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The Impact of Income Gap between Urban and Rural on Chinese Economic Growth: Based on the Perspective of Fiscal Expenditure Structure

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***Abstract*—Against the backdrop that the urban-rural gap is widening, this paper conducts a descriptive analysis of the urban-rural gap in China from 1978 to 2016. Combining the fiscal expenditure structure, this paper measures the income gap, per capita GDP, fiscal per capita expenditure of general public services, science, technology, culture and health, social security, employment and national defense expenditure in the east China, central China and west China, respectively. The fixed effect model and the OLS model is used to verify the relationship among the urban-rural income gap, fiscal expenditure structure and China's economic growth in China, east China, central China and west China, respectively. Research results suggest that the urban-rural income gap has a significantly negative impact on China's economic growth. Elimination of the negative impact of the urban-rural income gap on China's economic growth relies on the role of the fiscal expenditure structure in adjusting the urban-rural income gap. Meanwhile, it is necessary to properly shrink the percentage of general public services and national defense in the fiscal expenditure structure, and improve the percentage of expenditure of science, technology, culture and health as well as percentage of input in rural areas.**

Keywords—income gap; fiscal expenditure structure; production factors

I. INTRODUCTION

In 1978, China adopted the policy of reform and opening-up. On the one hand, the policy allowed China to change the isolation of an important production factor, namely labor force between rural and urban areas. Transfer of rural labor and land, which were not fully utilized, to urban areas significantly increased the utilization rate of resources. On the other hand, through opening-up, advanced equipment and technology were introduced to China. This enabled China to improve its production technological and narrowed down the technological gap between China and developed countries. All in all, through reform and opening-up, China has made remarkable economic achievements. A case in point is that the per capita GDP of China increased by 53,593 RMB in 2016 to be 140 folds higher than that in 1978 (China Statistical Yearbook).

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However, China has overemphasized economic growth while ignoring the issue of social equality. According to China's economic development strategy, production factors and resources should first satisfy development of heavy industries in urban areas. Because of the limited social resources, the rural labor force flows to urban areas, so does social capitals. China's input in urban areas is far higher than that for rural areas, the latter of which almost has no substantial support policies to fuel their economic development. As a result, income disparity has emerged in China, and the degree of disparity keeps deepening. Gini coefficient, a measure of wealth gap, rose from 0.18 in 1978 to 0.465 to 2016 China Statistical Yearbook. Currently, China has become the country which is faced with a huge income disparity among its people. Research has shown that income disparity among Chinese residents is mainly reflected as income disparity between rural and urban areas. The widening gap of income between rural and urban areas might exert, to some extent, a negative influence on China's economic development.

Based on the above introduction, this paper mainly studies the potential influence of income gap between urban and rural areas on economic growth.

II. DATA DESCRIPTION

A. Sources of Data

In describing the income gap between urban and rural areas in China, the data used in the article are: per capita disposable income of China's urban residents from 1978 to 2016, per capita net income of rural residents, and per capita GDP of China, which come from China Statistical Yearbook.

B. Data Processing

Due to changes in the statistical standards of the National Bureau of Statistics of China, after 2014, rural per capita net income data for 31 provinces in China is missing; after 2016, the China rural per capita net income data are missing.

Considering that too many time series are selected, a singular matrix is generated.

Therefore, in order to complement the corresponding data for research as much as possible, the article follows the trend characteristics of per capita net income of rural residents in China's eastern, central and western regions after weighted per capita processing. The polynomial model is used to supplement the per capita net income of rural residents in eastern China from 2014 to 2016. The model , the fitting effect is good. The polynomial model is used to supplement the per capita net income of rural residents in central China from 2014 to 2016. The model , the fitting effect is good. The polynomial model is used to supplement the per capita net income of rural residents in western China from 2014 to 2016. The model , the fitting effect is good. According to the data trend characteristics, the polynomial model is used to supplement the 2016 China rural per capita net income data. The model, the fitting effect is good.

