

## Analysis of Income Urban-Rural Gap of Guizhou Province in the Condition of Dualization

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### Abstract

This paper is to analyze the income gap urban-rural income of Guizhou province from 1995 to 2009 by applying the principal component and regression analysis and the ratio of disposable income of urban residents and the net income of the rural residents as a measuring indicator.

**Key words:** Dualization; Urban-rural income gap; Impact; Analysis; Guizhou Province

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### INTRODUCTION

Since the implementation of reform and opening policy in China, China's economy has developed in all aspects. Due to the urban-rural dual structure of the economy, the gaps of urban-rural income, labor productivity, living standard, education and public service is widening, which contribute to the current unbalanced economy (Yan-ping, 2009). The urban-rural income gap of Guizhou province is larger than the national average level, and shows sign of widening. In 1978, the ratio of urban-rural income is 2.39:1, and 3.12:1 in 1982. Since 1983, the urban-rural income gap of Guizhou province widened and amounted to 4.06:1 in 1994. And since 1997, it continued widening

and amounted to 4.5:1. The widening tendency should not be ignored (LuLu, Qindong, 2009).

Many factors are ascribed to the causation of the income gap between urban and rural residents. It's learned from the laws of social and economic development and the industrialization history of various countries in the world that the existence of urban-rural gap is a common phenomenon. In recent years, regarding to the impact of urban-rural income gap, some of them view the dual structure as the chief factor of fluctuating the urban-rural income gap for the labor flow between urban and rural areas, is greatly throttled by the dual structure (Martin, 2010). Some predecessors, studying the international cross-sectional data to analyze the relativity between urban-rural income gap and economic growth, found that the income gap has always negative impact upon economic growth. Lu Ming and other Chinese scholars have done research, utilizing simultaneous equation models and distributed lag models, also found the negative impact of income gap upon economic growth. Nevertheless, Wang Tongsan and Cai Yaozhou, using cointegration theory and application of standard Granger causality test, found that the widening urban-rural income gap leads to a tendency towards re-investment structure thus to increase the economic growth rate (Cao, Chen). Therefore, regarding to the impact of urban-rural income gap, the applied different indicators, or analytical approach or perspective in research will positively come to different conclusion. How should the urban-rural income gap of Guizhou province be measured And what are the major factors that are attributed to it. Answering these questions are the motivations of this paper. Therefore, this paper is to analyze the impact of urban-rural income gap of Guizhou province by measuring the urban-rural income gap via principal component and regression analysis and, analyzing the impact of dualization of Guizhou province and, building the regression model of urban-rural income gap and do

cointegration tests which will be later estimated.

## 1. DATA SOURCES AND VARIABLE SELECTION

### 1.1 Description of data sources

This raw data is collected from the “60 years in Guizhou Statistical Information” and the “Guizhou Statistical Yearbook from 1995-2009”.

### 1.2 Variable Selection

#### 1.2.1 The Choice of Dependent Variable

Major measure indicators of the income gap between urban and rural residents are the Gini coefficient, the absolute gap between urban and rural income and urban-rural income ratio. View of the urban-rural income ratio has simple and intuitive, the data for accuracy, high degree of social recognition, we use the urban-rural income gap between urban-rural income ratio as a measure of the indicators, which uses disposable income of urban residents and rural per capita net income as a measure of the ratio of urban and rural areas indicator of income disparity.

