

## An Empirical Cross Country Analysis on the Determinants of Economic Growth

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### **Abstract:**

This study analyzes the main factors affecting economic growth through regression models and carries out empirical analysis on different periods before and after the economic crisis. The results show that the increasing of trade, urban population growth rate, and inflation rate will lead to an increase in economic growth, but unemployment rate has a negative influence on economic growth.

**Keywords:** *Determinants, Economic growth, Trade, Population growth, Inflation rate.*

### **I. INTRODUCTION**

Since the development of the economic system has become more mature and complete, the determinants of economic growth have been the focus of policy maker and theoretical researcher. Especially after entering the 1990s, in the era of continuous technological advancement, per capita output has also grown rapidly, and the global economy has experienced rapid development. Capital has become more and more liquid on a global scale, and economic globalization, regional economic integration, and foreign direct investment have continued to grow, and various determinants affecting world economic growth have become more and more abundant. The theory of economic growth has been constantly developing since its inception. Different economic growth theories explore economic development from different angles and different factors. For example, Marx mainly studies the role of population and productivity in the process of economic development; the exogenous growth theory of modern economic growth theory discovers the important role of capital accumulation in economic growth; the endogenous growth theory explores that technological progress plays a significant role in economic growth. This study combines the above theories and chooses population growth rate, investment net inflows (% of GDP), foreign direct investment net outflows (% of GDP), inflation rate, release rate (% of total labor force), fertility rate, trade (% of GDP) and urban

population growth rate as related factors to study their impact on economic growth. Using the data from Brazil, Chile, China, German, France, United Kingdom, India, Japan, Korea, United States, and South Africa from 1990 to 2018, this research analyses the influence of these 8 factors on economic growth through the regression of panel. In addition, through a segmented study of time spans this research also analyses whether the effect of these factors on economic growth before and after the economic crisis has changed.

## II. LITERATURE REVIEW

The main representatives of the researcher of the relationship between population size and economic growth include Malthus, Keynes, Hansen, and Simon. They have conducted in-depth research on the impact of population changes on economic growth and put forward different theoretical perspectives. The first theory is a genre of pessimistic population theory developed by Malthusian population theory. Malthus (1956) believes that any food supply per capita that exceeds the level of survival will eventually be exhausted by the increased population. When existing resources cannot sustain a large population, further population growth will be suppressed by famine, disease, and war [1]. The combination of Malthusian population theory and later economic growth theory formed the hypothesis of the new Malthusian "low-level equilibrium trap", and proposed five major factors affecting economic growth: population, capital, food, non-renewable resources, and environmental pollution. The five factors are exponential growth, and the five factors are mutually influential and constrained. The excessive exploitation and waste of resources caused by the exponential growth of human economic activities will lead to the depletion of natural resources and environmental degradation which will cause a serious crisis of human survival. They believe that poverty, war, disease, environmental pollution, energy crisis, and other issues are all originated from the "population explosion." Another perspective is that the optimistic population economic theory represented by Keynes and Hansen. The long-term stagnation theory proposed by Hansen (1938) believes that the shrinking of population growth is the main reason for economic stagnation, and population growth can stimulate and promote economic development. "The population can provide a necessary consumer demand and lead to optimized economies of scale in production, which can reduce production costs and provide ample and low-cost labor for higher production." He proposes that in the long run it is expected that population growth will stimulate the generation and application of science and technology, and technological advancement will have a tremendous impetus to economic growth [2].

The city is a highly concentrated regional space created by human beings to meet their own needs for survival and development. Urbanization is a natural historical process accompanied by industrial development, non-agricultural industries in urban agglomerations, and rural populations concentrated in cities and towns. The objective trends and laws of social development are important signs of national modernization. Most scholars use developed countries' empirical data proves that urbanization is conducive to economic growth. For

example, Black and Henderson (1999) found that urbanization has a strong positive correlation with economic growth [3]. Sveikauskas (1975) found that the modern economy can be said to be an urbanized economy. If the urban population is doubled, it will increase the total factor productivity by 8.1% [4]. Henderson (2002) used cross-sectional data from different countries and regions. The empirical analysis found that the correlation coefficient between the two variables of GDP per capita and urbanization level is as high as 0.85 [5].