C. Interpolation Processing

On the empirical side, in order to eliminate heteroskedasticity, the article conducted logarithmic processing of data on general public services, science, education, culture and health, social security employment, and defense spending. At the same time, logarithmic processing is helpful in analyzing the impact of fiscal expenditure on general public services, science, education, culture and health, social security employment, defense spending, and the impact of rising or falling 1% on GDP per capita.

III. DATA ANALYSIS

A. Analysis of the Current Situation of Income Gap between Urban and Rural Areas in China

1) Trends of income changes of urban and rural residents in China

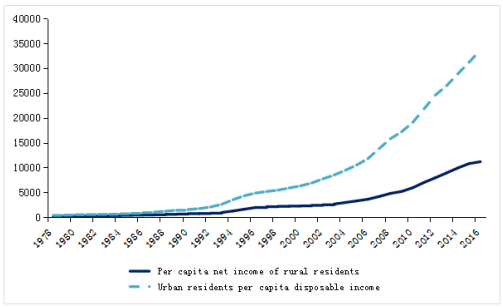

Fig. 1. Trends of income changes of urban and rural residents in China

From table I, It can see that after 1978, the per capita disposable income of urban residents and the per capita net income of rural residents in China have a growing trend. After 1992, the growth trend is obvious, but the per capita disposable income of urban residents is significantly higher than that of rural residents. And as time goes by, this gap is gradually expanding. As of 2016, the disposable income of urban residents was 97.89 times that of 1978, while the net income of rural residents was 83.47 times that of 1978.

2) Trends of Income Gap between Urban and Rural Areas

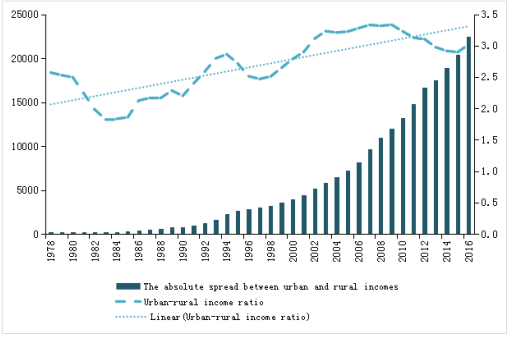

Fig. 2. Urban-rural income gap trends

It can be seen from table II that the overall income gap between urban and rural areas in China continues to expand. Judging from the absolute difference in urban-rural income, the absolute spread between urban and rural incomes in the remaining years all showed a year-on-year increase, with the exception of the absolute spread between urban and rural incomes in 1981-1983. From the perspective of the income ratio between urban and rural areas, except for the 1979-1983 and 2009-2015 years, the decline rate is more obvious, and the rising trend in other years is more significant, and the urban-rural income ratio in 2002-2012 has remained above 3.

3) Analysis of the changing trend of China's urban-rural income gap and per capita GDP

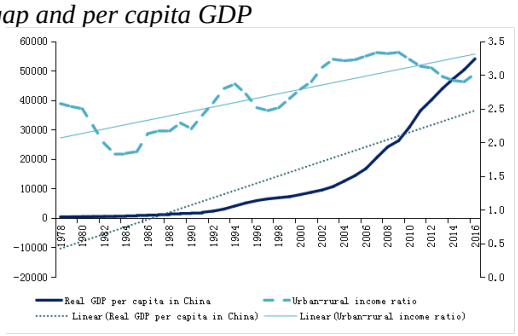

Fig. 3. Analysis of the changing trend of China's urban-ruraliIncome gap and per capita GDP

From the linear relationship between urban-rural income ratio and per capita GDP, it can see that the urban-rural income ratio and economic growth both show an overall growth trend over time. However, its effect on economic growth needs further empirical analysis.

