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Estimation and Dynamic Judgment of Urban-rural Coordinated Development: A Case Study of Chongqing City

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Abstract Using AHP (Analytic Hierarchy Process) and GCA (Grey Comprehensive Analysis), this article measures the degree of urban-rural coordinated development of Chongqing City, and establishes GARCH model to analyze its dynamic feature. The results show that urban-rural coordination degree of Chongqing City tended to decline year by year in the period 1985 – 2010 on the whole; after it became a municipality directly under the Central Government, the average annual rate of decline reached 1.78%. Further, from GARCH modeling analysis, there is no "clustering" in urban-rural coordination degree of Chongqing City, and the impact of fluctuation state in the past on the future will gradually intensify. There is no "leverage effect" in urban-rural coordination degree of Chongqing City, and if the government does not exert "external force", urban-rural coordination degree will decline year by year. But in the long run, urban-rural coordination degree will gradually converge to the equilibrium level. Based on this, we propose to strengthen institutional innovation and help propel coordinated urban and rural development, in terms of employment, social security, finance, land management and use.

Key words Urban-rural coordination degree, AHP, GCA, GARCH, Indicator system

1 Introduction

Chongqing City integrates the spatial structure of "big city", "big village", "big mountainous area", and "big reservoir area" into a whole, with particularly prominent dual structural problem, regional disparities and urban-rural development gap looming large. In order to reflect the trend of coordinated urban-rural development more comprehensively, we have to establish the indicator system to measure and quantify the coordinated urban-rural development. The researches on coordinated urban-rural development are always the hot issues of the overseas research. From point of view of practice, foreign scholars expound the path to realization of balanced urban-rural development from different perspectives. Hossain (1988), Jorgensen(1999), Van Domelen(1999), Berger(2002), Loayza (2009), and Claudio Raddatz (2009) analyzed endogenous feature of poverty and economic growth using "two-sector model", and believed that the construction and manufacturing have made the greatest contribution to coordinated urban-rural development. In terms of dependence on exogenous force to narrow the gap between urban and rural areas, Epstein and Jezeph,

believed that only by cracking institutional shackles can we achieve coordinated urban-rural development through establishing three-dimensional urban and rural cooperative model. In addition, Byerlee(2000), Kerr(2002) and Hiskey(2003) also presented similar viewpoints. Domestic scholars also conducted a lot of researches on coordinated urban and rural development, which largely boil down to the definition of urban-rural coordination concept, breakthrough point of coordinated urban-rural development, etc. Gu Yikang and Chen Xiwen (2003) held that urban-rural coordination is to regard urban and rural areas as a whole, and implement unified urban-rural planning of national income distribution and major economic policies. In addition, Han Jun (2003) and Zhong Funing (2003) believed that promoting farmers' human capital is the key to the development of urban and rural areas. Wang Chongju (2007) and Zhang Zhiyong (2007) believed that the breakthrough point of coordinated urban-rural development is to optimize the industrial layout and promote industrial development. From the relevant researches at home and abroad, we can find that the research perspectives of coordinated urban-rural development are various, but most of them are focused on path and means for achieving coordinated urban-rural development, lacking quantitative researches. In particular, the researches on the dynamic trend of coordinated urban-rural development are in blank. Therefore, based on the previous studies and development reality of Chongqing City, we establish the indicator system to measure urban-rural coordination of Chongqing City using AHP and GCA; establish GARCH model to study the dynamic trend; put forth recommendations for coordinated urban-rural development.

Received: March 26, 2012 Accepted: May 29, 2012

Supported by Key Chongqing Municipal Humanities and Social Sciences Research Base Project in Southwest University (SWU0810026); the Fundamental Research Funds for the Central Universities (SWU1209457 and SWU0909510); National Soft Science Fund (2007GXS3D094); Youth Fund Project of Southwest Normal University (SWU07106); Chongqing Soft Science Project (CSTC, 2009CE9016); 2012 Shizhu Base Science and Technology Innovation Special Fund Projects (sz201208); Social Science Planning Fund of the Ministry of Education (07JA790104).