The relationship between foreign direct investment and host country economic growth has long been a topic of focus for economists. Some scholars believe that foreign direct investment promotes economic growth in host countries, but others believe that there is no impact or even a reverse effect. Ranjan Kumar Dash (2013) used the empirical method of Granger causality test to research the impact of FDI on India's economic growth, and argues that there is a two-way causal relationship between foreign direct investment and India's economic output, that is, FDI promoted Indian economic growth, and India's economic growth has also attracted foreign companies to invest in India [6]. However, Brecher and Findlay (1983) studied the relationship between foreign direct investment and the economic difficulties of the countries under investment. The results show that one of the reasons for the economic difficulties of the affected countries is foreign direct investment counseling [7]. Carkovic and Levine (2002) used 72 countries as research objects and concluded that foreign direct investment did not have a significant positive effect on the economic growth of these countries [8].

The research on the effect of foreign direct investment on the economic growth of the home country is rich, but the economic growth effects of foreign direct investment are not consistent for different countries or regions. Ozkilbac (2016) empirical research on Turkish foreign direct investment shows that foreign direct investment has a positive effect on economic growth in the long run, but this effect is not significant in the short term [9]. A quantitative study of ASEAN countries by Ahmad et al. (2015) shows that foreign direct investment has an adverse effect on economic growth and that overseas investment growth will weaken domestic economic growth [10]. Lee (2010) found that long-term foreign direct investment has a positive impact on GDP when he researched Japanese FDI inflows, but there is no causal relationship between the two in the short term [11]. When Lee (2009) studied the related issues in Singapore, he found that the economic growth effect of OFDI is two-way in the short-term, that is, the two will affect each other [12].

Fertility rate is the ratio of the number of babies born in a year to the average age of women of childbearing age in the same period, and is regarded as the core factor of population growth rate (Siegers, J. 1987) [13]. The debate on the relationship between the birth rate and economic growth began in 1798. Malthus (1798) holds that the increase in per capita income will result in population growth and, at the same time, affected by the reduction of resource constraints and marginal returns, the rapid population growth will reduce per capita income and the final population is stable at or slightly above the level of food and clothing [1]. The thought of Malthus was called the "Malthusian population trap" theory, because that it ignores the

existence of technological advances, and the assumption that the relationship between population growth and per capita income growth is not amenable to practice, Therefore, there are great limitations of this theory. Hondroyiannis and Papapetrou (2002) used Greek time-series data from 1960 to 1996 to carry out empirical research and found that in the long run, the decline of infant mortality will lead to the decrease of fertility, and verify that fertility is an endophytic variable of the whole economic system [14]. Subsequently, Hondroyiannis and Papapetrou (2005) also used panel co-integration research methods based on panel data from eight European countries for 1960-1998 to analyze the relationship between the per capita output, the real wage, and the population variable. The study concluded that, in the long term, the growth of real per capita output was associated with high fertility and a positive impact of employment could lead to a decline in fertility rate [15].

Whether a trade can promote economic growth has always been a focus of economists at home and abroad, thus forming a theoretical system of the relationship between international trade interests and economic growth. Since the early 1980s, economists have proposed new trade theories. From the perspective of demand, they analyzed that a country's import trade satisfies consumers' demand for differentiated products, and also gains the benefits of economies of scale and monopolistic competition for imported products. Developing countries make advanced technologies of developed countries through intermediate products. Spilling into the country, improving the labor productivity of the country and improving the original production mode bring the country's economic development to a new level. In 1991, Grossman and Helpman examined the data of 21 DECD countries and found that developing countries saved their homeland by importing technology-intensive end products. The research and development costs increase the production efficiency of domestic enterprises [16]. Moreover, Foster et al.(2004) moved from the perspective of human capital and believed that with the experiences of technology diffusion production efficiency can be improved by trade [17].

The relationship between growth and unemployment is not only an important theoretical issue but also a practical issue of practical significance. Zalger (2002) pointed out that unemployment is first and foremost a social issue. From the perspective of policy, economic growth and employment are two important goals that the government needs to achieve when making economic policy decisions. If you can prove or describe the relationship between growth and unemployment, the choice of goals is much simpler for government decision-making. The conclusion is that productivity growth is positively correlated with unemployment in the short term and negatively correlated in the long run [18]. Zalger (2002) pointed out that whether it is cross-country analysis or time series analysis, there is a systematic negative correlation between unemployment and economic growth, but this model is not static over time [18].

