

Analysis of Price Effect and Employment Effect of Government Tax Reduction

Shuodi Wang*

Shijiazhuang Foreign Language Education Group, Shijiazhuang, China

*Corresponding author: 15010140215@xs.hnit.edu.cn

Abstract. Under the influence of today's pandemic, it has led to the stagnation of production and business operations in various industries and the shutdown of enterprises, bringing serious disasters to the global economy. In order to mitigate the loss, governments are adopting policies to ensure the economic development of their countries, such as reducing taxes and fees, issuing national bonds, etc. In this paper, we will assume a closed economy and use Keynesian model to study the effect of government tax cuts on price level and labor employment. Through the rigorous logical analysis and theoretical derivation of this paper, it is found that in a closed economy, if the government reduces taxes, the employment of a country will be increased accordingly, and the price level will have a restraining effect to curb inflation. At the same time, this study can allow the government to formulate and improve policies more scientifically, bring reference and reference to the market, and help enterprises adapt to the market, understand the information and make the proper decisions.

Keywords: Keynesian model; Cut tax; Labor force; Price level.

1. Introduction

Under the effect of the current epidemic, the world is facing a recession and governments are implementing expansionary fiscal policies in order to stimulate economic development. Tax cut policy is demand side policy and as it is one of the very important methods, it can make market entity more energetic and active, and promote their growth. Market entity refer to organizations and individuals engaged in trading activities in the market, mainly divided into investors, operators, workers and consumers, enterprises. Regarding minor and medium-sized corporations, tax reduction eases the strain on the finances of enterprises and promotes the healthy development and expansion of enterprises. At the same time, the tax reduction protects people's life, reduces their living pressure, and promotes the increase of consumption and investment. After the tax reduction, although it stimulated the growth of the market, due to the scarcity of resources and the shutdown of producers caused by the epidemic, the limited resources will lead to the increase of the price level, which will have a restraining effect and appropriately curb inflation. However, the misuse of tax cuts may push up inflation and stagnate economic growth. In addition, tax cuts have promoted the normal operation of the market, but may raise the inflation level in the long run. During the epidemic, the stagnation of production and operation of various industries and the shutdown of enterprises will lead to cyclical unemployment, and the bankruptcy of enterprises may also lead to structural unemployment. Therefore, during the epidemic period of economic recession, labor unemployment is a major livelihood issue. Through tax reduction, employment, the biggest problem of people's employment, will lead to corresponding relief. This is because tax reduction can enable enterprises to expand their scale in order to increase profits, thus increasing the demand for labor, but this is a long-term impact. In the short term, it has a relatively small role in alleviating unemployment.

Due to the impact of the epidemic, no conflict, soaring energy prices and economic recession in various countries, in order to cope with the economic recession, various countries have adopted a series of expansionary fiscal policies to stimulate the market. Among them, government tax reduction, as a very important financial means, is the main fiscal policy currently adopted by various countries. Clemens and Veuger(2020) argued how the Covid-19 pandemic affected American state governments' cash flow in the first few months, due to the reduction of income and the increase of expenditure demand, the pressure increased, and the severity of the Covid-19 crisis itself led to the decline of employment and consumption[1]. By comparing the possible impact of the epidemic on

state government income with more typical economic contraction and providing health and macroeconomic data describing the impact of Covid-19 in the first few months, they found that Covid-19 led to the decline of personal health care Consumer spending on catering and accommodation fell significantly[1]. In the first few months after the outbreak of the Covid-19, Jr et al.(2020) found that the employment and sales income of SMEs in developing countries in Asia decreased significantly, the epidemic has a serious impact on employment and enterprise sustainability therefore SMEs in low-income economies are easy to use liquid assets and reduce employment to lessen those problems incurred from the epidemic[2]. In the face of cash shortage, many companies use online sales to increase their share, but there is a nonlinear relationship between online sales share and employment [2].

The Keynesian model is used for derivation, the current mainstream macroeconomic analysis is not done with Keynesian, but with the neoclassical model. The assumptions of the neoclassical model are not quite consistent with the current operating background of the world economy. On the contrary, the assumptions of the Keynesian model are more consistent with the characteristics of the current world economy, because the Keynesian model was proposed based on the background of the Great Depression, the current background of the world economy is the worldwide economic recession. Compared with Neoclassical, Keynesian is more suitable for the current economic situation.