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2 Research method and model selection

2.1 Research method When conducting research on the level of coordinated urban-rural development, the majority of domestic scholars adopt two indicators, income and consumption, to reflect the urban-rural gap (Zhao Caiying, Xiayun, 2008). Coordinated urban-rural development is a comprehensive and systematic project involving a wide range, and all sub-systems interrelate and restrict each other, so if we use these two aspects of indicators, it will be inevitably partial and inadequate. This article aims to remedy this defect and innovate upon the research methods, to comprehensively and scientifically reflect the dynamic trend of coordinated urban-rural development.

First, we establish the indicator system, to evaluate and measure coordinated urban-rural development. Using GCA method, we calculate the degree of urban-rural coordinated development, in order to reflect the level of urban and rural development.

Second, on the basis of urban-rural coordination degree measured using AHP and GCA, we establish econometric model, to study and judge the dynamic trend of urban-rural coordination degree of Chongqing City.

The measure data are time series data, therefore, in order to ensure the stationarity of the data, this article firstly uses PP test, to test the stationarity of the data; then establishes model to analyze and judge the symmetry and fluctuation in urban-rural coordination degree; finally, based on empirical analysis results, expound the relevant experience of Chongqing City, to provide a directional reference for the reform of coordinated urban-rural development.

2.2 Model selection In order to fully reflect the dynamic nature of urban-rural coordination degree, this article mainly uses GARCH(p, q) model, supplemented by EGARCH model and combined GARCH model, for analysis. Generally speaking, in addition to the impact of the past development level, the variation in urban-rural coordination degree is also affected by the impact of various random factors. Based on this, the mean and conditional heteroskedasticity model is established as follows:

$$CXTCD = \beta_0 + \beta_1 CXTCD_{t-1} + \beta_2 CXTCD_{t-2} + \dots + \beta_p CXTCD_{t-p} + \mu_t \quad I$$

$$\sigma_t^2 = \alpha_0 + \alpha_1 \mu_{t-1} + \alpha_2 \mu_{t-2} + \dots + \alpha_p \mu_{t-q} \quad II$$

In equation I, $CXTCD$ signifies urban-rural coordination degree; $\beta_1 \dots \beta_p$ signify the model parameters to be estimated; μ_t is the random error term. In equation II, σ_t^2 is conditional variance; $\alpha_0 \dots \alpha_p$ are parameters to be estimated. Equation II is also ARCH model, GARCH model (Bollerslev, 1986) is an extension of ARCH, and GARCH(p, q) model assumes that the variance depends on its lag term (σ_{t-i}^2) and the lag term of the residual sum of squares (μ_{t-j}^2), therefore, GACH(p, q) model is set as equation III.

$$\sigma_t^2 = \gamma + \alpha \sum_{i=1}^q \mu_{t-i}^2 + \beta \sum_{j=1}^p \sigma_{t-j}^2 \quad III$$

By equation III, we examine whether there is "clustering" in urban-rural coordination degree. In equation III, we require that $\gamma > 0$, $\alpha \geq 0$, $\beta \geq 0$, $\alpha + \beta < 1$. If α and β are significant, and σ_t^2 and σ_{t-i}^2 are positively correlated, t indicates that the

"cluster effect" is significant, that is, the effects of fluctuation in the past on the future wane gradually. But there are also flaws in GARCH (p, q) model, that is, it cannot test the "symmetry" of urban-rural coordination degree. The EGARCH (Nelson, 1991) model can resolve the issue based on the above. Consequently, this article will establish the EGARCH model to analyze "symmetry" of urban-rural coordination degree. The model is specifically set as equation IV.

$$\ln \sigma_t^2 = \gamma + \alpha \left[\frac{\mu_{t-1}}{\sigma_{t-1}} \right] + \left[\frac{\mu_{t-1}}{\sigma_{t-1}} \right] + \omega \ln \sigma_{t-1}^2 \quad IV$$

In equation IV, if $\omega < 0$, it indicates that there is "symmetry" in the fluctuation of urban-rural coordination degree; on the contrary, if $\omega > 0$, it indicates that there is "asymmetry" in the fluctuation of urban-rural coordination degree. At the same time, in order to test whether there is consistency in fluctuation of urban-rural coordination degree in the short or long term, this article will establish combined GARCH model, specifically set as equation V and VI.

