Research on the Relationship between Structural Change and Economic Growth in Guangzhou——An Empirical Analysis Based on VAR Model

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Abstract. High-quality development is an active choice for socialism with Chinese characteristics to enter a new era. As one of the four first-tier cities, Guangzhou should set an example in promoting high-quality economic development. Based on the structural factors of economic development, this paper uses vector autoregressive model (VAR) to empirically analyze the dynamic relationship between consumption structure, industrial structure, ownership structure change and economic growth in Guangzhou from 1985 to 2017. The results show that there is a two-way Granger causality between Guangzhou’s consumption structure, industrial structure, ownership structure change and economic growth. The two-way causal relationship between industrial structure change and economic growth is the most significant. From the results of variance decomposition, the consumption structure changes have the highest contribution to the trend of economic growth fluctuations.

1. Introduction

The Chinese economy has entered a stage of high quality development. As the capital of Guangdong Province and a developed coastal city in the east, Guangzhou needs to take the initiative to adapt to the new normal of economic development. In the definition of traditional economics, economic growth generally refers to the increase in GDP or per capita GDP. The main factors determining economic growth are institutions, resources and technology. High-quality development is a new expression put forward by the Communist Party’s 19th National Congress. At present, relevant research results are mainly concentrated on economic factors, structural factors, technical factors and policy factors of high-quality development. Xuemin Xu (1998) believed that the quality of economic development was an efficiency improvement, mainly reflected in the mode of economic growth and economic restructuring [1]. Chongzong Leng (2008) pointed out that the quality of economic development was the coordinated development of economy and society, and established an economic development quality evaluation index system [2]. Junkuo Zhang et al. (2019) believed that the key to shifting to high-quality development was to accelerate the formation of appropriate institutional mechanisms [3]. Weimin Jing et al. (2019) demonstrated that the influence of ownership structure on regional economic growth was related to the market institutional environment [4]. Yunhang Wang et al. (2019) argued that consumption upgrading and industrial restructuring were important for high-quality economic development [5]. In this paper, the consumption structure, industrial structure and...
ownership structure are taken as the structural factors of high-quality economic development. The VAR model and VEC model are used to empirically analyze the relationship between three structural factors and economic growth of Guangzhou in order to provide a theoretical support for Guangzhou to better guide residents' consumption, establish an industrial structure and ownership structure system that is compatible with economic development, and promote high-quality economic development.

2. Analysis of the current situation of consumption structure, industrial structure, ownership structure and economic growth in Guangzhou

2.1. Analysis of the Status Quo of economic growth in Guangzhou
Over the past 30 years, Guangzhou's GDP has grown rapidly. The total amount has increased from 12.4 billion yuan in 1985 to more than 2 trillion yuan, the average annual growth rate is over 13%. The comprehensive economic strength has been at the forefront of the country. Figure 1 shows the nominal GDP of Guangzhou from 1985 to 2017, it can be seen that Guangzhou's economy continues to develop rapidly and has accelerated upwards since 2005. By 2017, the total economic output will be about 2.15 trillion yuan.

![Figure 1. Trends in nominal GDP of Guangzhou City from 1985 to 2017](Source: Guangzhou Statistical Yearbook)

2.2. Analysis of the Status Quo of Consumption Structure, Industrial Structure and Ownership Structure in Guangzhou
This paper selects the Engel coefficient of urban residents in Guangzhou as the representative variable of consumption structure [6]. According to the law of economic development, with the growth of economy, the Engel coefficient will show a downward trend, and the consumption structure of residents will gradually upgrade. Serviceization is an important indicator of the transformation and upgrading of industrial structure. Referring to Rukai Gong (2016) measurement method for industrial structure upgrading [7], the ratio of the output value of the tertiary industry and the secondary industry in Guangzhou is used as a representative variable to measure the upgrading of industrial structure. The increase in the ratio means that the industrial structure has moved from the industrial economy to the service economy[8]. The ownership structure is expressed by the amount of fixed assets investment of the state-owned economy in Guangzhou divided by the total investment in fixed assets. The smaller the ratio, the more diversified the form of ownership. The trend of consumption structure, industrial structure and ownership structure in Guangzhou from 1985 to 2017 is shown in Figure 2:
The above figure shows that the Engel coefficient of urban residents in Guangzhou has gradually declined over time. By 2017, the Engel coefficient of urban residents fell to 32.1%, and Guangzhou has entered the ranks of wealthy regions. The ratio of industrial structure rose from 70% in 1985 to 254% in 2017, and the proportion of tertiary industry has exceeded 70%, indicating that Guangzhou has entered the stage of service economy. The ratio of ownership structure shows a step-down decline, which means that the ownership structure of Guangzhou has gradually evolved from the state-owned economy to the state-owned, private and foreign-funded forms of ownership.