Because of the different types of inflation involved, and the differences in the different stages of inflation, foreign economists have done a lot of quantitative analysis on the relationship between inflation and economic growth. There are three different types. The

viewpoints are "promotion theory", "promotion theory" and "neutral theory".

For inflation, Dewan and Hussein (2001) with analyzing the sample data of 41 middle-income developing countries argues that inflation has a negative impact on economic growth [19]. In addition, McCandless and Weber (1995) measured the 30-year data of 110 countries and found that there is no correlation between inflation or monetary growth and long-term growth of actual output [20].

### III. METHODOLOGY

#### 3.1 Research Method

Based on the above literature, this study makes a comprehensive and objective analysis of the factors affecting economic growth in many countries from the perspective of multiple factors. We use gross domestic product (GDP) as the explanatory variable, and using population growth rate, investment net inflows (% of GDP), foreign direct investment net outflows (% of GDP), inflation rate, unemployment rate (% of total labor Force), fertility rate, trade (% of GDP) and urban population growth rate as explanatory variables for multiple regression analysis. The hypothetical regression model is as follows:

$$\begin{aligned} \text{GDP}_{it} = & \alpha_{it} + \beta_1 \text{FDIIN}_{it} + \beta_2 \text{FDIOUT}_{it} + \beta_3 \text{FERTILITY}_{it} \\ & + \beta_4 \text{INFLATION}_{it} + \beta_5 \text{POPULATIONGROWTH}_{it} + \beta_6 \text{TRADE}_{it} \\ & + \beta_7 \text{URBANPOPULATIONGROWTH}_{it} + \beta_8 \text{UNEMPLOYMENT}_{it} + \mu_{it} \end{aligned}$$

#### 3.2 Data Resource

First, in order to make the research results robust, we need to select countries with large differences in samples. This is the requirement of the econometric model for sample variance. In order to meet the requirements of robustness, we have selected not only the major developed countries in the world but also selected major developing countries as samples. Such samples better represent the economies of different regions and different levels of development in today's world. Secondly, the availability and accuracy of sample data in each country is a necessary guarantee for the value of research results. In view of the above two criteria, this research screened Brazil, Chile, China, German, France, United Kingdom, India, Japan, Korea, United States, and South Africa as research samples. Quantitative research on national economic growth has high requirements for data quality and quantity of data, so this research collects data from the 28-year span of 1990-2018 that can be used as factors related to economic growth. The data used in this research mainly comes from two aspects: The first is international statistical agencies, including the United Nations Department of Statistics, the Organization for Economic Cooperation and Development, the World Development Indicators; the second is China Statistical Yearbook.

### IV. DATA

#### 4.1 Unit Root Test

The test results of the stability of each variable are shown in Table I below:

**TABLE I. Unit root test for each variable**

	LLC	IPS	ADF	PP	Result
GDPit	-9.0599 (0.0000)	-9.1275 (0.0000)	119.392 (0.0000)	133.136 (0.0000)	Stable
FDI inflows	-4.4293 (0.0000)	-5.0846 (0.0000)	66.6549 (0.0000)	59.8927 (0.0000)	Stable
FDI outflows	-1.9345 (0.0265)	-2.6332 (0.0042)	44.0439 (0.0035)	50.1085 (0.0006)	Stable
Fertility	-2.2891 (0.0110)	1.64061 (0.9496)	21.9853 (0.4608)	96.2915 (0.0000)	Stable
Inflation	-5.3875 (0.0000)	-5.5061 (0.0000)	71.4322 (0.0000)	75.9209 (0.0000)	Stable
Population growth	-2.6509 (0.0040)	-2.0297 (0.0212)	40.8414 (0.0086)	27.5432 (0.1913)	Stable
Trade	-1.4325 (0.0760)	1.0278 (0.8480)	11.9271 (0.9589)	10.1186 (0.9852)	Unstable
Unemployment rate	-9.8831 (0.0000)	-8.2488 (0.0000)	106.019 (0.0000)	102.306 (0.0000)	Stable
Urban population growth	-9.70312 (0.0000)	-11.1626 (0.0000)	148.936 (0.0000)	151.725 (0.0000)	Stable
Note: the figures in brackets are p-value					