$$\sigma^2 - \omega_t = \alpha_1 (\mu_{t-1}^2 - \omega_{t-1}) + \gamma_1 (\sigma_{t-1}^2 - \omega_{t-1}) \quad V$$

$$\omega = \omega + \rho_1 (\sigma_t - \sigma_{t-1}) + \theta_1 (\mu_{t-1}^2 - \sigma_{t-1}^2) \quad VI$$

In equation V and VI, if α_1 , γ_1 , ρ_1 , θ_1 are significant, then the fluctuation of urban-rural coordination degree in the short or long term will slowly converge to the steady state. The indicator data in this article are all from *Chongqing Statistical Yearbook (1986–2011)*, *Chongqing Municipal Statistics Bulletin (1986–2011)*, *China Statistical Yearbook (1986–2011)*, in conjunction with annual government work report of Chongqing's districts and counties. In the process of analysis, we need to conduct indexation processing of the data; in establishing the model, we need to conduct differential processing of the relevant data.

3 Measure and description of urban-rural coordination degree

3.1 Urban-rural coordination degree According to the basic steps of the AHP evaluation method, this article establishes the indicator system from the target layer, the middle layer and the indicator layer. Specifically, the target layer refers to urban-rural coordination degree (A); the middle layer includes urban-rural economic coordination (B_1), urban-rural social coordination (B_2), and urban-rural ecological coordination (B_3) the indicator layer includes urban and rural per capita GDP ratio (C_1), urban and rural residents' disposable income ratio (C_2), urban and rural residents' consumption expenditure ratio (C_3), urban and rural residents' Engel coefficient ratio (C_4), the proportion of financial expenditure for agriculture to local financial expenditure within the budget (C_5), the proportion of agricultural output value per capita to non-agricultural output value per capita (C_6), urbanization rate of rural residents (C_7), employment population ratio per household (C_8), housing area ratio per household (C_9), the proportion of urban and rural workers (C_{10}), the registered urban unemployment rate (C_{11}), the proportion of urban and rural phone users (C_{12}), the proportion of urban and rural residents' expenditure in culture, education, entertainment and services (C_{13}), urban and rural residents' basic medical care expenditure ratio (C_{14}), per capita highway

mileage (C_{15}) , popularization rate of rural tap water in rural areas (C_{16}) , per capita public green area (C_{17}) , forest coverage rate (C_{18}) , the proportion of social fixed asset investment to GDP (C_{19}) , the proportion of expenditure in environmental protection to total financial expenditure (C_{20}).

After the establishment of indicator system, we need to assign value to the weights of all indicators and calculate the weight; then conduct the consistency test. First of all, we construct the judgment matrix, and assign value to the importance using the means of "pairwise comparison" and "1-9" scale

method, to determine the relative importance of each indicator. Secondly, we normalize the standard matrix, and then calculate the mean of the standard matrix by row, to get the corresponding weight of the indicator layer (Table 1). Finally, we conduct the consistency test, to study and judge whether each indicator has satisfactory consistency. After calculation, the consistency ratio of all indicators in the middle layer is 0.085, 0.1, and 0.064, less than or equal to 0.1, passing the consistency test.