B. Empirical Study on the Income Gap between Urban and Rural Areas and the Structure of Fiscal Expenditure on China's Economic Growth

1) Descriptive statistics of research data

Regarding the per capita GDP, urban-rural income gap in eastern, central and western China from 2005 to 2016, per capita fiscal expenditures in the east, middle, and west areas: general public services, science, education, culture and health, social security and employment, defense spending, descriptive statistics, and various variables the minimum, maximum, and standard deviations are as follows:

TABLE I. DESCRIPTIVE STATISTICS OF URBAN-RURAL INCOME RATIO AND GDP PER CAPITA IN EAST, CENTRAL AND WEST CHINA

	Y1	Y2	Y3	X1	X2	X3
Mean	49369.53	27786.75	25860.66	2.74	2.71	3.41
Maximum	76871.30	47520.54	46319.90	2.96	2.96	3.75
Minimum	23321.37	11107.88	9309.90	2.27	2.27	2.80
Std. Dev.	18029.77	12330.51	12554.10	0.24	0.24	0.34
Observation	12	12	12	12	12	12

Y1, Y2, and Y3 represent the per capita GDP of the eastern, central, and western regions, respectively, and X1, X2, and X3 represent the urban-rural income ratios of the eastern, central, and western regions, respectively.

From table 1, we can see that the minimum values of GDP per capita in East, Central, and West China from 2005 to 2016 were 23,321.37, 1107.88, and 9309.90, respectively, and the maximum values were 76,871.30, 47,520.54, and 46,319.90 respectively, the average GDP per capita in the eastern, central and western regions was 49,369.53 yuan, 27,786.75 yuan, and 25,860.66 yuan respectively, that is, the average economic growth level in the eastern region was significantly higher than that in the central and western regions. The average economic growth rate in the central region was slightly higher than that in the western region. The standard deviation of per capita GDP in the eastern region is the largest, that is, the difference in GDP per capita between the eastern regions is large.

The minimum values of the urban-rural income gap in eastern, central and western regions were 2.27, 2.27, and 2.80, and the maximum values were 2.96, 2.96, and 3.75 respectively, the average levels of the urban-rural income gap in the eastern, central and western regions were 2.74, 2.71, and 3.41 respectively. That is, the average urban-rural income gap in the western region is significantly higher than that in the eastern and central regions. The average urban-rural income gap in the eastern region is slightly higher than that in the central region. The per capita disposable income of urban residents in the western region is about 3.41 times that of rural per capita net income. The per capita disposable income of urban residents in the eastern region is 2.74 times that of rural per capita net income. The per capita disposable income of urban residents in the central region is about the rural per capita net income. 2.71 times. The standard deviation of the income gap between urban and rural areas in the western region is the largest, that is, the income gap between urban and rural areas in the western regions varies greatly.

TABLE II. DESCRIPTIVE STATISTICS OF PUBLIC SERVICES IN THE EAST, CENTRAL AND WEST OF CHINA, EXPENDITURE OF SCIENCE, EDUCATION, CULTURE AND PUBLIC HEALTH.

	Z1	Z2	Z3	R1	R2	R3
Mean	744.65	619.21	771.67	2062.78	1489.22	1816.66
Maximum	1011.74	1088.52	1314.80	3946.86	3045.26	3734.26
Minimum	428.26	167.37	268.66	560.33	316.16	378.35
Std. Dev.	197.65	289.63	344.31	1131.49	919.43	1131.23
Observation	12	12	12	12	12	12

Z1, Z2, and Z3 represent general public services in the east, central, and western regions, respectively. R1, R2, and R3 represent expenditures on science, education, culture, in the eastern, central, and western regions, respectively.

From table 2, it can be seen that the minimum per capita public expenditure for public services in the eastern, central and western regions from 2005 to 2015 was 428.26 yuan, 167.37 yuan, and 268.66 yuan respectively, with the maximum being 1011.74 yuan, 1088.52 yuan, and 1314.80 yuan respectively, the average expenditures in the east, central and western regions were 744.65 yuan, 619.21 yuan, and 771.67 yuan, that is, the per capita public service investment in the western region was higher than that in the eastern and central regions, and the average per capita public service investment in the central region was the least.