From the above analysis, we can see that GDP, FDI inflows, FDI outflows, inflation, unemployment rate, and urban population growth rate have no unit root since their p-value of LCC test, IPS test, ADF test, and PP test are less than 0.05, which are significant in the model. Since that the variable fertility rate passed the LCC and IPS test but did not pass the IPS and ADF test, and the variable population growth rate did not pass the PP test but passed the ADF, LCC and IPS tests, they are both stable. The variable trade failed in all the tests, so the data should be subjected to first-order differential processing, and finally, the following differential data results are obtained (shown in Table II):

**TABLE II. First-order differences unite root test for variable TRADE**

Variable	First-order differences unite root test				
	LLC	IPS	ADF	PP	Result

Trade	-14.4802 (0.0000)	-13.2423 (0.0000)	177.835 (0.0000)	193.908 (0.0000)	Stable
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After the first-order differences, the data sequence of variable trade tends to be stable, and the significance of all the tests are less than 0.05, indicating that the data is significant, and the data is converted into a stationary sequence by the first-order difference.

## 4.2 Co-Integration Test

After the unit root test, in order to analyse whether the data has a co-integration relationship and whether it can be used for subsequent data analyse, the co-integration test needs to be used, the results of KAO-based threshold co-integration are as following (shown in Table III):

**TABLE III. Co-integration test based on KAO method**

	Co-integration Test	
	t-Statistic	Prob.
ADF	-9.0533	0.0000
Residual variance	0.8993	
HAC variance	0.4311	

From the results of co-integration analysis, we found that the co-integration based on KAO method has a higher meaning by the co-integration test of all the variables, and under the premise that the P-value is 0.0000, which reject the null hypothesis, we believe that the above analysis variables have a long-term co-integration relationship. Thus, the variables are suitable for the regression analysis of panel data.

## V. RESULT

### 5.1 Hausman Test

This research uses Hausman test to test whether random-effects model or fixed-effects model is more suitable.

The p-values of the Hausman test are 0.2847, indicating that the null hypothesis of random effects cannot be rejected at the 10% significance level (see table IV). Therefore, the random-effect model is selected for regression analysis.

**TABLE IV. Hausman test results**

	Hausman Test 1990-2018			Hausman Test 1990-2008			Hausman Test 2009-2018		
	Chi-sq statistic	Chi-sqd.f	Prob	Chi-sq statistic	Chi-sqd.f	Prob	Chi-sq statistic	Chi-sqd.f	Prob
Cross-	10.8705	9	0.2847	13.6161	9	0.1366	6.2101	9	0.7187



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## 5.2 Random-Effect Regressions

In Table V column (1), it can be seen the regression result for the samples of 1990-2018. Thus the equation is as following:

$$\begin{aligned}
 \text{GDP} = & 0.079118 + 0.016907 \text{ FDIIN} - 0.016976 \text{ FDIOUT} - 0.171963 \text{ FERTILITY} \\
 & (0.272518) \quad (0.634435) \quad (-0.593700) \quad (-1.047492) \\
 & + 0.000962 \text{ INFLATION} - 0.050459 \text{ POPULATIONGROWTH} + 0.004397 \text{ TRADE} \\
 & (4.302658) \quad (-0.273831) \quad (1.469260) \\
 & + 0.413373 \text{ URBANPOPULATIONGROWTH} - 0.018627 \text{ UNEMPLOYMENT} \\
 & (5.124141) \quad (-2.094954)
 \end{aligned}$$

$$R^2 = 0.93175$$

$$F = 468.7213$$

From the results of the above regression analysis, it can be seen that the value of R-squared is 0.93175, the value of adjusted R-squared is 0.929762. The statistic of Durbin-Watson stat is 1.873282, which shows that the first-order auto-correlation considering the residual term in the regression equation makes the D-W statistic close to 2, indicating that the residual term of the regression has no sequence correlation. Moreover, the statistic of F-statistic is 468.7213. As can be seen from the above, this model can be used to analyze the contribution of each element to economic growth. According to the statistics of the p-value of each determinant, since the value of P-value is greater than 0.05, the influence of FDI inflows, FDI outflows, fertility rate and population growth rate on GDP growth has no statistical significance. The Unemployment rate and trade have P-values as 0.037 and 0.0428 respectively which are less than 0.05, so its impact on GDP growth is significant at 95% confidence. The P-values of Urban population growth rate and inflation rate are all 0, so their impact on GDP growth is significant at 99% confidence.