#### 1.2.2 Choice of Variables and Data Acquisition

According to the theoretical analysis, the factors that cause income gap between urban and rural areas of Guizhou Province are various, but can be broadly grouped into two categories, which are the impact of development and strengthening dualization. This paper focuses on impact of dual factors upon urban-rural income gap, which are directly reflected by the economic factors and indirectly reflected by the political and systematic factor. The degree of dualization of a country is largely related to its policy and system, and dualization cannot be separated from them, also the strict division between dualization and them is hard to draw, thus the dual factors should include them and other relative aspects. After comparison and deletion of the data, taking the feasibility principal of data collecting into account, the 8 statistical indicators are selected  $X_1$  The proportion of urban population to total population (reflecting the population structure of binary);  $X_2$  The secondary industry and the primary industry ratio (reflecting the dual industrial structure);  $X_3$  The tertiary industry added value of the ratio of the first production;  $X_4$  The second industry labor productivity and labor productivity ratio of primary industry (reflecting the relatively labor;  $X_5$  Dual factors tertiary industry, labor productivity and labor productivity, the ratio of the first;  $X_6$  Absolute amount of urban and rural per capita health care spending ratio;  $X_7$  Absolute amount of per capita expenditure of urban and rural communications costs ratio;  $X_8$  Culture of urban and rural residents per capita ratio of the absolute amount of entertainment expenses as the dual factors which has impact upon the urban-rural

gap. Data from the Statistical Yearbook of Guizhou.

## 2. THE ANALYSIS METHOD AND RESULTS

### 2.1 Analysis Method

Since a large number of indicators are interrelated to each other, the basic method is to analyze the principal component (or factor analysis) to attain numerous principal component (or factor analysis), thus to further analyze the principal components as independent variables via multiple regression method, and finally illustrate the principal components respectively that impact upon the urban-rural income and, to what extent they impact (GAO, 2009).

### 2.2 Binary Principal Component Analysis of Factors and Their Results

According to the 8 indicators, the following results are generated by principal component analysis.

**Table 1**  
**Communalities**

$X_1$	$X_2$	$X_3$	$X_4$	$X_5$	$X_6$	$X_7$	$X_8$
0.867	0.970	0.968	0.962	0.763	0.819	0.878	0.795

**Table 2**  
**Total Variance Explained**

Component	Initial Eigenvalues		
	Total	Variance %	Cumulative %
	5.350		
1	1.673	66.878	66.878
2	0.585	20.915	87.793
3	0.220	7.316	95.109
4	0.106	2.748	97.857
5	0.051	1.319	99.176
6	0.012	0.634	99.810
7	0.003	0.151	99.961
8		0.039	100.000

**Table 3**  
**Component Matrix**

Component	Key Indicators							
	$X_1$	$X_2$	$X_3$	$X_4$	$X_5$	$X_6$	$X_7$	$X_8$
1	0.832	0.680	0.569	0.966	-0.874	0.261	-0.489	0.263
2	0.481	0.712	0.803	0.169	0.002	-0.867	-0.799	0.852

**Table 4**  
**Component Score Coefficient Matrix**

Component	Key Indicators							
	$X_1$	$X_2$	$X_3$	$X_4$	$X_5$	$X_6$	$X_7$	$X_8$
1	0.237	0.118	0.056	0.340	-0.339	0.279	-0.025	-0.073
2	-0.005	0.143	0.202	-0.131	0.180	-0.398	-0.217	0.284

Table 1 shows the extracted information from original variable, indicating that the information extracted

from majority of original variables is more than 80%. The total variance of original variables explained by principal components. Two principle components are extracted from it and concentrate 87% information of the original variables. It is showed in Table 3 that the first principle component, denoted as  $F_{11}$  and named as "dual consolidated Factor" reflects the economic gap between urban and rural regions and, gap of between different household register systems. The second principle component, denoted as  $F_{12}$  and named as "policy factor", reflects the non-economic factors between urban-rural regions, namely, the ratio of the absolute amount of entertainment expenses and expenditure on medical

care per capita, of the absolute amount of entertainment expenses and education costs per capita, and of communication costs per-capita.