Based on the above analysis, this paper will conduct research from the following perspectives. First, in the second part, it will conduct a literature review on closed economies, the impact of tax cuts on labor employment and price levels, and review the latest and cutting-edge articles under the theme to extend the views of this paper. The third part is the method of this paper, which is mainly used to describe the assumptions and derivation of the model cited in this paper. The forth part is the theoretical analysis of this paper, the fifth part is the limitations of this study and the prospects for the future, the last part is the conclusion.

2. Literature Review

2.1 Closed Economy

A closed economy is a self-sufficient economy, meaning that economic exchanges with foreign countries are closed off, thus leaving the country's economy without exchanges with the outside world. No international trade or labor exchange occurs in such an economy. In contrast, an open economy does not restrict economic exchanges between the country and the outside world, such as the import and export of goods and services.

Carlberg (1998) argued that the causes of closed economies include natural factors, cultural factors, and high trade costs, resulting in a lack of international trade and bringing disadvantages such as political isolation and military coercion [3].

However, no country in the real world is completely closed, only relatively closed. And it is a common approach to study macro problems by assuming economic closure, from which the Keynesian model develops its analysis.

Brunner and Meltzer (1976) indicated that the economy is closed, and the real money stock, population and effective labor force have not increased [4]. However, interest rates, output and the price of real money are variable, and the government purchases goods and services, collects taxes, funds for fiscal deficit and surplus, and participates in open market operations. Favero and Giavazzi(2008) has found in their study that situations where the European Central Bank(ECB) detracts out of its regulation highlight the significance of taking the consequences of variations in global asset prices in to the account while analyzing the monetary policy of the Eurozone countries, they additionally imply that such ECB's power to influence macroeconomic volatility may well be constrained[5].

2.2 Impact of Government Tax Cuts on Labor Force Employment

Korkeamäki and Uusitalo(2009) conducted a comparative experiment in Finland where they compared payroll tax declines for 3 consecutive years to do comparison of variations in salaries and occupation, this study showed that the payroll tax reduction resulted in a rise in salaries in the area and the increase in wages approximately offset wages, the tax has half the impact on labor costs, so a reduction in labor costs has no significant effect on employment[6]. Peter et al. (2017) assumed a general equilibrium behavior micro simulation model, and overall results show that although reducing the marginal rate of taxation for top earners would boost GDP, but won't get a major impact on job growth. [7]. Plans such as employee's government subsidy can dramatically change unemployment, however, as in long run, the policy has greatly increased income inequality, so it is necessary to consider family heterogeneity when analyzing [7]. Rider (1996) analyzed the Tax Reform Acts of 1986 and suggested that when the marginal tax rate of the self-employed increases, the probability of employing labor will decline [8]. At the same time, under the condition of employing labor, the increase of marginal tax rate will reduce the growth rate of these enterprises' wage bills, which increases the possibility that part of the tax revenue of high-income entrepreneurs may be transferred to low-income employees, resulting in an anti-intuitive impact on the after-tax income distribution [8]. Hembre and Dantas(2022) used the simulation policy tools of state tax policies and housing market differences to compare families with different risk levels under the 2017 Tax Reduction and Employment Act, and found that when the effective housing subsidy rate decreased, the housing ownership rate decreased, and the mortgage utilization rate also decreased[9].

2.3 Impact of Government Tax Cuts on Price Level

The consumer price index (CPI) is a relative figure that reflects both direction and magnitude of fluctuations in price for household goods and services that residents have ordered during a specific time span. This index has the potential to track and evaluate how changes in the selling prices of merchandise and services for consumers affect people' actual living expenses. The CPI is a crucial metric for tracking inflation. A universal and ongoing increase in the level of prices is called inflation. To some extent, CPI can be used to demonstrate how severe inflation is.

Greenwood and Hanke (2021) indicated that the inflation during the epidemic was caused by the interruption of the supply chain is not true[10]. The general inflation ratio & price level are governed first via alteration in the supply of money, despite the fact that multiplication of something like the money supply should result in a doubled of all nominal prices, the relative costs are still unaffected by monetary policy[10]. Countries that produce excess money according to either governing body plus its monetary system due to some political pressure and misinterpretation of information will increase their price level, while countries that resolutely resist money surplus will have little impact on inflation growth[10].