Table 1 Indicator system for measuring urban-rural coordination degree

The target layer	The middle layer	The indicator layer	Comprehensive weight
Urban-rural coordination degree (A)	Urban-rural economic coordination degree (B_1)	Urban and rural per capita GDP ratio (C_1) Urban and rural residents' disposable income ratio (C_2) Urban and rural residents' consumption expenditure ratio (C_3) Urban and rural residents' Engel coefficient ratio (C_4) The proportion of financial expenditure for agriculture to local financial expenditure within the budget (C_5) The proportion of agricultural output value per capita to non-agricultural output value per capita (C_6) Urbanization rate of rural residents (C_7) Employment population ratio per household (C_8) Housing area ratio per household (C_9) The proportion of urban and rural workers (C_{10}) The registered urban unemployment rate (C_{11}) The proportion of urban and rural phone users (C_{12}) The proportion of urban and rural residents' expenditure in culture, education, entertainment and services (C_{13}) Urban and rural residents' basic medical care expenditure ratio (C_{14}) Per capita highway mileage (C_{15}) Popularization rate of rural tap water in rural areas (C_{16}) Per capita public green area (C_{17}) Forest coverage rate (C_{18}) The proportion of social fixed asset investment to GDP (C_{19}) The proportion of expenditure in environmental protection to total financial expenditure (C_{20})	0.19 0.10 0.06 0.06 0.07 0.08 0.03 0.05 0.03 0.05 0.04 0.01 0.02 0.01 0.03 0.04 0.02 0.02 0.05 0.04
	Urban-rural social coordination degree (B_2)		
	Urban-rural ecological environment coordination degree (B_3)		

Based on this, this article uses GCA analysis method to measure the level of coordinated urban and rural development in Chongqing City. Due to different caliber of each indicator unit, in accordance with the GCA analysis steps, we need to conduct dimensionless processing of the source data, in order to ensure comparability and consistency of data. Based on this, we select the reference sequence, calculate the correlation coefficient, and multiply correlation coefficients of all indicators, to get urban-rural coordination degree in Chongqing City during the period 1985–2010, as is shown in Table 2.

3.2 Dynamic description Using AHP and GCA, we conduct comprehensive evaluation of urban-rural coordination degree in Chongqing City during 1985–2010, and find that urban-rural coordination degree in Chongqing City, on the whole, tends to decline; but there is a conspicuous "dividing line" before and after Chongqing became a municipality directly under the Central Government. Overall, urban-rural coordination degree in Chongqing City was 0.662 in 1985, and urban-rural coordination degree decreased to 0.550 in 2010, an average annual decline of 0.7%. It indicates that during the period 1985–2010, the dual urban-rural structure in Chongqing City was gradually deepened, with increasing differences of development. From

Table 2 The comprehensive level of urban-rural coordinated development and ranking in Chongqing City

Year	Urban-rural coordination degree	Ranking	Year	Urban-rural coordination degree	Ranking
1997	0.751	1	1986	0.679	14
1991	0.736	2	2001	0.676	15
1990	0.73	3	1985	0.662	16
1989	0.728	4	2002	0.641	17
1996	0.725	5	1992	0.636	18
1995	0.706	6	2003	0.634	19
1987	0.699	7	2004	0.627	20
1993	0.698	8	2005	0.612	21
1998	0.692	9	2006	0.606	22
1988	0.69	10	2007	0.602	23
1994	0.689	11	2008	0.578	24
1999	0.686	12	2010	0.550	25
2000	0.684	13	2009	0.537	26

the point of view of the stage characteristics, taking 1997 when Chongqing became a municipality directly under the Central Government as a dividing line, we divide coordinated urban-rural development into two stages: the period 1985–1997; the period 1998–2010. From analysis, we can find that in the period 1985–1997, urban-rural coordination degree in Chongqing

City showed an increasing trend, with an average annual growth of 1.06%. In the period 1998–2010, urban-rural coordination degree in Chongqing City showed a downward trend, with an average annual decrease of 1.78%. This also shows that although Chongqing becoming a municipality contributes to

rapid economic and social development, the urban and rural gap widens increasingly; if the current trend evolves, urban-rural coordination degree will be further reduced, and the urban-rural differences will be further expanded, as shown in Fig. 1.