**TABLE V. The results of regression with the random-effect model**

	Regression With The Random-effect Model		
	1990-2018 (1)	1990-2008 (2)	2009-2018 (3)
C	0.079118 (0.272518)	-0.014323 (-0.036687)	0.452180 (0.923885)
FDI inflows	0.016907 (0.634435)	0.041135 (1.091046)	-0.049136 (-1.337325)



FDI outflows	-0.016716 (-0.593700)	-0.021514 (-0.603769)	-0.089223 (-1.801619)
Fertility	-0.171963 (-1.047492)	-0.145930 (-0.617231)	-0.316687 (-1.125955)
Inflation	0.000962 (4.302658)	0.000889 (3.489066)	0.028705 (0.963560)
Population growth	-0.050459 (-0.273831)	-0.073412 (-0.252086)	0.147042 (0.665763)
Trade	0.004397 (1.469260)	0.009530 (1.854027)	0.001517 (0.416887)
Unemployment rate	-0.018627 (-2.094954)	-0.026008 (-2.180529)	-0.006914 (-0.416902)
Urban population growth	0.413373 (5.124141)	0.456027 (4.443604)	0.156932 (1.145635)
R-squared	0.931750	0.917088	0.960279
Adjusted R-squared	0.929762	0.913338	0.956705
F- statistic	468.7213	244.5701	268.6207
Durbin-Watson stat	1.873282	1.863666	1.803552

The Coefficient values of the inflation rate, trade, unemployment rate, and urban population growth rate are 0.000962, 0.004397, -0.018627 and 0.413373, respectively, which represent the degree of influence of these factors on GDP growth and are in line with practical economic significance. Every 1% increase in inflation rate will lead to a GDP increase of 0.000962, and every 1% increase in trade will result in a GDP growth of 0.004397, and every 1% increase in the unemployment rate will result in a GDP reduction of 0.018627, and an increase of 1% in the urban population growth rate will result in a GDP increase of 0.413373.

### 5.3 Time-Varying Regression Model Construction

The outbreak of the 2008 economic crisis has changed the economic development of many countries, the control of economic development and related policies. This has also led to the impact of various factors explored above on economic growth before and after the economic crisis. In order to study the existence of this difference in impact, this research will divide the time span into 1990-2008 and 2009-2018 to perform regression analysis on the data of the two time periods.

The p-values of the Hausman test for period 1990-2008 is 0.1366 (shown in Table IV), the p-values of the Hausman test for period 2009-2018 is 0.7187 (shown in Table IV), which are indicating that the null hypothesis of random effects cannot be rejected at the 10% significance

level. Therefore, the random-effect model is selected for regression analysis for both periods.

From the results of the above regression (shown in Table V column (2)), it can be seen that the value of R-squared is 0.917088, the value of adjusted R-squared is 0.913338. The statistic of Durbin-Watson stat is 1.863666, which shows that the first-order auto-correlation considering the residual term in the regression equation makes the D-W statistic close to 2, indicating that the residual term of the regression has no sequence correlation. Moreover, the statistic of F-statistic is 244.5701. As can be seen from the above, this model can be used to analyze the contribution of each element to economic growth. According to the statistics of the p-value of each determinant, since the value of P-value is greater than 0.05, the influence of FDI inflows, FDI outflows, fertility rate, and population growth rate on GDP growth has no statistical significance. The Unemployment rate and trade have P-values as 0.0304 and 0.0352 respectively which are less than 0.05, so its impact on GDP growth is significant at 95% confidence. The P-values of Urban population growth rate and inflation rate are all 0, so their impact on GDP growth is significant at 99% confidence.

The Coefficient values of the inflation rate, trade, unemployment rate, and urban population growth rate are 0.000889, 0.00953, -0.026008 and 0.456027 respectively, which represent the degree of influence of these factors on GDP growth and are in line with practical economic significance. Every 1% increase in inflation rate will lead to a GDP increase of 0.000889, and every 1% increase in trade will result in a GDP growth of 0.00953, and every 1% increase in the unemployment rate will result in a GDP reduction of 0.026008, and an increase of 1% in the urban population growth rate will result in a GDP increase of 0.456027.