3. Research methods and variable selection

3.1. Research method

In this paper, the vector autoregressive model (VAR) is used to research the relationship between consumption structure, industrial structure, ownership structure and economic growth in Guangzhou. The VAR model is a dynamic simultaneous equation model proposed by the American econometrician Sims in 1980. The model does not set relevant constraints on the variable index parameters. The variable on the right side of the equation includes the lag term of all endogenous variables. Thus, the univariate autoregressive model is extended to a vector autoregressive model consisting of multiple time series variables. The VAR model overcomes the difficulty of traditional simultaneous equations in estimating exogenous and endogenous variables. It can also be used to analyze and predict interconnected multivariate time series systems to explain the impact of various economic shocks on economic variables. This paper uses Eviews10.0 metrology analysis software to conduct empirical research through impulse response analysis and variance decomposition, establishes a vector error correction (VEC) model for Guangzhou's consumption structure, industrial structure, ownership structure and economic growth based on Johansen cointegration test. At the same time, the Granger causality test was carried out, and the corresponding conclusions were finally obtained.

3.2. Variable selection

Taking into account the interference of price factors, the GDP of this paper is calculated according to the comparable price (1978 as the base period), as an indicator reflecting the economic growth of Guangzhou. Since the logarithmic transformation does not change the cointegration relationship of the original variables, eliminate the effects of heteroscedasticity and dimension to a certain extent, this paper performs natural logarithmic transformation on each variable, which is \( \text{LENGLES} \),
LINDUS_STR, LOWNER_STR, LR_GDP represents the consumption structure, industrial structure, ownership structure and economic growth. The selected variable data are from the “Guangzhou Statistical Yearbook”. Since some data in 2018 have not been published, the time span is from 1985 to 2017.

4. An Empirical Analysis of Consumption Structure, Industrial Structure, Ownership Structure and Economic Growth in Guangzhou

4.1. Time series stationarity test (PP test)
Considering that there may be problems such as heteroscedasticity and autocorrelation in time series, this paper uses PP test to test the stationarity of time series. The results are shown in Table 1:

| Variable          | Test value | Test critical values(5% level) | DW value | Conclusion |
|-------------------|------------|-------------------------------|----------|------------|
| LR_GDP            | -0.3230    | -2.9571                       | 1.088    | Unstable   |
| LEN              | -0.9953    | -2.9571                       | 2.22     | Unstable   |
| LENGELS          | -0.5202    | -2.9571                       | 1.92     | Unstable   |
| LINDUS_STR        | -0.4188    | -2.9571                       | 1.95     | Unstable   |
| LOWNER            | -0.4188    | -2.9571                       | 1.95     | Unstable   |
| Variable first order difference | Test value | Test critical values(5% level) | DW value | Conclusion |
| ΔLR_GDP          | -3.2605    | -2.9604                       | 2.184    | I(1)       |
| ΔLEN             | -5.9768    | -2.9604                       | 1.98     | I(1)       |
| ΔLINDUS_STR       | -5.5475    | -2.9604                       | 1.99     | I(1)       |
| ΔLOWNER_STR       | -5.6191    | -2.9604                       | 2.0022   | I(1)       |

The results show that the original time series are non-stationary and are all first-order single-sequence sequences, and there may be a cointegration relationship.

4.2. VAR model construction
In order to research the long-term equilibrium and short-term relationship between Guangzhou's economic growth (LR_GDP) and urban residents' consumption structure (LENGELS), industrial structure (LINDUS_STR), ownership structure (LOWNER_STR), analyze the integrated dynamic response of each variable system, explain the impact of the economic shock of various related variables on Guangzhou's economic growth, establish an unstructured VAR model consisting of these four endogenous variables, the specific form is:

\[ y_t = c + \sum_{i=1}^{p} A_i y_{t-i} + \epsilon_t \]

\[ y_t = (LR\_GDP, LENGELS, LINDUS\_STR, LOWNER\_STR) \]

c is a constant term, p is the autoregressive lag order.