The minimum per capita expenditure on science, education, culture, and health of the eastern, central and western regions was 560.33 yuan, 316.16 yuan, and 378.35 yuan respectively, and the maximums were 3946.86 yuan, 3045.26 yuan, 3734.26 yuan, respectively, the average value is 2062.78 yuan, 1489.22 yuan, and 1816.66 yuan, that is, the input in the eastern region is significantly greater than that in the middle and western regions, and the =the central region input is the least.

TABLE III. STATISTICS ON SOCIAL SECURITY EMPLOYMENT PER CAPITA IN EAST, CENTRAL, AND WEST CHINA AND DEFENSE EXPENDITURE

	W1	W2	W3	T1	T2	T3
Mean	716.95	730.20	867.78	14.90	8.67	13.18
Maximum	1252.10	1302.97	1641.76	29.89	17.54	26.03
Minimum	263.94	262.53	257.53	2.70	1.49	2.24
Std. Dev.	328.38	348.90	466.17	8.93	5.29	7.73
Observation	12	12	12	12	12	12

W1, W2, and W3 represent social security and employment in the eastern, central, and western regions, respectively. T1, T2, and T3 represent defense spending in the east, central, and western regions, respectively.

From table 3, it can be seen that the minimum per capita social security and employment expenditures in the East, Central, and West China from 2005 to 2015 were 263.94 yuan, 262.53 yuan, and 257.5 yuan respectively, with the maximum of 1252.10 yuan, 1302.97 yuan, and 1641.76 yuan respectively, the average expenditures in the east, central and western regions were 716.95 yuan, 730.20 yuan, and 867.78 yuan, which means that the investment spending per capita for social security in the western region was higher than that in the eastern and central regions. The investment per capita for social security in the eastern region was the least.

The minimum per capita financial expenditure for defense in the eastern, central and western regions was 2.70 yuan, 1.49 yuan, and 2.24 yuan respectively, with the maximum of 29.89 yuan, 17.54 yuan, and 26.03 yuan respectively, the average national defense spending per capita in the eastern, central and western regions was 14.90 yuan, 8.67 yuan, and 13.18 yuan respectively, that is, the national defense investment per capita in the eastern region was greater than that in the middle and western regions, and the education investment in the central region was the least.

2) An empirical study on the national and rural income gap based on the panel data of China's eastern, central, and western regions and the empirical study of fiscal expenditure structure on economic growth

In order to explore the national income gap between urban and rural areas and the impact of fiscal expenditure structure on economic growth, the paper builds the following regression models based on the East, Middle and West panel data of China, and uses hybrid least-squares method, fixed effect model, and random effect model for regression testing.

$$PGDP_{it} = \alpha_0 + \alpha_1 income\_ratio_{it} + \mu_{it} \quad (1)$$

$$PGDP_{it} = \alpha_0 + \alpha_1 income\_ratio_{it} + \alpha_2 public_{it} + \alpha_3 education_{it} + \alpha_4 employment_{it} + \alpha_5 defense_{it} + \mu_{it} \quad (2)$$

$$PGDP_{it} = \alpha_0 + \alpha_1 income\_ratio_{it} + \alpha_2 public_{it} + \alpha_3 education_{it} + \alpha_4 employment_{it} + \alpha_5 defense_{it} + c_i + \mu_{it} \quad (3)$$

Among them, $PGDP_{it}$ represents GDP per capita (as an explanatory variable), α_0 represents a constant term, $\alpha_1 income\_ratio_{it}$ represents urban-rural income ratio (for explanatory variables), $\alpha_2 public_{it}$, $\alpha_3 education_{it}$, $\alpha_4 employment_{it}$, $\alpha_5 defense_{it}$ respectively indicate the control variables, that is, the structure of fiscal expenditure: General Public Service Expenditure, Expenditure on Science, Education, Culture and Public Health, Social Security Employment Expenditure, and National Defense Expenditure. (In order to eliminate the influence of heteroscedasticity, the data selected in this section are all logarithmic). μ_{it} is a random disturbance item. C_i does not change with time.