From the above, it can be seen that the data regression analysis results before the economic crisis are very similar to the overall data regression results, and the impact of each factor on economic growth has not changed significantly.

From the regression results shown in Table V column (3), it can be seen that the value of R-squared is 0.960279, the value of adjusted R-squared is 0.956705. The statistic of Durbin-Watson stat is 1.803552, which shows that the first-order auto-correlation considering the residual term in the regression equation makes the D-W statistic close to 2, indicating that the residual term of the regression has no sequence correlation. Moreover, the statistic of F-statistic is 268.6207. As can be seen from the above, this model can be used to analyze the contribution of each element to economic growth. According to the statistics of the p-value of each determinant, since the value of P-value is greater than 0.05, the influence of FDI inflows, FDI outflows, fertility rate, inflation, population growth, trade, unemployment rate and urban population growth on GDP growth has no statistical significance. Only the urban population rate has a P-value as 0.0482, so its impact on GDP growth is significant at 95% confidence.

The Coefficient values of GNI is 0.156932, which represent the degree of influence of these factors on GDP growth and are in line with practical economic significance. Every 1% increase in GNI will result in a GDP growth of 0.156932. Perhaps because that the sample spans from the financial crisis to 2018 is not long enough, the amount of data is not enough, the value

difference is large, and the overall data quality is low, the regression analysis is a little significance and lack of statistical significance.

## VI. CONCLUSION

### 6.1 Main Conclusions of This Research

In summary, the inflation rate, trade, and urban population growth rate have a positive impact on economic growth, that is, GDP growth. On the contrary, the negative rate has a negative impact on economic growth. The following will analyze the reasons for the impact of these four factors on economic growth.

According to the statistical value of the coefficient, the positive impact of trade on economic growth is significant. A country that participates in the international division of labor can import domestically-exploited resources and raw materials through foreign trade, advanced technologies and equipment that are conducive to improving economic and technological levels, and products that cannot be produced or produced at a high cost in China; And superior products, raw materials and resources. This will be able to take advantage of the country's strengths, make up for the country's shortcomings, save social labor costs, and improve resource utilization efficiency. When countries choose import and export products, they all compare prices according to the principle of comparative advantage, and then decide that those products with higher international prices than domestic prices should produce more exports, and those with lower international prices than domestic ones. More imports. In this way, it is possible to obtain more economic benefits by consuming the same social labor and expenses. Moreover, competition in the world market will put tremendous pressure on a country's export industry, prompting domestic export industries and related industries to improve efficiency, reduce costs, improve quality, and eliminate inefficient export industries, thereby promoting domestic industrial development and structure. optimization. Under the conditions of foreign trade, the trade profits obtained by a country in the process of foreign trade can increase the investment of the country and promote the growth of the economy at a higher growth rate. At the same time, trade benefits can increase the savings rate of a country, and the high savings rate is also an important guarantee for high economic growth rate, ensuring that the economy has a high capital stock and a high level of production.

The coefficient of the inductance of Inflation rate is 0.000962, so inflation has a slightly positive impact on economic growth.

Economic growth will be positively stimulated by inflation, and there is a "Tobin effect" in macroeconomic operations. Tobin (1965) believed that if currency and capital can be freely converted, the inflation rate will promote actual output [21]. The phenomenon of acting on actual output is called the "Tobin effect" of the effect of inflation. Specifically, moderate inflation stimulates economic growth for three reasons. One is that inflation has an output effect. If inflation is not expected by the public, then a modest rise in price levels can stimulate consumption, which will result in output growth and full employment in the market. The second

is that inflation has a resource allocation effect. A moderate increase in the inflation level of the current month will cause a relative change in commodity prices, which in turn will cause market resources to gather at a relatively high price, thereby paving the necessary capital for economic growth and enterprise expansion and reproduction. accumulation. The third is that inflation has a capital accumulation effect. Many studies regard inflation as a kind of "coinage tax". The coinage tax can increase the wealth of the currency issuer, so the government can obtain income through price inflation, but the function of capital accumulation of inflation is conditional. Therefore, the capital accumulation effect of inflation is also limited.