4.3. Model estimation and testing

4.3.1. Model lag order and stability test
The best lag order of the VAR model is usually determined by two methods: AIC and SC information criterion test, LR (likelihood ratio) test. According to the calculation results of the sample data, considering the restriction of the sample capacity (33) on the parameter determination, the optimal lag order is selected as 2, so the second-order lag VAR model is constructed, and the stability test is performed. The results show that the absolute value of the reciprocal of the modulus of all eigenvalues is less than 1, that is, within the unit circle, as shown in Figure 3, indicating that the model is stable.
4.3.2. Impulse response analysis

In most cases, the many coefficients in the VAR model are difficult to explain. The researchers are more concerned with the local constraints and equilibrium between the variables in the model system, and further examine how the unexpected changes of one variable affect other parts of the model, also includes the impact on itself. Impulse response analysis attempts to describe the impact of the impact of a standard deviation of random disturbances on endogenous variables, provided that the VAR model system is stable. According to the needs of this paper, the following LR_GDP, LENGELS, LINDUS_STR, LOWNER_STR equations are applied to the positive impact of the standard deviation, and the response time path of LR_GDP for different impulse sources is obtained. The specific results are shown in Figure 4:

The impulse response analysis results show:

- Economic growth: Guangzhou's GDP growth response to its own shock response time path reached its highest point in the second period, about 0.05, although it has been ups and downs
but has remained at a relatively high positive level, indicating that Guangzhou's economic growth is good. The growth of GDP has a relatively good effect on the growth of GDP in subsequent periods.

- **Industrial structure**: The promotion of industrial structure in Guangzhou has promoted economic growth year by year, and the coefficient of elasticity of growth has reached a high point since the seventh period and has stabilized, indicating that the upgrading of industrial structure has long-term and stable characteristics for promoting economic growth in Guangzhou.

- **Ownership structure**: The state-owned economy has a positive effect on Guangzhou's economic growth. The third period reached a maximum value of about 0.01. The fifth period began to gradually decay to a negative value, and the eighth period reached a minimum value and then stabilized. It shows that the state-owned economy has a significant pulling effect on Guangzhou's economic growth in the short term, with a duration of about five periods, but it has a certain inhibitory effect in the long run. The reason for this may be that the state-owned economy will "squeeze" the development space of the private economy to a certain extent, that is, the "crowding effect." The proportion of fixed investment in the state-owned economy increase, it is possible that the state-owned economy and the private economy will compete for limited credit funds. As a result, market lending rates have risen, private financing costs have increased, investment enthusiasm has decreased, and economic growth has been suppressed in the long run.

- **Consumption structure**: Generally speaking, with the development of the economy, the income level of residents will continue to increase, and the Engel coefficient will decrease. This paper uses the Engel coefficient of urban residents as the representative variable of Guangzhou's consumption structure, that is, the relationship between economic growth and consumption structure should be inverse. From the results of the impulse response, this inverse relationship gradually weakens after reaching the maximum in the sixth period, but it remains at around -0.03, indicating that the inverse relationship between the two variables is more obvious and the effect lasts longer.

### 4.3.3. Variance decomposition

Variance decomposition is the evaluation of the importance of different structural shocks by analyzing the contribution of individual structural shocks to the trend of endogenous variables. Therefore, the variance decomposition can give information on the relative importance of each random perturbation term that affects the variables in the VAR model. The results of the variance decomposition are shown in Table 2:

| Period | S.E. | LR_GDP | LENGELS | LINDUS_STR | LOWNER_STR |
|--------|------|--------|---------|------------|------------|
| 1      | 0.040275 | 100.0000 | 0.000000 | 0.000000 | 0.000000 |
| 2      | 0.069568 | 91.47487 | 4.225344 | 2.046184 | 2.253598 |
| 3      | 0.091350 | 81.82120 | 11.00078 | 4.181586 | 2.996430 |
| 4      | 0.110511 | 73.29660 | 18.13179 | 6.359099 | 2.212507 |
| 5      | 0.129404 | 67.02940 | 23.17907 | 8.087204 | 1.704321 |
| 6      | 0.147775 | 63.21966 | 25.66559 | 9.356595 | 1.758158 |
| 7      | 0.164877 | 60.89660 | 26.62131 | 10.41095 | 2.071150 |
| 8      | 0.180167 | 59.24183 | 26.91981 | 11.40452 | 2.433850 |
| 9      | 0.193499 | 57.86926 | 26.97706 | 12.38110 | 2.772577 |
| 10     | 0.205009 | 56.66124 | 26.94269 | 13.3036 | 3.065713 |

