neixiang County changes significantly. The proportion of grain crops declines obviously in total sowing area of crops. As sowing area of commercial crop and other crops rises largely and the sowing area proportion of other crops exceeds that of commercial crop. In 2012, the sowing area proportion of commercial crop and other crops accounts for 40% of total sowing area of agricultural crops in Neixiang County.

Note that the grain crops in the Table 1 mainly include grain, potatoes and beans; commercial crops include cotton, oil plants, bast fiber plants, sugar crops and tobacco; other crops include vegetables and melon vegetables.

**GEOGRAPHICAL FEATURES OF AGRICULTURAL STRUCTURE CHANGE**

Geographic features directly decide the area, flatness and intensive degree of cultivation of land, which have direct influence on agricultural crop selection and cultivation mode, thus influencing change of agricultural structure. Table 2 shows changes in the proportion of sowing area of main crops to total sowing area of agricultural crops of sample counties in 1982-2012. In agricultural structure changes of Yuanyang County and Zhengyang County with plain landform, sowing area proportion of grain and oil crops exceeds 91%, obviously higher than that of mountainous county. Agricultural structure changes of the plain county present the pursuit of agricultural crops with larger scale economy and machinery operation advantage. In structure change of planting industry in Neixiang County with mountainous landform, sowing area proportion of grain and oil crops declines to 77% from 89%. Vegetable cultivation proportion increases to 12.6% from 3.7% rapidly. Agricultural structure changes of mountainous county present the pursuit of the crops with higher additional value of per-unit land. Generally, as a result of geomorphic conditions, agricultural structure changes show certain geographic features. For the plain county, which owns large cultivation area and high flatness and intensity degree, large machinery can be used more easily. Thus, development of gain and oil crops has more cost comparative advantage. For the mountainous county, the land is small and segmented. The labor force is large, but per-capita cultivation of land is small. Thus, development of vegetables and fruits has more comparative advantage. Agricultural structure change process of sample countries is a change process of seeking comparative advantage under the constraint of natural endowment.

**REGIONAL FEATURES OF AGRICULTURAL STRUCTURE CHANGE**

The distance with consumer market and market capacity largely influence industrial distribution (Redding and Venables, 2004). Metropolis means a large-capacity market, but convenient and cheap traffic network can make up for the disadvantage that the region is far away from urban consumption center. As shown in Table 1, in 1982-2012, in the agricultural structure change of Yuanyang County which is close to the provincial capital, the proportion of grain crop is high. The rising range of other crops with higher additional value is small. Agricultural structure changes are insignificantly. Influenced by metropolis development, agricultural resource is limited, and non-agricultural employment opportunities of agricultural labor force are numerous. High opportunity cost of agricultural production is an internal cause of agricultural structure change. Due to convenient traffic network and rapid development of fresh agricultural products of Neixiang County, vegetable cultivation area of Neixiang County expanded 36 times and fruit cultivation area expanded 130 times in 1982-2012. Improvement of traffic conditions makes fresh agricultural products of mountainous area conveniently supplied to surrounding cities, thus creating basic conditions of agricultural structure change. Similarly, due to the fact that non-agricultural employment opportunities of Zhengyang County are inferior to the suburban county and the strong dependence of Zhengyang County on agricultural income, agricultural structure changes of Zhengyang County is different from Yuanyang County. The proportion of commercial crops rises to 38.3% from 14.6% largely.

**RESOURCE STRUCTURE FEATURES OF AGRICULTURAL STRUCTURE CHANGE**

Agricultural structure change is closely related to resource structure. The combination state of light, water and land resources influence agricultural structure and its variation direction. Land and labor force are important initial resource supply of agricultural production. Agricultural structure is restricted by the availability of these elements. Yujirio and Vernon (1993) indicates that combination of relatively scarce land and rich labor force contributes to the
Figure 1. Changes in proportion of agricultural production value of sample counties in 1982-2012.

Table 1. Agricultural structure changes of sample countries in 1982-2012 (unit: %).