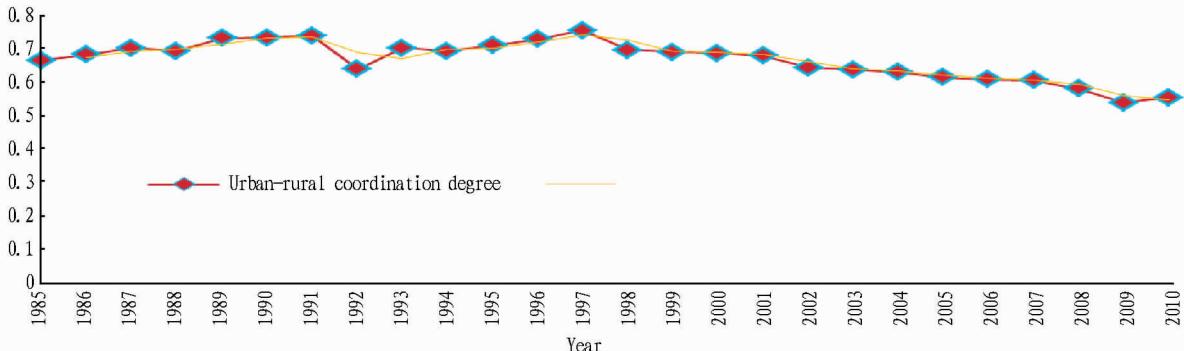


Fig. 1 Dynamic description of urban-rural coordination degree

4 Empirical test: dynamic research and judgment

Before the establishment of model, we must ensure the stationarity of the data. This article uses the test method developed by Phillips and Perron (1988), to test the stationarity of the data. Similar to ADF test, Phillips–Perron (PP) is the test on equation $\Delta Y_t = \mu + \rho Y_{t-1} + \varepsilon_t$, when $\rho = 1$, but different from ADF, there is no lag difference term. This equation is estimated by the least squares method, and then serial correlation of ε_t is used to correct PP statistics of ρ . Through test, pp value of urban-rural coordination degree (CXTCD) is -0.42889 , greater than the critical value significant at level of 1%, 5%, and 10%, indicating that urban-rural coordination degree (CXTCD) is non-stationary sequence. This article uses the difference method to process non-stationary sequence. $\Delta CXTCD$ signifies taking the first-order difference of urban-rural coordination degree. From Table 3, we can find that pp value of $\Delta CXTCD$ processed is -6.03903 , less than the critical value significant at level of 1%, 5%, and 10%, indicating that the processed data have become stationary time sequence data.

Table 3 PP test results

Variable	pp	Test type	Critical value
CXTCD	-0.42889	(0,0)	1% (-3.7343)
			5% (-2.9907)
			10% (-2.6348)
$\Delta CXTCD$	-6.03903	(0,0)	1% (-3.7497)
			5% (-2.9969)
			10% (-2.6381)

Data Source: The data are sorted based on E-Views software results.

Based on the above analysis, we need to identify and judge the concrete form of model analysis, and this article identifies the model form using the correlation diagram and the partial correlation diagram of time series. After analysis, $\Delta CXTCD$ is a first or second order autoregressive process. However, after repeated trials, the test result of AR (2) are not significant, thus we eliminate it. Based on this, we establish AR(1) model, and test whether there is autoregressive conditional het-

eroskedasticity in the random error term through the ARCH test. From the test results, we can derive that $F = 3.838$, and the corresponding probability is 0.03, less than the critical value at 5% significance level, that is, F value falls on the right side of the corresponding critical value, thereby rejecting the null hypothesis. There is first-order autocorrelation in the sequence of square of the residuals, so there is autoregressive conditional error in error sequence of the model. In order to avoid the problem of too many lag terms in due to the establishment of ARCH model, we finally establish GARCH(1,1) model to analyze the dynamic nature of urban-rural coordination degree (CXTCD); based on this, comprehensively analyze "clustering", "symmetry" and the evolution trend of urban-rural coordination degree, using EGARCH model and combined GARCH model, to systematically feel the pulse of variation in urban-rural coordination degree. The results can be shown in Table 4.