The above table gives the variance decomposition values of the consumption structure, industrial structure, and ownership structure for economic growth. It can be seen that:
In the change of LR\_GDP, the fluctuation of 4.23%~26.98% can be explained by the change of consumption structure. The fluctuation of 2.05%~13.33% can be explained by the change of industrial structure. The fluctuation of 1.70%~3.07% can be explained by the change of owner structure. Therefore, the impact of changes in consumption structure on economic growth is greater than the impact of changes in industrial structure on economic growth, and the impact of changes in consumption structure on economic growth has gradually increased in the early stage and stabilized in the later stage. In the seventh period, the predicted standard deviation of LR\_GDP is 60.90% due to its own residual impact. 26.62% is caused by the residual impact of LENGLES, 10.41% by the residual impact of LINDUS\_STR, and 2.07% by the residual impact of LOWER\_OWNER\_STR, the result of the decomposition to the rear is basically stable, which is consistent with the conclusion of the impulse response analysis. The results of variance decomposition show that the change of consumption structure is an important factor affecting Guangzhou's economic growth relative to industrial structure and owner structure, but it cannot ignore the impact of industrial structure and owner structure changes on economic growth.

### 4.4. Johansen cointegration test and establish VEC model

Although LR\_GDP, LENGELS, LINDUS\_STR, and LOWER\_OWNER\_STR are non-stationary and are all first-order single time series, there may be some kind of smooth linear combination between them. This linear combination reflects the long-term stable equilibrium relationship between variables [9], that is, the cointegration relationship. In this paper, the Johansen method is used to test the cointegration relationship. The test results are shown in Table 3:

| Hypothesized No.of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|--------------------------|------------|-----------------|---------------------|---------|
| None*                    | 0.581975   | 45.46362        | 40.17493            | 0.0134  |
| At most1                 | 0.336955   | 18.42500        | 24.27596            | 0.2287  |
| At most2                 | 0.151671   | 5.686691        | 12.32090            | 0.4752  |
| At most3                 | 0.018776   | 0.587600        | 4.129906            | 0.5049  |

The results show that there is at least one cointegration relationship between LR\_GDP, LENGELS, LINDUS\_STR, and LOWER\_OWNER\_STR. The cointegration (error correction term) equation of the normalization coefficient obtained after cointegration test is:

\[
e_{\text{ECM}} = \text{LR\_GDP} - 4.6662\text{LENGELS} - 0.3511\text{LINDUS\_STR} - 0.0677\text{LOWER\_OWNER\_STR} - 27.2120
\]

Therefore, according to Granger's theorem, can create a VAR model with cointegration constraints, that is VEC model. The specific form is as follows:

\[
\begin{align*}
\Delta \text{LR\_GDP}_t & = -0.0471 + 0.5286\Delta \text{LENGELS}_{t-1} + 0.0160\Delta \text{LINDUS\_STR}_{t-1} + 0.1646\Delta \text{LOWER\_OWNER\_STR}_{t-1} + 0.0792\epsilon_{\text{ECM}}_{t-1} + \epsilon_t \\
\Delta \text{LENGELS}_t & = -0.0204 - 0.4112\Delta \text{LR\_GDP}_{t-1} - 0.1813\Delta \text{LENGELS}_{t-1} + 0.0014\Delta \text{LINDUS\_STR}_{t-1} + 0.0014\epsilon_{\text{ECM}}_{t-1} + \epsilon_t \\
\Delta \text{LINDUS\_STR}_t & = -0.1643 - 1.088\Delta \text{LR\_GDP}_{t-1} - 0.0049\Delta \text{LENGELS}_{t-1} - 0.3932\Delta \text{LINDUS\_STR}_{t-1} + 0.0523\Delta \text{LOWER\_OWNER\_STR}_{t-1} + \epsilon_t \\
\Delta \text{LOWER\_OWNER\_STR}_t & = -0.0982 - 1.0134\Delta \text{LR\_GDP}_{t-1} - 0.5218\Delta \text{LENGELS}_{t-1} - 0.4614\Delta \text{LINDUS\_STR}_{t-1} - 0.0610\Delta \text{LOWER\_OWNER\_STR}_{t-1} + \epsilon_t
\end{align*}
\]