<table>
<thead>
<tr>
<th>Year</th>
<th>Yuanyang county</th>
<th>Zhengyang county</th>
<th>Neixiang county</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grain</td>
<td>Commercial</td>
<td>Others</td>
</tr>
<tr>
<td>1982</td>
<td>86.6</td>
<td>10.4</td>
<td>3.0</td>
</tr>
<tr>
<td>1985</td>
<td>80.0</td>
<td>14.7</td>
<td>5.3</td>
</tr>
<tr>
<td>1988</td>
<td>77.3</td>
<td>17.9</td>
<td>4.8</td>
</tr>
<tr>
<td>1991</td>
<td>76.1</td>
<td>19.8</td>
<td>4.1</td>
</tr>
<tr>
<td>1994</td>
<td>78.9</td>
<td>17.8</td>
<td>3.3</td>
</tr>
<tr>
<td>1997</td>
<td>81.6</td>
<td>15.1</td>
<td>3.3</td>
</tr>
<tr>
<td>2000</td>
<td>81.8</td>
<td>15.0</td>
<td>3.2</td>
</tr>
<tr>
<td>2003</td>
<td>83.9</td>
<td>13.1</td>
<td>3.0</td>
</tr>
<tr>
<td>2006</td>
<td>85.6</td>
<td>10.1</td>
<td>4.3</td>
</tr>
<tr>
<td>2009</td>
<td>86.5</td>
<td>9.5</td>
<td>4.0</td>
</tr>
<tr>
<td>2012</td>
<td>86.4</td>
<td>9.5</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Table 2. Changes in the proportion of sowing area of main crops to total sowing area of agricultural crops (unit: %).

<table>
<thead>
<tr>
<th>Sample county</th>
<th>Landform</th>
<th>Year</th>
<th>Grain</th>
<th>Oil plants</th>
<th>Cotton</th>
<th>Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yuanyang County</td>
<td>Plain</td>
<td>1982</td>
<td>86.5</td>
<td>3.6</td>
<td>6.6</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2012</td>
<td>85.7</td>
<td>7.8</td>
<td>1.0</td>
<td>3.9</td>
</tr>
<tr>
<td>Zhengyang County</td>
<td>Plain</td>
<td>1982</td>
<td>83.2</td>
<td>12.5</td>
<td>0.4</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2012</td>
<td>59.2</td>
<td>34.7</td>
<td>0.3</td>
<td>3.7</td>
</tr>
<tr>
<td>Neixiang County</td>
<td>Mountainous land</td>
<td>1982</td>
<td>79.3</td>
<td>10.5</td>
<td>4.5</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2012</td>
<td>58.9</td>
<td>18.3</td>
<td>1.3</td>
<td>12.6</td>
</tr>
</tbody>
</table>

devlopment of agricultural industry which consumes labor force and owns high additional value. Table 3 shows changes of agricultural resource conditions of sample counties in 1982-2012. In terms of labor force resources, agricultural labor force of Yuanyang County and Zhengyang County retains a high proportion, but the proportion of agricultural labor force has declined rapidly in recent 10 years. Yuanyang County drops more fiercely. The proportion of agricultural labor force in Neixiang County declines by 1% annually on the average. From the perspective of cultivation of land resource, mean calculation area per labor force of Yuanyang County reduced by a large margin. The reduction speed has increased especially since middle 1990s. Mean calculation area per labor force of Zhengyang
Table 3. Agricultural resource condition changes of sample counties in 1982-2012.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ratio of agricultural labor force*(%)</td>
<td>95.8</td>
<td>90.9</td>
<td>91.0</td>
<td>47.7</td>
</tr>
<tr>
<td>Yuanyang County</td>
<td>Mean cultivation area per labor force (mu)</td>
<td>4.8</td>
<td>3.8</td>
<td>1.9</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>Total machinery power (1000KW)</td>
<td>20</td>
<td>43.7</td>
<td>101.6</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>Ratio of agricultural labor force(%)</td>
<td>96.8</td>
<td>90.7</td>
<td>93.9</td>
<td>51.9</td>
</tr>
<tr>
<td>Zhengyang County</td>
<td>Mean cultivation area per labor force (mu)</td>
<td>6.5</td>
<td>4.4</td>
<td>4.3</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td>Total machinery power (1000KW)</td>
<td>13</td>
<td>18.3</td>
<td>84.8</td>
<td>205</td>
</tr>
<tr>
<td>Neixiang County</td>
<td>Mean cultivation area per labor force (mu)</td>
<td>4.0</td>
<td>2.9</td>
<td>3.0</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>Total machinery power (1000KW)</td>
<td>9</td>
<td>9.3</td>
<td>22.1</td>
<td>63</td>
</tr>
</tbody>
</table>

*Labor force proportion refers to the ratio of agricultural labor force to rural labor force of sample counties.

County fluctuates all the time, but the overall change is small. Mean calculation area per labor force of Neixiang County reduces a half. Considering the use of agricultural machinery, total machinery power of sample counties is on the rise, and especially, rapidly in recent two decades. Total machinery power of Yuanyang County and Zhengyang County is twice and three times of that of Neixiang County. Based on differences of resource structure, the proportion of field crops allows the fast growth of machinery in the plain county. For the mountainous county, specific climate and segmented cultivation of land have impact on agricultural structure. Reduction of field crops with increase of higher-profit crops is a significant feature of its agricultural structure change.