4.1 GARCH(1,1) test The GARCH (1, 1) model is mainly used to test "clustering" of urban-rural coordination degree. From the results, we can find that the coefficient of μ_{t-1}^2 is 0.289, and the coefficient of σ_{t-1}^2 is -0.963 . T-test value shows that it passes the test of significance under the condition of 5% significance level. And the summation of the two coefficients is less than 1, but in accordance with the basic requirements of GARCH (1, 1) model, and must be positively correlated, that is, the coefficient of must be greater than 0. Therefore, we can judge that there is no "clustering" in urban-rural coordination degree, that is, the impact of the past fluctuations on the future is gradually enhanced. This shows that in each period, the association between urban and rural areas is closely related. If the urban-rural coordination degree is left fluctuated randomly in the natural state, then the future urban-rural coordination degree of Chongqing City will also fluctuate greatly, and the influencing effect will be gradually enhanced. In accordance with the above analysis, it indicates that in the period 1985–1997, the urban-rural coordination degree of Chongqing City showed an increasing trend, an average annual growth of 1.06%, but this merely shows that in this period, the urban-rural coordination degree was in a stage of "low-level equilibrium", and after Chongqing City became a municipality directly

under the Central Government, such low-level equilibrium was rapidly broken down. Especially in the period 1998–2010, the urban-rural coordination degree experienced an average annual decline rate of 1.78%, and the impact of this decline trend on the future urban-rural coordination degree will be gradually enhanced.

4.2 EGARCH model test EARCH model is mainly used to investigate "asymmetry" of information impact curve. From the results, the coefficient of conditional variance model in EARCH is 0.818, passing the test at significance level of 5%. But T-value of $|\mu_{t-1}/\sigma_{t-1}|$ is 0.44, failing to reject the null hypothesis at corresponding significance level, thus it is not significant. Thus there is no "asymmetry" in urban-rural coordination degree, that is, there is no "leverage effect". This also shows that under the conditions of never imposing favorable factors, urban-rural coordination degree will gradually decline. The above analysis shows that the annual decline rate of urban-rural coordination degree was 0.7% in the period 1985–2010; if allowing urban-rural coordination degree to develop at this rate, urban-rural coordination degree of Chongqing City will be get-

ting smaller and smaller, which meshes with Xu Xiuchuan's research results using system dynamics (2008). By then, the urban-rural gap, regional disparity, and divisions between rich and poor will be compounded, posing a serious threat to the building of a harmonious society and the common prosperity of the urban and rural residents, delaying the process and pace of the construction of a comprehensive well-off society.

4.3 Combined GARCH model test In order to fathom the difference in urban-rural coordination degree in the short and long term, we need to use the combined GARCH model to test and analyze it. By the test results, we can find that in the short term, $(\mu_{t-1}^2 - \sigma_{t-1}^2)$ and $(\sigma_{t-1}^2 - \sigma_{t-1}^2)$ have not passed the significance test at corresponding significance level; but in the long term, the coefficient of $(\sigma_t - \sigma_{t-1})$ is 0.903, passing the significance test. This shows that the fluctuations in urban-rural coordination degree in the short and long term are not consistent. The fluctuation is relatively intense in the short term, but in the long run, urban-rural coordination degree will gradually converge to the steady state, and integrated urban-rural development pattern will eventually take shape.

Table 4 Specific test results of GARCH model

Model	Type	Variable	Coefficient	T	R ²	DW
GARCH(1,1)	Mean equation	$\Delta CXTCD$	0.986	221.94	0.673	2.35
	Condition equation	Intercept term	0.0014	2.802	–	–
		μ_{t-1}^2	0.289	3.198	–	–
		σ_{t-1}^2	-0.963	-17.69	–	–
EGARCH	Mean equation	$\Delta CXTCD$	0.986	95.648	0.629	2.25
	Condition equation	Intercept term	-2.106	-0.98	–	–
		$\left[\frac{\mu_{t-1}^2}{\sigma_{t-1}^2} \right]$	0.979	1.266	–	–
		$\left[\frac{\mu_{t-1}^2}{\sigma_{t-1}^2} \right]$	0.251	0.44	–	–
Combined GARCH	Mean equation	$\Delta CXTCD$	0.7033	4.526	0.37	2.35
	Condition equation	Intercept term	–	–	–	–
		$\mu_{t-1}^2 - \sigma_{t-1}^2$	0.529	0.32	–	–
		$\sigma_{t-1}^2 - \sigma_{t-1}^2$	-0.18	0.83	–	–
		Intercept term	0.01	1.286	–	–
		$\sigma_t - \sigma_{t-1}^2$	0.903	2.495	–	–
		$\mu_{t-1}^2 - \sigma_{t-1}^2$	0.615	0.259	–	–

Note: The above data are calculated by the E-views software.