The model reflects the short-term fluctuations and long-term equilibrium relationship between economic growth in Guangzhou and the optimization of residents' consumption structure, industrial structure upgrading, and diversification of ownership structure. From the calculation results of the VEC model, the AIC and SC values of the model are relatively small, -11.224 and -10.068 respectively, the log-likelihood function value is relatively large, 198.97, indicating that the overall explanatory ability of the model is relatively strong. The coefficient symbol of the error correction term (ECM) is negative, which also indicates that there is a reverse correction mechanism. From the cointegration equation, the coefficient of LENGELS is significant at the confidence level of 0.05 (t=9.648) and is positive, indicating that the Engel coefficient is negatively correlated with economic growth in the long run, and the Engel coefficient is reduced by 1%, the actual GDP value increased by about 4.67%. The coefficients of LINDUS\_STR and LOWER\_OWNER\_STR are not significant. In the VEC equations, in terms of the equation of current GDP change, only the impact of the GDP change of the first phase on the current GDP change is significant (t=2.447), the coefficient is 0.5286, which means...
that when the GDP changes by 1% in the short term, there will be an impact of 0.5286% to the next period. In terms of the equation of change in the consumption structure of residents, only the impact of the GDP change in the first phase on the changes in the current consumption structure coefficient is significant ($t = -2.32$), the coefficient is $-0.4112$, which means that when the GDP changes by 1% in a short period, the coefficient of consumption structure of the next period will change by 0.4112% in the reverse direction. In terms of the equation of industrial structure change, the error correction term of the first phase of lag ($t = -3.81$) and the GDP change of the first phase of lag are significant for the current industrial structure change ($t = -3.18$), the coefficients are $-0.1643$ and $-1.1088$ respectively, indicating the industrial structure and the error between the variables is adjusted back to the equilibrium state at a rate of -0.1643. When the GDP changes by 1% in a short period, the next phase of the industrial structure will change in the opposite direction by 1.1088%. In terms of the equation of ownership structure change, the impact of changes in all other variables is not significant.

4.5. Granger causality test

Whether there is a causal relationship between variables, Granger causality test is generally used. The basic idea of Granger causality test is:

For the variables X and Y, if the change in X causes a change in Y, then the change in X should occur before the change in Y [10]. The specific results of the Granger causality test are shown in Table 4:

Table 4. Granger causality test results

| Variable            | p value | Lag 1 | Lag 2 | Lag 3 | Lag 4 | Lag 5 |
|---------------------|---------|-------|-------|-------|-------|-------|
| LR_GDP→LENGELS      | 0.3150  | 0.0268**| 0.0385**| 0.1274 | 0.2943 |
| LENGELS→LR_GDP      | 0.0232**| 0.3433 | 0.6207 | 0.6694 | 0.0456**|
| LR_GDP→LINDUS_STR   | 0.0444**| 0.0011**| 0.0116**| 0.0078**| 0.0353**|
| LINDUS_STR→LR_GDP   | 0.1780  | 0.1695 | 0.0061**| 0.0113**| 0.4192 |
| LR_GDP→LOWNER_STR   | 0.0263**| 0.0643* | 0.1521 | 0.1792 | 0.0813*|
| LOWNER_STR→LR_GDP   | 0.5976  | 0.3802 | 0.4510 | 0.5424 | 0.0633*|
| LENGELS→LINDUS_STR  | 0.1828  | 0.4588 | 0.9614 | 0.7420 | 0.9387 |
| LINDUS_STR→LENGELS  | 0.9121  | 0.2000 | 0.1198 | 0.4928 | 0.7364 |
| LENDS→LOWNER_STR    | 0.1112  | 0.2142 | 0.2372 | 0.2359 | 0.5195 |
| LOWNER_STR→LENGELS  | 0.3523  | 0.6256 | 0.8384 | 0.6174 | 0.1548 |
| LINDUS_STR→LOWNER_STR| 0.0333**| 0.1168 | 0.0232**| 0.0533*| 0.2685 |
| LOWNER_STR→LINDUS_STR| 0.1264  | 0.3055 | 0.8305 | 0.2840 | 0.6867 |

Note: ** indicates rejection of the null hypothesis at a significance level of 0.05, * indicates rejection of the null hypothesis at a significance level of 0.1.