PERFORMANCE DIFFERENCES OF AGRICULTURAL STRUCTURE CHANGE

Resource endowment, land and labor force are important initial resource supplies of agricultural production. Agricultural structure change process is also a re-allocation process where agricultural resources flow to high remuneration department from low remuneration department. Influenced by landform and regional conditions, resource allocation process and performance of agricultural structure change are important contents to explain change features.

COMPARISON OF PERFORMANCE OF AGRICULTURAL STRUCTURE CHANGE

Comparison of land output performance: Land output rate can be expressed as the specific value of agricultural production value and cultivation of land. It is used to investigate the production efficiency of crops of a region. On the whole (as shown in Figure 2), land output rate of the mountainous county is higher than that of the plain county. With economic development, land output rate of the outer-suburban county has exceeded the suburban county in recent decade. Per-capita cultivation of land of Neixiang County is minimal. In 2012, the proportion of land and labor force was 3.3, far below 7.2 in Yuanyang County and 12.2 in Zhengyang County. Land output rates of the three counties further explain the agricultural production performance differences caused by agricultural structure change: Neixiang County utilizes mountain resources to develop vegetables and fruits with high additional value; Zhengyang County utilizes vast and superior cultivation resources to plant commercial crops; Yuanyang County is still dominated by grain crop with little change in production structure. Therefore, allocation of resource factors in agricultural sector with higher remuneration and adjustment of agricultural structure can boost agricultural output of per-unit land area.

Comparison of labor output performance: Labor productivity can be expressed with the specific value of total value of agricultural output and total value of agricultural output. It is used to reflect the production efficiency of agricultural labor force. As shown in Figure 3, labor productivity discrepancy of sample counties in 1982-1997 is very weak. Labor productivity of the mountainous county in 1998-2007 is slightly higher than that of the plain county. Since 2006, labor productivity of the plain county has greatly exceeded that of Neixiang County. During the period of traditional agriculture, when manpower and animal power served as the main power, labor productivity did not make huge difference. However, due to the innovations in agricultural technology, the use of agricultural equipment can increase land area managed by each agricultural technology and greatly improve per-capita
output efficiency. Adaptation of large agricultural mechanical equipment to the plain area is higher than that of mountainous region. Total machinery power of Zhengyang County grew to 2050000 kw from 130000 kw in 1982-2012. Total machinery power of Yuanyang County grew to 1250000 kw from 200000 kw in 1982-2012. Total machinery power of Neixiang County grew to 630000 kw from 90000 kw in 1982-2012. Thus, technical innovation and its promotion of labor productivity promote plantation selection and agricultural structure change differently in sample counties.

Comparison of household income performance: Income performance of agricultural structure can be expressed with per-capita agricultural production value. In 1982-2012, as agricultural structure coefficient converged to 0-2, per-capita agricultural production value of sample counties is presented the rising trend (as shown in Figure 4). Agricultural structure coefficient of Yuanyang County dropped to 1.3 from 4.2, and per-capita agricultural production value rose to 6504 Yuan from 328 Yuan. Agricultural structure coefficient of Zhengyang County dropped to 1.4 from 1.6, and per-capita agricultural production value rose to 5426 Yuan from 254 Yuan. On the whole, agricultural structure adjustment imposes direct influences on income of rural household. Income effect of agricultural structure changes in the suburban county is slightly smaller than that of other two counties. This is because the income of non-agricultural employment is higher than that of agricultural employment due to regional advantage of the suburban county. The other two counties are far away from the central city. Labor force transfer cost is relatively high. Rural households can improve agricultural income through optimization of agricultural production structure.

EMPIRICAL PERFORMANCE ANALYSIS OF AGRICULTURAL STRUCTURE CHANGE

Agricultural structure change is the result of re-allocation of resource factors in different departments. The change will
impose effects on agricultural economic growth. To further analyze features and performance of agricultural structure changes of three counties, this paper refers to production function model constructed by Wei and Shaorong (2002), and the contribution of agricultural structure to agricultural economic growth is expressed as follows:

\[ Y_i = F(X_1, X_2, X_3, X_4, A), \]

where \( Y_i \) is total agricultural output, expressed with gross output of agriculture, forestry, animal husbandry and fishery; \( Y_1 \) represents Yuanyang County; \( Y_2 \) represents Neixiang County; \( Y_3 \) represents Zhengyang County; \( X_1, X_2, X_3 \) and \( X_4 \) mean value added of four sectors (agriculture, forestry, animal husbandry and fishery); \( A \) represents level of agricultural economic system and technology. The above formula can be transformed to:

\[ \frac{dY}{Y} = \frac{\partial Y}{\partial X_1} \frac{dX_1}{X_1} + \frac{\partial Y}{\partial X_2} \frac{dX_2}{X_2} + \frac{\partial Y}{\partial X_3} \frac{dX_3}{X_3} + \frac{\partial Y}{\partial X_4} \frac{dX_4}{X_4} + \frac{\partial Y}{\partial A} \frac{dA}{A}. \]