The economic growth rate and the inflation rate have a great influence on each other and have a positive correlation. That is, when the economic growth rate is gradually rising or decreasing, the inflation rate will also rise or fall accordingly, but the currency rate of change in inflation rate is much smaller than the rate of change in economic growth rate. The current and lag period of inflation rate has an impact on economic growth and has a certain predictive function. In the process of economic development, moderate inflation has a certain role in promoting economic development. This slow and gradually rising price has a positive effect on economic and income growth. According to this view, the government should choose to implement an inflation policy, such as it can implement expansionary monetary policies such as expanding currency issuance or implementing expansionary fiscal policies such as increasing government spending, so as to timely and moderately adjust the total social demand, thus ensuring a steady economic growth.

In general, economic growth is negatively correlated with unemployment growth. American economist Okun (1962) used the US economic data to draw Austrian affirmation law. The content is that if the unemployment rate is lowered by 1%, the government will be required to put the actual gross national product. It is 2.5% higher than the potential GDP, and vice versa [22]. Since the introduction of Okun's law, governments have reached lots of inconsistent conclusions about the relationship between economic growth and unemployment rate. But on the whole, there is a reverse relationship between unemployment and economic growth. The high unemployment rate will have some negative effects on economic growth: on the one hand, the vicious competition between laborers and workers caused by the greater pressure of survival will lower wages. The decline in wage levels will further reduce the already small total consumption level, which will further worsen the economic situation, and the deterioration of the economic situation will further increase the unemployment rate, which will enter the vicious circle of employment and economic situation; On the one hand, it will increase the insecurity of the unemployed themselves. Therefore, the unemployed will further adjust his consumption budget, making his consumption structure more conservative, and the insecurity of the unemployed will have a conductive diffusion effect on the working group, and will also increase the incumbent group. Insecurity, which in turn increases the overall insecurity of society. The increase in the overall insecurity of society will further reduce the propensity to consume and reduce the affordability of investment risks. Therefore, this loop will also lead to a

vicious circle of the economic situation.

Another way to improve the urban population rate is the rise in the proportion of urbanization. Henderson (2002) found that urbanization has a strong positive correlation with economic growth. With the increase in the population of urban areas, the expansion of regional scale, the scale construction of industrial parks, the scale of market trade and the marketization effect, the industrial economy is concentrated to promote the improvement of production efficiency, thereby accelerating the steady growth of the economy [5]. Urbanization promotes economic growth. The mechanism of urbanization development affecting economic growth is mainly that the towns attract many individuals, enterprises, and institutions to the towns through their concentrated effects and conditions so that various factors are concentrated in the towns. At the same time, in the process of urbanization, urban areas have great advantages in terms of technology, capital, management, concept, production system, etc., which can generate industrial diffusion effects and drive economic development in the surrounding areas, making the city's space constantly Expanding outward, the scale of towns continues to expand.

Urbanization is a process of gathering people and industries. As the population flows into cities, it will inevitably increase investment in urban infrastructure, housing, and necessities, thus promoting economic growth. The wage income of cities is generally higher than that of rural areas. The increase in income will increase savings and consumption. According to the classical economic model, the increase of savings will increase per capita output and per capita capital, and at the same time increase income, form a virtuous circle, and continuously promote the economy. Growth; the increase in consumption will increase the profits of enterprises, and higher profits will encourage enterprises to expand their scale, purchase production equipment, increase investment, and accelerate economic growth. Labor entering the city will reduce the cost of the enterprise, expand the scale of the enterprise, and promote the productivity of the enterprise.

## 6.2 Limitation

First, there are many studies on the impact of foreign direct investment, birth rate and population growth rate on economic growth. Many scholars have made significant regression analysis on these influencing factors. However, in this research, no significant analysis results have been obtained for these factors, and the correlation coefficient obtained by regression analysis is not statistically significant. The first reason may be that the choice about countries is not typical or the data of some countries are not highly authentic and effective, resulting in biased regression analysis results. Secondly, there is still a lack of scientificity in the selection of indicators that reflect the factors affecting economic growth. Because that many indicators are reflecting economic growth, the classification criteria are different, and the indicators reflect different contents, which make that it is impossible to select indicators according to a standard in the selection process. Therefore, the selected indicators may not fully reflect the influencing factors to economic growth.