5 Conclusions and policy recommendations

5.1 Conclusions Firstly, this article uses AHP (Analytic Hierarchy Process) and GCA (Grey Comprehensive Analysis), to measure the level of coordinated urban-rural development in Chongqing City during the period 1985–2010; then uses GARCH model to research and judge the dynamic urban-rural coordination degree. On the whole, urban-rural coordination degree of Chongqing City tends to decline; by 2010, the urban-rural coordination degree had dropped to 0.550, an average annual decline of 0.7%. From the point of view of stage characteristics, if taking 1997 when Chongqing became a municipality directly under the Central Government as a dividing line, in the period 1985–1997, urban-rural coordination degree in Chongqing City showed an increasing trend, with an average

annual growth of 1.06%; in the period 1998–2010, urban-rural coordination degree in Chongqing City showed a downward trend, with an average annual decrease of 1.78%.

Through empirical modeling, we draw the following conclusions. There is no "clustering" in urban-rural coordination degree of Chongqing City, that is, the past fluctuations have significant impact on the future urban-rural coordination degree, and the impact will gradually intensify. Although in the period 1985–1997, urban-rural coordination degree rose incessantly, it is only viewed as a kind of "low-level equilibrium", and after Chongqing City became a municipality directly under the Central Government, such "low-level equilibrium" was rapidly broken down. Especially in the period 1998–2010, the urban-rural coordination degree experienced an average annual decline rate of 1.78%, and the impact of this decline trend on the future ur-

ban-rural coordination degree will be gradually enhanced. There is no "leverage effect" in variation of urban-rural coordination degree of Chongqing City, and if the government does not exert "external force", leaving urban-rural coordination degree in the natural state of development, it will gradually decline, and urban-rural differences will continuously widen. In the short term, there is a great fluctuation in urban-rural coordination degree of Chongqing City, but in the long run, urban-rural coordination degree will gradually converge to the steady state, and the situation of balanced, integrated and coordinated urban and rural development will outcrop.

5.2 Policy recommendations Based on research findings, this article believes that the government should strengthen innovation from the three aspects of employment and social security system, financial and monetary system, and land management system; reinforce the "external force", and narrow the urban-rural differences, to boost coordinated and balanced urban and rural development in Chongqing City.

5.2.1 Accelerating innovation of employment and social security system. The system is an important factor for promoting employment, thus we should establish normative system in rural labor employment and social security. For Chongqing City, on the one hand, through vigorously developing strategic emerging industries, it should encourage the farmers to be independent in pioneering work, support the development of micro-enterprise, increase employment opportunities for the rural residents, and stabilize farmers' non-farm income; on the other hand, it should steadily push forward the integrated urban-rural household registration system reform, accelerate the pace of rural residents translating into urban residents, and innovate upon the social security system, to eliminate the uncertainty arising from labor mobility. By deepening and advancing the reform of unemployment, work injury and maternity insurance system, it should gradually increase the level of treatment, explore the treatment item and standard of migrant worker social insurance, explore coordinated urban-rural medical insurance system, do a good job in the expansion of urban and rural cooperative medical insurance pilot, and develop the overall program of medical insurance for urban and rural areas, to constantly improve the urban and rural endowment insurance system.

5.2.2 Innovating upon public financial system.

(i) Optimizing the financial structure and improving the efficiency of capital allocation. In accordance with the principle "give top priority to what is the most important, make unified planning so as to take into consideration every aspect of a matter", it should restructure financial expenditure, give preferential financial policies for coordinated urban and rural reform and development, and the new annual financial revenue should be first used for coordinated urban and rural reform and development; make reasonable arrangements of the spatial distribution of financial capital, strengthen financial support for the construction and development of poor districts and counties in Northeast Chongqing, Southeast Chongqing, and other areas, so that urban and rural residents can get roughly equal public services; the National People's Congress should legislate to provide the legal constraints and security for the flow of public finances into rural areas; establish and improve open and transparent rural public financial funds use mechanism, and

comprehensively improve the efficiency of the allocation of financial funds; unify urban and rural tax system, and achieve supply of urban and rural public goods within the system.