3. Method

In this paper, the Keynesian model will be used to study. Keynesian model created during the Great Economic Crisis from 1929 to 1933, it rejected the New Classical Economics and suggested that the government takes the responsibility for regulating aggregate demand, intervening and regulating economic life, using fiscal and monetary policies to promote investment and demand to be able to guarantee sufficient aggregate demand and full employment.

In this model, assuming that in a closed economy and it includes three markets, goods and service market, asset market and labor market.

$$Y = C + I + G \quad (1)$$

Y is national income and national output, consumption is C, I as the investment on currently produced goods, G is government expenditure.

$$E \equiv Y \quad (2)$$

E is desired(planned) expenditure, equation 2 is the equilibrium condition.

So from equation 1 and equation 2, we can know

$$E = Y = C + I + G \quad (3)$$

Assume

$$C = f(Y_d) \quad (4)$$

$$Y_d = Y - T \quad (5)$$

Y_d is disposable income, T is taxes minus transfer payment.

Then

$$C = c + bY_d \quad (6)$$

$$= c + b(Y - T)$$

$$0 < b < 1$$

b is marginal propensity to consume.

$$Y = C + S + T \quad (7)$$

$$E = C + I + G \quad (8)$$

S is saving.

Assume $Y = E$ is equilibrium, then

$$C + S + T = C + I + G \quad (9)$$

$$S + T = I + G \quad (10)$$

If no government,

$$I = S \quad (11)$$

For investment,

$$I = g(r) \quad (12)$$

$$I = g_0 - g_1 r \quad (13)$$

r is the rate of interest.

Varying output level and interest rate combinations that result in market equilibrium for products are shown on the IS curve. The trend line is downward because of the inverse relationship between interest rates and output. At every intersection with the IS curve, the products market is in equilibrium. However, changes in consumption, saving desire, investment, government expenditure, etc. may lead IS curve shift movement.

The LM curve displays various interest rate and output level mixtures that lead to asset market equilibrium. Given that output and interest rates are positively correlated, the line is upward sloping. Every point along the LM curve is equilibrium in the asset market. However, changes in real money demand, money supply, price level, etc. may let the LM curve shift upwards or downwards.

The FE curve contains numerous production level and interest rate pairings which converge to labor market equilibrium. Due to the fact that the interest rate has no impact on the level of output at full employment, the graph is a vertical straight line. Any point along the FE curve is equilibrium in the labor market. The possible reasons for the curve shift are changes in capital stock, labor supply, technological advancement and so on.

4. Theoretical Analysis

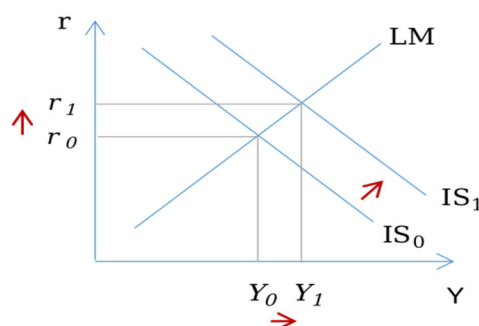


Fig. 1 Movement on IS curve when tax cuts

When the government cuts taxes, that means the disposable income of individuals increase, so the consumption will also increase. This would lead to the IS curve shift to right, in the figure 1, the IS curve shift from IS_0 to IS_1 , the output will shift to right from Y_0 to Y_1 , and the rate of interest rise from r_0 to r_1 .

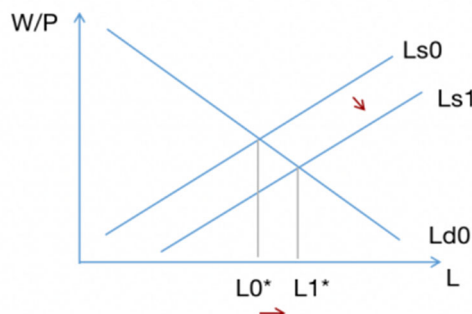


Fig. 2 Movement on LS curve when tax cuts

$$Y = G(L) \quad (14)$$

(in the short run)

Under normal condition, for firms, output is related to capital and labor force. However, in the short run, capital is fixed, so output is a function of labor. As can be seen from the figure 2, when the supply of labor increase because of the cut taxes, then the labor supply curve will shift to right from L_{s0} to L_{s1} . Then the L_{0*} shifts to the L_{1*} . So when the supply of labor increase, the output will also increase.