TABLE IV. REGRESSION RESULTS BASED ON PANEL DATA FOR CHINA EASTERN, CENTRAL, AND WESTERN REGIONS

Explanatory variables	Explained variables: GDP per capita			
	Model (1.1)、(1.2)		Model (2)	Model (3)
	Mixed OLS		Fixed effect	Random effect
Income-ratio	-0.9357***	-0.2820***	-0.1000*	-0.2820***
	(-5.89)	(-4.70)	(-1.96)	(-4.70)
Ln Public		-0.1841	0.0277	-0.1841
		(-1.61)	(0.57)	(-1.61)
Ln Education		1.7638***	0.6028***	1.7638***
		(7.74)	(4.62)	(7.74)
Ln Employment		-1.2202***	0.2087*	-1.2202***
		(-11.91)	(1.73)	(-11.91)
Ln Defense		-0.1232	-0.1402	-0.1232
		(-1.04)	(-2.81)	(-1.04)
_cons	13.0656***	7.7243***	4.9879***	7.7243***
	(27.58)	(8.92)	(9.46)	(8.92)
R2	0.5054	0.9833		
R2(Adjustment)	0.4908	0.9805		
F test value		352.40***		
Wald chi2(5)				1762.02***
Hausman chi2(5)			76.45***	
Observations	36	36	36	36

Note: *, **, *** are the significance levels of 10%, 5%, and 1% respectively,t values are in parentheses,_cons is the intercept term.

Table 4 gives the full sample estimate. The column 1 is the explanatory variable, columns 2 and 3 are the regression results of the mixed least squares method (POOL), and the column 2 is the regression results that only consider the relationship between the explanatory variables urban-rural income gap and the per capita GDP of the explained variable. 3 The estimation result after adding the control variable. Columns 4 and 5 are the estimated results of fixed effects (FE) and random effects (RE), respectively.

The estimates in columns 2 and 3 show that there is a significant negative correlation between urban-rural income and GDP per capita, and the regression coefficient in the column 2 explains the urban-rural income ratio is -0.9357, which is significant at the 1% confidence level. The urban-rural income gap has a greater negative impact on per capita GDP. he coefficient of regression of the urban-rural income ratio in the column 3 is -0.2820. After adding the corresponding control variables, the estimation results show that the negative impact of the urban-rural income gap on per capita GDP has decreased, but it is still significant at the 1% confidence level. Column 5 considers the random effects of the explanatory variables urban-rural income ratio and other control variables, The estimation results are the same as those in the column 3.Column 4 shows the fixed-effects estimation results, showing a coefficient of income ratio of -0.1, still negative, significant at the confidence level of 10%,compared with other regression coefficients, it is clear that the urban-rural income gap has a significant negative impact on per capita GDP.

The Hausman test value shows that under the East, Central, and West panel data, a fixed effect measurement model should be used. The increase in the urban-rural income gap by 1 unit will reduce the per capita GDP by 0.1 unit.

From the fixed-effects estimation results, the logarithmic estimation coefficient of expenditure on science, education, culture, and health is positive, which is significant at the 1% confidence level. This shows that the increase in expenditure on science, education, culture, and health will increase the per capita GDP, which will have a positive impact on GDP per capita. For every 1% increase in expenditure, the per capita GDP increases by 0.6028 units. Similarly, the logarithmic coefficient of social security and employment expenditure is positive, which is significant at the 10% confidence level. This shows that the increase in social security and employment expenditure will increase GDP per capita, which will have a positive impact on per capita GDP. For every 1% increase in social security and employment expenditures, per capita GDP increases by 0.2087 units. It can be seen that the expenditure on science, education, culture and public health has a greater impact on GDP per capita than social security and employment expenditure. The other two control variables, the logarithmic coefficient of general public service expenditure and the logarithmic coefficient of national defense expenditure, are still not significant at a confidence level of 10%.