In addition, for the regression analysis of the impact of various factors on economic growth

after the economic crisis, because that the time span of the data is short and the volatility of the data is large, most of the results are insignificant. At the same time, the author's own lack of relevant processing of data and the application of measurement tools is also an important reason why significant results cannot be obtained.

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## REFERENCES

- [1] Malthus T. R. (1798) First Essay on Population. ISBN: 978-1-349-81731-3.
- [2] Hansen A. H. (1939) Economic Progress and Declining Population Growth. *American Economic Review* 29:1-15. doi:10.2307/1806983
- [3] Black D., Henderson V. (1999) A theory of urban growth. *Journal of Political Economy* 107: 252-284. doi:10.1086/250060
- [4] Sveikauskas L. (1975) The productivity of cities. *Quarterly Journal of Economics* 89: 393-413. doi:10.2307/1885259
- [5] Henderson J. V. (2002) Urbanization in Developing Countries. *New Zealand Geographer* 17: 89-112. doi:10.1111/j.1745-7939.1979.tb00906.x
- [6] Dash R. K., Parida P. C. (2013) FDI, services trade and economic growth in India: empirical evidence on causal links. *Empirical Economics* 45: 217-238. doi:10.1007/s00181-012-0621-1
- [7] Brecher R.A., Findlay R. (1983) Tariff, foreign capital and national welfare with sector specific factors. *Journal of International Economics* 14:277-288. doi:10.1016/0022-1996(83)90005-3
- [8] Carkovic M.V., Levine R.E. (2002) Does Foreign Direct Investment Accelerate Economic Growth. Social Science Electronic Publishing. doi:10.2139/ssrn.314924
- [9] Ozkilbac B. S. (2016) Effects of Outward Foreign Direct Investment of Turkey on Economic Growth and Domestic Investment 71:231-247. doi:10.1501/SBFder\_00000002390
- [10] Ahmad F., Draz M.U., Yang, S. (2015) Does OFDI Affect Economic Growth? Evidence from Cross-Country Regression and Time Series Analysis. Social Science Electronic Publishing. doi:10.2139/ssrn.2613840
- [11] Lee C. G. (2010) Outward Foreign Direct Investment and Economic Growth: Evidence from Japan. *Global Economic Review* 39:317-326.
- [12] Lee C. G. (2009) Outward Foreign Direct Investment and economic growth: Evidence from Japan and Singapore. NUBS Malaysia Campus Research Paper Series, 2009. doi:10.1080/1226508X.2010.513143
- [13] Siegers J. (1987) An economic analysis of fertility. *De Economist* 135: 94-111. doi:10.1007/BF01856705



- [14] Hondroyiannis G., Papapetrou E. (2002) Demographic transition and economic growth: Empirical evidence from Greece. *Journal of Population Economics*2: 221-242.
- [15] Hondroyiannis G., Papapetrou E. (2005) Fertility and output in Europe: new evidence from panelcointegration analysis. *Journal of Policy Modeling*27:143-156.doi:10.1016/j.jpolmod.2004.12.001
- [16] Grossman G. M., Helpman E. (1991) *Innovation and Growth in the World Economy*. MIT Press Books1: 323-324. doi:10.2307/2554862
- [17] Foster N., Falvey R., Greenaway D. (2004) Import, Export, Knowledge Spillovers and Growth, *Economics Letters* 85: 209-213. doi:10.1016/j.econlet.2004.04.007
- [18] Zagler, Martin. (2002) *Growth and Unemployment: Theory, evidence, and policy*. International Journal of Economic Perspectives, 2007.
- [19] Dewan E., Hussein S. (2001) Determinants of Economic Growth, Working research. Reserve Bank of Fiji 1:27-36. doi:10.1002/9781118854006.ch3
- [20] McCandless G.T., Weber W. E. (1995) Some Monetary Facts. Federal Reserve Bank of Minneapolis Quarterly Review19:2-11.
- [21] Tobin J. (1965) Money and Economic Growth. *Econometrica*33: 671-684. ISBN: 978-1-4613-4242-7
- [22] Okun A. M. (1962) Potential GNP: Its Measurement and Significance. Reprinted asCowles Foundation 1: 190.doi:http://dx.doi.org/