According to the test results, the conclusion can be drawn:

- Consumption structure and economic growth: There is a lagging two-way causal relationship between Guangzhou's consumption structure and economic growth. The upgrading of residents' consumption structure can promote economic growth in the short-term and long-term, and economic growth can optimize the consumption structure of residents in the medium and long term. This is consistent with the basic law that the Engel coefficient will show a downward trend as the regional wealth increases.

- Industrial structure and economic growth: The two-way causal relationship between industrial structure change and economic growth in Guangzhou is the most significant. At a significant level of 0.05, Guangzhou's economic growth can drive industrial structural changes both in the short and long term, and industrial structure changes can promote economic growth in the medium and long term.

- Ownership structure and economic growth: There is also a two-way causal relationship between the ownership structure of Guangzhou and economic growth. At a level of significance of 0.05, economic growth can cause ownership structure changes in the short term. At the level of significance of 0.1, Guangzhou's economic growth can cause ownership
structure changes in the long run, represent as state-owned, collective economy of public ownership and non-public ownership forms such as individual, private, and foreign investment develop together. At the same time, it also shows that in the process of economic rise in Guangzhou, the power of the market mechanism is constantly strengthening. In the same way, the continuous strengthening of the market mechanism has also promoted the economic growth of Guangzhou in the long run.

- Industrial structure and ownership structure: Whether in the short or long term, there is a one-way causal relationship between the industrial structure and the ownership structure in Guangzhou, that is, the upgrading of industrial structure can promote the diversification of ownership structure. The private and foreign economy, which represents the new format and new business model, is the backbone of Guangzhou's industrial economy and service economy.

5. Conclusion

Through empirical analysis of the relationship between Guangzhou's consumption structure, industrial structure, ownership structure and economic growth, the following conclusions can be drawn:

5.1. Guangzhou should accelerate the transformation and upgrading of industrial Structure

From the results of Granger causality test, the industrial structure upgrade can effectively promote the economic growth of Guangzhou. There is significant two-way causality between industrial structure and the economic growth whether in the short or long term. Guangzhou needs to rely on supply-side structural reform, adjust the economic structure, improve the quality of the industry, expand the effective supply, and provide new impetus for the high-quality development of the economy. In the current domestic and international political and economic background, Guangzhou as the core city of Guangdong, Hong Kong and Macao Bay Area, it is necessary to integrate resources and vigorously support the growth of emerging industries, and to partially clean up some of the backward production capacity through reasonable industrial policies, ensure that the industrial structure is constantly becoming more rational.

5.2. Consumption upgrade is an inevitable requirement for the high-quality development of Guangzhou's economy

Although the two-way Granger causality between consumption structure and economic growth is not as significant as the industrial structure and economic growth, but from the results of variance decomposition, the consumption structure changes contribute more to the trend of economic growth. On the one hand, Guangzhou should continue to improve the income distribution system, increase the proportion of labor compensation in income distribution, and match the growth rate of residents' income with the rate of economic growth. On the other hand, the government should pay attention to the changes in social consumption concepts and consumption patterns, through policy convergence and public opinion guidance, tap and stimulate potential consumer demand into real demand, and promote the overall consumption level and consumption quality.

5.3. Changes in ownership structure have a dual effect on Guangzhou's economic growth

From the results of impulse response analysis, the state-owned economy has a significant pulling effect on Guangzhou's economic growth in the short term, but it has a certain inhibitory effect in the long run, which is reflected in the coexistence of “stability effect” and “extrusion effect”. It can be seen that in the process of marketization and ownership reform, Guangzhou must fully recognize the strategic, stability and policy functions of the state-owned economy in the overall economic development, and must not copy the Western state-owned economic reform theory. At the same time, we must also note that the state-owned economy may have negative externalities in the development of other forms of ownership, so as to promote the construction of the market system and institutional environment.
In summary, only clarify the long-term equilibrium and short-term relationship between consumption structure, industrial structure, ownership structure and economic growth, understand the impact of the economic shock of the relevant variables on the economic growth of Guangzhou, only then can we formulate relevant policies and make positive contributions to the realization of Guangzhou's high-quality economic development.

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