However, output is also related to labor efficiency. If more labor brings more costs but lower efficiency, then output will not necessarily increase. However, when the labor force increases to a point, this point reaches the full employment, then if still increase the labor force will lead to the decrease in the efficiency of labor but the labor costs have increased, so causing the cost of consumer items to go up.

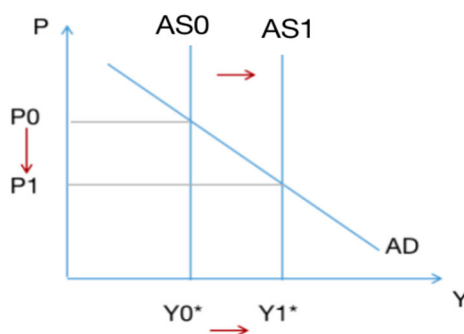


Fig.3 Movement on AS curve when tax cuts

Under normal condition, as the output increase which is deduced from figure 2. In figure 3, the output will shift from Y_{0*} to Y_{1*} which means that aggregate supply increase, because in the closed economy, aggregate supply equals to aggregate demand equals to the output is in equilibrium, so the aggregate supply curve will shift to right from AS_0 to AS_1 , then the price decrease from P_0 to P_1 .

4.1 Impact of Government Tax Cuts on Labor Force Employment

For firms, when the government cuts taxes, this will reduce the burden of tax for firms, and also reduce the production and operation costs of firms. Then the profits of firms will increase. In order to promote firms investment and scale growth, they need more labor force.

The impact of tax reduction on firms is that tax reduction will help reduce the burden of firms and boost their confidence. At the same time, it is beneficial help encourage actual economy's wholesome growth.

For individuals, when the government cuts taxes, this will stimulate more people to join the labor force in order to get more real income so the labor supply may increase.

When other conditions remain the same, wages are the main factor affecting labor supply. Therefore, any factor that affects the change of workers' wages will have a direct or indirect impact on labor supply.

4.2 Impact of Government Tax Cuts on Price Level

Labor is an important component of production costs, and labor costs are variable costs. One best method to combat growing worker expenses is to increase prices of goods and shift some of the costs to customers and lower-level businesses as businesses are unable to quickly change their manufacturing costing and volume strategy. Therefore, in the short run, the level of prices for goods and services may be affected by the rise in human fees by how much they affect item values.

However, consumers could potentially lower their need on such products by finding substitutes thus leading to an increase in the average cost of the product. In the long run, in the face of the continuous rise in labor costs, firms can reduce the share of labor costs in the total cost of the firm by increasing relatively low-cost capital investment to replace the use of labor and mitigate the impact of rising labor costs on the total cost of the firm, for example, by developing new technologies or acquiring new technologies to replace a large amount of labor spending, and at the same time, using new capital to promote the progress of production technology and improve At the same time, we can use new capital to promote the improvement of production technology and increase labor productivity to further reduce the unit labor cost.

5. Limitations and Future Outlook

In this paper, we do not use a large number of mathematical derivations to prove the analysis in this paper, so the theoretical analysis in this paper lacks a certain mathematical basis method, and in the subsequent work, some complex mathematical models will be applied to improve the analysis results. This study is a derivation under a closed economy, but there is no perfect closed economy in real life. In the subsequent research, we will relax the assumptions of the model, relax the closed economy to open economy, and then introduce the two-country model to continue the research of this paper, and strive to get a more reference value and meaningful research results for the real world.

6. Conclusion

Through the rigorous logical analysis and theoretical derivation of this paper, it is found that in a closed economy, if the government reduces taxes, the employment of a country will be increased accordingly, and the price level will have a restraining effect to curb inflation. In the future, this could be linked to the real world, in an open economy, where the inclusion of international trade is studied for this purpose and what are the effects, for example, migration makes the labor force migrate, which may be due to low wages in the home country. Further refinements could be made to facilitate an in-depth study of the topic.

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