The two principal components contain 87% information of the original variables. Therefore, the two principal components are selected as the dual explanatory variables reflecting the dual factors. Here follows the first two the linear expression of the two principle components:  
 $F_{11}=0.548X_1+0.273X_2+0.129X_3+0.786X_4-1.819X_5$   
 $+0.645X_6-0.058X_7-0.169X_8$  (1)  
 $F_{12}=-0.006X_1+0.185X_2+0.261X_3-0.169X_4+0.233X_5$   
 $-0.515X_6-0.281X_7+0.367X_8$  (2)  
 By(1), (2), calculate the  $F_{11}$ ,  $F_{12}$  values each year.

**Table 5**  
**The Indicators Related to Its Principal Component Scores**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
$F_{11}$	-1.21	-1.47	-1.69	-0.98	-0.60	-0.36	0.66	1.17	0.99	1.19	1.08	0.72	0.46	0.05	-0.01
$F_{12}$	-0.14	-0.20	-0.17	-0.49	-0.58	-1.00	-1.12	-0.95	-0.65	-0.44	-0.09	0.83	1.10	1.77	2.13

**2.3 Regression Analysis of Principal Component and Its Results**

To  $F_{11}$ ,  $F_{12}$  as explanatory variables and urban-rural income gap as the dependent variable, after being standardized, the results of regression analysis come out as in Table 6.

**Table 6**  
**Multiple Linear Analysis**

Model	Unstandardized Coefficients		Standardized Coefficients	Sig
	B	Std. Error	Beta	
(Constant)	3.954	0.033		0.000
$F_{11}$	0.343	0.034	0.818	0.000
$F_{12}$	0.212	0.034	0.504	0.000

Table 6 shows positive relationship between  $F_{11}$ ,  $F_{12}$  and Y. the regression coefficient t-test is significant, or to say that impact of dual factors plays a significant role on the expansion of urban-rural gap. Thus:

$$Y=3.954+0.343 \times F_{11}+0.212 \times F_{12} \quad (3)$$

Formulate(3) shows that economic factors dominated by "dual consolidated factor" dominated by economic factors has a greater impact than "policy factor".

**3. SUGGESTIONS**

Firstly, narrow income gap between urban and rural areas by balancing urban and rural economic development and accelerating economic development in rural areas.

Building a uniformed mold which integrates the urbanization of population, rural industrialization, rural industrialization and urbanization of rural life is the premise of balancing the urban and rural economic

development (DONG, 2008). Under the guidance of rural town model, the development of rural township integrated with construction of enterprises and industrial zones is favorable to the promotion of the public utilities and rural enterprises, especially in rural third industry, and the transfer of surplus labor from rural areas. To accelerate the rural economic development, the benefits of agriculture should be increased, rural living condition improved and quality of rural residents improved in an all-round way.

Secondly, reform the current household registration management system of urban and rural division

The solution to the fundamental problem of household system is to assure the citizen's freedom of settlement and residence (TANG, 2009). In order to promote the balanced development of urban-rural regions and accelerate urbanization process, it is timely to deepen reform of the current household registration system, break the dual urban-rural split account management system and abolish the "Agricultural Status" account program management, reform the household registration system integrated with various urban subsidies such as housing, transport, to create a favorable condition for the establishment of a unified account management system, further to make the urban and rural residents enjoy the same treatment.

All the above measures will promote the integration of urban and rural economies and narrow the urban-rural income gap.

Thirdly, accelerate social development in rural areas.

The key components of balanced economic development of urban and rural areas are equal opportunity and enjoyment of civil rights both to the urban and rural residents, restore the civil rights of rural residents, namely the right of equal employment, migration and residency, education, production and operation, community participation, social security and etc.

In order to facilitate the development of rural areas, the rural infrastructure construction should be strengthened, support and benefits to rural residents enhanced and public services in rural areas improved (LIU, 2009). To accelerate the social development of rural areas and narrow the urban-rural income gap, the direction and structure of investment should be efficiently adjusted, therefore the investment on rural education, health, electricity, credit, water conservancy, post and telecommunications and other infrastructure should be enhanced to form an integrated urban-rural industry.

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