3) Empirical study on the impact of urban-rural income gap and fiscal expenditure structure on economic growth in China

Based on the impact research at the national level, it can be concluded that expenditures on science, education, culture and public health, and social security employment expenditures play a significant role in the negative impact of the urban-rural income gap on economic growth. This is because science, education, culture and health, social security and employment play a positive role in economic growth. Therefore, based on the national level, weakening the negative impact of the urban-rural income gap on economic growth should increase the share of expenditure on science, education, culture and health, social security and employment in fiscal expenditure.

4) The linear regression analysis of urban-rural income gap in eastern, central and western China and the structure of fiscal expenditure on economic growth

In order to explore separately the income gap between urban and rural areas in China's eastern, central and western regions and the impact of fiscal expenditure structure on economic growth, and regression tests were performed using the least-squares method.

TABLE V. RESULTS OF THE EASTERN REGION REGRESSION

Explanatory variables	Explained variables: GDP per capita				
	OLS				
	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Income_ratio	-1.3243***	-0.2465***	-0.1322*	-0.0039	0.0287
	(-4.43)	(-3.29)	(-2.07)	(-0.05)	(0.33)
Ln Public		1.2065***	0.1841	0.1103	-0.0456
		(19.04)	(0.57)	(0.41)	(-0.14)
Ln Education			0.4891**	-0.1091	0.2538
			(3.18)	(-0.37)	(0.51)
Ln Employment				0.8523*	0.6241
				(2.22)	(1.35)
Ln Defense					-0.0850
					(-0.92)
_cons	14.3623***	3.4788***	6.2399***	5.3286***	5.2402***
	(17.51)	(5.92)	(6.48)	(6.00)	(5.82)
R2	0.6628	0.9918	0.9964	0.9979	0.9981
R2(Adjustment)	0.6290	0.9900	0.9950	0.9967	0.9966
F test value		546.34***	735.36***	824.18***	644.35***
Observations	**12**	**12**	**12**	**12**	**12**

Note: *, **, *** are the significance levels of 10%, 5%, and 1% respectively,t values are in parentheses,_cons is the intercept term.

Table 5 shows the regression results for the eastern region, the OLS estimation results under different variables are taken into account respectively. The model (4) only examines the relationship between the explanatory variables and the explained variables, and the urban-rural income ratio regression coefficient is -1.3243, significant at 1% confidence level. Model (5) examines the regression of the general public service spending with the addition of control variables. The regression coefficient for urban-rural income is -0.2465, under the condition that the control variable's general public service expenditure is unchanged, the per capita GDP will decrease by 0.25 units for every 1 unit increase in the urban-rural income gap. Model (6) adds public service expenditures and expenditures for science, education, culture, and health. The estimation results show that the regression coefficient between urban and rural income ratios is still negative, and is significant at a confidence level of 10%, indicating that the urban-rural income gap have negative influences for per capita GDP. Model (7) adds control variables for social security and employment expenditure on the basis of model (6). The estimation results show that the urban-rural income gap coefficient is negative. Model (8) has added two control variables: social security, employment expenditure, and defense expenditure. The estimation results show that the urban-rural income gap coefficient is positive, but it is no longer significant at the 10% confidence level.

From the regression results of Models (4), (5), and (6), it can be concluded that the income gap between urban and rural areas in the eastern part of China has a negative effect on economic growth, along with the addition of control variables such as general public service expenditure and expenditure on science, education, culture, and health, the negative effect has weakened. At the same time, it can see from the models (5) and (6) that with the addition of the random variable of expenditure on science, education, culture and public health, the positive effect of general public services on economic growth is no longer significant.