(ii) Innovating upon rural finance and supplying adequate funds.

It should further increase efforts in innovation of the financial system, to provide a steady stream of funds for coordinated urban-rural development; guide financial institutions to increase credit funds to support urban and rural construction projects, and establish reasonable loan compensation mechanism. At the same time, it should reward the financial departments in terms of interests to increase the effective supply for urban and rural construction; nurture rural financial competition subject, improve the financial mechanism of competition, deepen the institutional reform of rural credit cooperatives; improve the agricultural policy bank's function of supporting agriculture, and strengthen the role of the agricultural development bank; regulate and develop private finance, and ensure the healthy development of rural finance under monitoring and guidance of the national law.

(iii) Establishing oversight mechanism and constantly resolving the risk.

Firstly, it should increase policy support, and the central and local governments should arrange some special funds used for subsidizing interest payment of loans in agricultural projects, reducing the risk faced by the projects merely relying on the policy-based loans and commercial loans; establish and improve social intermediary service system, and optimize the credit environment in rural areas; at the same time, increase efforts in rural credit environment governance to promote the credit construction in rural areas. Secondly, it should establish agriculture-supporting loan risk management and compensation mechanism, to reduce risk and loss of agriculture-supporting loans. Finally, it should improve the rural financial regulatory system, prevent and defuse financial risks, and gradually improve the access policies and regulations of rural finance.

5.2.3 Strengthening the land management and innovation of use system. In order to bridge the gap between urban and rural areas, we should not artificially abate the growth rate of urban residents' income, but try to make the pace of increasing farmers' income faster; deepen the property rights reform in rural areas, to liven the "dormant" resources such as rural land, housing and forestry rights, to make them become visible and permanent assets.

The specific operational means to increase farmers' income from property in Chongqing City include the following aspects.

(i) "Land securities" transaction. This is the right to trial bestowed on Chongqing City by the central government, which not only additionally increases urban construction land indicators in Chongqing City, and ensures that the area and quality of rural arable land does not decline, but also enhances the value of the land in the rural homestead, therefore, it wins acclaim from farmers.

(ii) Rural housing transformation. Rural renovation of dilapidated buildings and the construction of the new village is conducive to intensive use and economical use of land for construction in rural areas, and promoting increase in value of farmers' houses.

(iii) "Three rights" mortgage loans in rural areas. Chongqing has more than 30 million mu of cultivated land and 60 million mu of forest land, 100 million mu of land in total. In addition to 3 million mu of homestead, the conservatively assessed value is 1 trillion yuan. Even if 10%–20% of the land is mortgaged, rural areas can also finance more than 100 billion yuan.

(iv) Shareholding system transformation of rural collective property rights. Now Chongqing City has 10 000 specialized cooperatives. We can promote the development of modern agriculture, by introducing the stock cooperative system into rural areas. In the improvement of farmers' cooperative economic governance performance, we should strengthen normative management, optimize the government guidance, improve the property rights structure, and innovate upon the governance mechanism.

Through above-mentioned reforms, we can help the people to get rich quickly, narrow the gap between urban and rural areas, and raise the level of urban-rural coordinated development.

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agriculture^[5]. It indicates that promoting the agricultural structure adjustment, achieving the transformation of agricultural management system, expanding the farmers' income sources, and building harmonious community in rural areas, are important aspects of the construction of urban agriculture. Through promoting agricultural organizing degree and relying on resources and geographical location advantages, industrial management of agriculture can enhance the development of the characteristic industry, and strengthen the vitality of the industrial chain, thereby achieving the optimal allocation and efficient use of agricultural production resources. It is an effective measure for agricultural industrial structure adjustment, a fundamental way to improve agricultural comprehensive competitiveness, and also an important channel for increasing added value of agricultural products and farmers' income, which is of important significance to the advance of modern

agriculture construction, innovation of agricultural management system, and acceleration of development of urban agriculture.

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