(1)

\[ \frac{X_j}{Y_i} \frac{\partial Y_i}{\partial X_j} \]

refers to output elasticity of the \( j \)th department of County \( i \). \( Y \frac{\partial Y}{\partial A} \frac{dA}{A} A \) means the contribution of system and technology progress to gross output of agriculture. Formula (1) can be transformed to:

\[ \frac{dY}{Y} = \beta_0 + \beta_1 \frac{dX_1}{X_1} + \beta_2 \frac{dX_2}{X_2} + \beta_3 \frac{dX_3}{X_3} + \beta_4 \frac{dX_4}{X_4}. \]

(2)

Thus, the contribution of agricultural structure change to agricultural economic growth can be expressed as:

\[ \log Y = \alpha_0 + \alpha_1 \log X_1 + \alpha_2 \log X_2 + \alpha_3 \log X_3 + \alpha_4 \log X_4. \]

(3)

Based on Model (3), the measurement software is used for regression of sample data of Neixiang County, Yuanyang County and Zhengyang County in 1982-2012. The following formulas are thus gained:

\[ \log y_1 = 6.709 + 0.466 \log x_1 - 0.002 \log x_2 + 0.058 \log x_3 + 0.161 \log x_4 \]

(4)

\[ \log y_2 = 4.947 + 0.011 \log x_1 - 0.16 \log x_2 + 0.593 \log x_3 + 0.392 \log x_4 \]

(5)

\[ \log y_3 = 9.214 + 0.822 \log x_1 - 0.264 \log x_2 + 0.358 \log x_3 + 0.101 \log x_4 \]

(6)

It can be seen from the above results that the contribution of agricultural structure change of sample counties to agricultural performance has significant differences. Agricultural structure change of Yuanyang County is driven by agriculture industry. 1% rise of agriculture industry will result in 0.47% rise of total agricultural output value. 1% rise of animal husbandry will lead to 0.06% rise of total agricultural output value. 1% rise of fishery will give rise to 0.16% rise of total agricultural output value. Since forestry scale is too small, its contribution can be ignored. In agricultural structure changes of Neixiang County, animal husbandry, fishery and agriculture industry have large contributions to agricultural economic growth. The contribution elasticity is 0.59, 0.39 and 0.01%, respectively. Forestry presents negative influence. In agricultural structure of Zhengyang County, 1% growth of agricultural industry, animal husbandry and fishery will lead to 0.82, 0.36 and 0.10% rise of total agricultural output value, respectively. The constant term \( c \) reflects that the contribution degree of technology and system of the three counties to total agricultural output also differs. This value of Yuanyang County and Zhengyang County which are easier for mechanization is higher than that of Neixiang County.
SUMMARY AND CONCLUSIONS

This study applies rural economic statistical data of Yuanyang County, Neixiang County and Zhengyang County in 1982-2012, analyzes agricultural structure change of the three counties and then compares its features and performance. Research conclusions are as follows: Firstly, agricultural structure changes of sample counties present gradual optimization trend on the whole. The change in agriculture structure is characterized by pursuit crops of high value added. Agricultural structure change process of sample counties is a process of continuously matching with local resource endowment superiority. Secondly, due to the differences in landform and region, agricultural structure change features of different types of sample counties have certain peculiarity. The plain county has higher proportion of field crops with adaptation to technical innovation. The mountainous county in which agricultural machinery progress is slow shows the feature of pursuing labor intensive agricultural production with higher value added. The trend of labor-force saving agricultural production is significant in counties with more non-agricultural employment opportunities. Thirdly, differences in initial resource endowment and regional conditions trigger diverse cost of factor flow and different technical adaptation. Agricultural structure change performance of sample counties presents significant difference in land output rate, labor productivity and agricultural income.

Policy enlightenments of this study include the following: Firstly, agricultural structure adjustment should identify comparative advantage of local agricultural structure, effectively boost resource utilization efficiency and promote the formation of advantageous agricultural production structure with regional characteristics. Secondly, it is necessary to pay attention to the feature of active factor replacement, the strength and value of cultivation of new agricultural operation subjects under the background of continuous rise in the cost labor force and aging of agricultural labor force. Thirdly, it is also necessary to enhance cooperation among regions. Adjust agricultural structure with production advantage and specialization.

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REFERENCES


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