TABLE VI. RESULTS OF THE CENTRAL REGION REGRESSION

Explanatory variables	Explained variables: GDP per capita				
	OLS				
	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Income_ratio	-1.8302***	-0.7928***	-0.1849**	-0.1699	-0.2112*
	(-7.12)	(-4.14)	(-2.31)	(-1.78)	(-2.04)
Ln Public		0.5223***	-0.1509*	-0.1451*	-0.1835*
		(6.66)	(-2.18)	(-1.93)	(-2.19)
Ln Education			0.7108***	0.6611***	0.5862**
			(10.27)	(4.06)	(3.29)
Ln Employment				0.0709	0.0496
				(0.34)	(0.24)
Ln Defense					0.1002
					(1.02)
_cons	15.0928***	8.9934***	6.5468***	6.3635***	7.1934***
	(21.57)	(9.33)	(18.12)	(9.68)	(6.89)
R2	0.8352	0.9722	0.9980	0.9981	0.9984
R2(Adjustment)	0.8187	0.9660	0.9973	0.9970	0.9970
F test value		157.48***	1358.42***	906.46***	729.86***
Observations	**12**	**12**	**12**	**12**	**12**

Note: *, **, *** are the significance levels of 10%, 5%, and 1% respectively,t values are in parentheses,_cons is the intercept term.

Table 6 shows the regression results for the central region. As in the eastern region, studies in the central region consider the OLS estimation results for the central region under different variables, the model (4) only examines the relationship between the explanatory variables and the explained variables, and the urban-rural income ratio regression coefficient is -1.8302, significant at 1% confidence level, model (5) examines the regression of the general public service spending with the addition of control variables. The regression coefficient for urban-rural income is -0.7928, under the condition that the control variable's general public service expenditure remains unchanged, the increase in the urban-rural income gap by 1 unit will reduce the per capita GDP of 0.79 units. Model (6) has added public service expenditures and expenditures for science, education, culture, and health. The estimation results show that the regression coefficient of urban-rural income ratio is still negative, and it is significant at a confidence level of 5%, indicating that the urban-rural income gap have negative effect for per capita GDP. Model (7) adds control variables for social security and employment

expenditure on the basis of model (6). The estimation results show that the urban-rural income gap coefficient is negative, but it is no longer significant at the 10% confidence level. Model (8) was added to two control variables: social security, employment expenditure, and defense expenditure. The urban-rural income gap coefficient was negative, and it was significant at a confidence level of 10%. The regression results of models (4), (5), (6), and (8) show that the negative impact of the urban-rural income disparity in the central region on economic growth has weakened. with the general public services, science, education and health control variable added.

However, from model (5) and (6), it can be seen that with the addition of the control variable of expenditure on science, education, culture and public health, the significant positive impact of public services on GDP per capita becomes negative. From (6) and (8), it can be found that with the addition of two variables such as social security, employment, and defense spending, the positive effect of spending on science, education, culture, and health on the economic growth in the central region has weakened.

TABLE VII. WESTERN REGION REGRESSION RESULTS

Explanatory variables	Explained variables: GDP per capita				
	OLS				
	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Income_ratio	-1.4141***	-0.3937**	-0.1804***	-0.1824***	-0.1317**
	(-6.21)	(-3.10)	(-4.50)	(-4.13)	(-2.55)
Ln Public		0.8011***	-0.1919*	-0.1963	-0.1584
		(9.68)	(-2.00)	(-1.86)	(-1.60)
Ln Education			0.7648***	0.7923**	0.9006**
			(10.63)	(4.69)	(5.34)
Ln Employment				-0.0310	-0.0414
				(-0.18)	(-0.27)
Ln Defense					-0.1024
					(-1.56)
_cons	14.8630***	6.1431***	6.3433***	6.3837***	5.4844***
	(19.03)	(6.58)	(24.85)	(18.21)	(8.33)
R2	0.7941	0.9819	0.9988	0.9988	0.9992
R2(Adjustment)	0.7735	0.9779	0.9984	0.9981	0.9985
F test value		244.78***	2231.39***	1471.36***	1419.98
Observations	**12**	**12**	**12**	**12**	**12**

Note: *, **, *** are the significance levels of 10%, 5%, and 1% respectively,t values are in parentheses,_cons is the intercept term.

Table 7 examines the situation in the western region. The five models in Table 11 all show that the regression coefficient of urban-rural income ratio is negative, and both are significant at the 5% confidence level. In examining the addition of different control variable models, There are some differences in the regression coefficients. However, it shows that the greater the urban-rural income gap, the smaller the per capita GDP, because the urban-rural income gap has a negative impact on GDP per capita.

From models (4)-(8), it can see that with the introduction of control variables such as general public services, science, education, culture and health, social security and employment, and defense spending, the negative impact of the urban-rural income gap on economic growth will increase by 1 unit per unit of the urban-rural income gap, and the per capita GDP will decrease by 1.4141 units, transfer that the income gap between urban and rural areas is increased by one unit, the per capita GDP is reduced by 0.1317 units. Model(5)-(8) shows that the expenditure on science ,education, culture, and health has a positive impact on per capita GDP, and is significant at the 1% confidence level. It shows that expenditures on science, education, culture and health have a significant positive impact on the economic growth in the west, and play an important role in weakening the negative impact of the urban-rural income gap on economic growth.

IV. CONCLUSION AND RECOMMENDATIONS

A. Continuously Increasing the Fiscal Expenditure of Science, Education, Culture and Public Health

An important cause of the income distribution gap is the difference of personal endowment (Xu & Wang). According to the human capital theory of Schultz, an American economist, the educational expenditure can influence the income distribution gap from two aspects. First, the overall scale of the educational expenditure. On the whole, the higher the total educational expenditure is, the more expenditure can be used to improve laborers' qualities, skills and knowledge reserve. This has a direct influence on improvement of their payment. Second, the distribution of the educational expenditure in urban and rural areas can also directly influence the urban-rural income gap. At present, elementary education in China's rural areas has already reached the same level of that in urban areas, but there is still a large gap in the secondary and higher education between the two (Lian). If more educational expenditure can be spent in improving the rural educational expenditure, it can positively contribute to narrowing of the urban-rural educational gap. As the overall educational level of rural residents increases, the demographic advantage of the rural areas can be directly transformed into the advantage of human capitals. Thereby, the income of rural residents will increase as well.

B. Continuously Improving the Fiscal Social Security and Employment Expenditure

After the first distribution pattern, the government can realize redistribution through transfer payment. This can reduce the gap of income distribution in preliminary distribution,(Duan;Tang).As an important means of transfer payment, expenditure of social security can directly influence the urban-rural income gap ,(Zhao) .Therefore, it is necessary to increase expenditure of social security, particularly expenditure for rural residents. Only in this way can China gradually expand the coverage of beneficiaries of social security, improve the guarantee level, and reduce rural residents' living expense incurred by payment of social security. Meanwhile, more policy-oriented subsidies should be provided for unemployed urban residents. The rural residents should also be guided on how to realize reemployment. This can help guarantee the sources of income for residents to make a living.

C. Moderate Rreduction of The Expenditure of General Public Services and National Defense

The number of beneficiaries of general public services is usually limited, which cannot effectively adjust the income distribution (Wang & Yin). Besides, national defense expenditure can increase the burden of the local fiscal expenditure and limit the financial power of the local government (Zhao). Hence, it is necessary to upgrade the

utilization efficiency of capitals under the prerequisite of maintaining necessary expenditure. To the end, the expenditure of general public services and national defense can be properly cut to increase the percentage of the expenditure of science, technology, culture and public health as well as social security and employment (particularly the fiscal expenditure for rural areas) in the fiscal expenditure structure. This can help optimize the fiscal expenditure structure and give full play the role of the fiscal expenditure structure in adjusting the urban-rural residents' income gap.

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