An Economic Analysis of Efficiency and Equality Combining Epistemological True with Axiological Good Through Microeconomics to Macroeconomics

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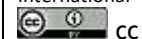Email: yye@nju.edu.cn

Abstract

Applying the Arrow-Debreu-Mundell-Fleming model as an economic standard model, with combining axiological framework and epistemological model, it is proposed to analyze economic policies with using a synthetic model, where interest, exchange and tax rates are integrated together. Except normal monetary and fiscal policies mainly via interest and tax rates, there are feasible ways to utilize modified strategies via exchange and tax rates. When ones need to simulate national local market, ones can raise the exchange rate. Otherwise, when ones need to promote international global trade, ones may lower the exchange rate. It is found that tax reduction is good policy when tax rate is higher than normal and that tax increase is good social policy when tax rate is lower than normal, during economic depression. Also it is revealed that tax reduction is good social policy when tax rate is lower than normal, and that tax increase is good policy when tax rate is higher than normal, during economic overheat. While economic system seeks efficiency and social system pursues equality, common interest modifications with elastic exchange and tax rates could be applied for balancing efficiency and equality.
Keywords: Economic analysis; Economic model; Microeconomics; Macroeconomics; Interest; Exchange; Tax.

1. Introduction

As an important field of social sciences, economics applied many models for approaching economic phenomena as well as economic analysis. While microeconomics examines how entities, forming a market structure, interact within a market to create a market system, macroeconomics examines the economy as a whole to explain broad aggregates and their interactions as well as effects of monetary policy and fiscal policy (Samuelson and Nordhaus, 2005). However, microeconomics and macroeconomics are divided by artificial processing as if they speak different economic language. Actually, economy is an integrated whole in the human society. We need integrated knowledge penetrating microeconomics and macroeconomics.

In fact, economics is not only a social science on the goods production and consumption, but also the epistemology and axiology on the wealth distribution, related to economic philosophy (Mäki, 2012). The good of rationality is a meaningful issue for understanding national economic policies and individuals' economic behaviors (Arrow, 1963; Davis, 2003; Sen, 2002;2005), so that it is necessary to study both epistemological true and axiological good of wealth distribution and redistribution in economic society.

Mostly, economists studied the macroeconomics via interest rate and exchange rate (Floyd, 2010; Friedman and Hahn, 2000; Tobin, 1969), also considered the welfare economy and wealth redistribution concerning efficiency and equality (Feldman and Serrano, 2005; Nicola, 2013). Actually, from both macroeconomic and microeconomic views (Arrow and Debreu, 1954; Samuelson and Nordhaus, 2005), taxation is also a key element in economic system as an interdisciplinary issue (Lamb *et al.*, 2005), though there was lack of a unified analytical model to probe into integrated interest, exchange and tax rates.

Therefore, a synthetic model with combining interest, exchange and tax rates together has been proposed (Ye, 2017), for analyzing integrated economic behaviors, where we consider both scientific epistemological true and philosophical axiological good, with linking microeconomics and macroeconomics via three key linkages.

2. Philosophical Axiological Framework

Suppose that there are three kinds of economic subjects in the society, i.e. nations (governments), enterprises and individuals (persons), where bank is also a special kind of enterprise. They construct following relations as shown in an axiological framework (see Fig. 1).

Fig-1. An axiological framework supported by tax, interest and exchange ratios
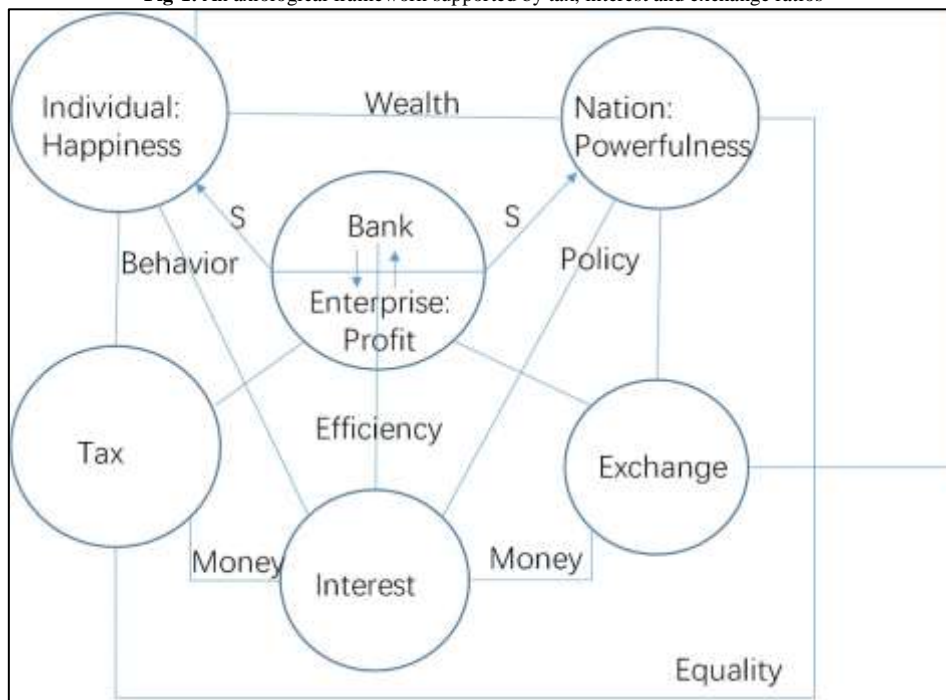
In Figure 1, the nodes represent subjects and ratios, while the links denote relations with axiological views, where individuals work towards happiness, nations act towards powerfulness and enterprises want profit for supporting nation and individual (marked by S). In the economic system, both banks and enterprises need efficiency, and the nation or society needs equality, while individual behaviors are affected by national policies and goods-money supply as well as all ratios based on money. It is expected that the framework will work towards the axiological good.

3. Epistemological Methodological Model

As a mathematical description of general equilibrium of economic markets, Arrow-Debreu model (Arrow and Debreu, 1954) explains microfoundations of economics, while Mundell-Fleming model (Fleming, 1962; Mundell, 1963) supplies macroeconomic images of goods and finance (Friedman and Hahn, 2000; Jones and Kenen, 1985). However, these two important models ignored necessary relations in linking each other, as if macroeconomics lost its microfoundations (Forni and Lippi, 1997; Weintraub, 1977;1979) or microeconomics never knew macroeconomic language. For better economic policy analysis (Scarth, 2014), we need a unified micro-macro-economic model as unified economics. Therefore, it is suggested to apply Arrow-Debreu-Mundell-Fleming model as an economic standard model (Ye, 2015).

Arrow–Debreu (A-D) model is a mathematical economic model under certain economic assumptions (i.e. convex preferences, perfect competition and demand independence), which suggest that there must be a set of prices to allow aggregate supplies to equal aggregate demands for every commodity in economic system. The model is the central theory of general economic equilibrium and it is often used as a general reference for other microeconomic models. The A–D model is one of the most general models of competitive economy and is a crucial part of general equilibrium theory, as it can be used to prove the existence of general equilibrium (or Walrasian equilibrium) of an economy. In general, there may be a lot of equilibria. However, with extra assumptions on consumer preferences, to be specific, their utility functions are strongly concave and twice continuously differentiable, a unique equilibrium exists.

Meanwhile, Mundell–Fleming model is described in terms of an IS-LM-BP graph with the domestic interest rate plotted vertically and real GDP plotted horizontally, where IS curve represents the equilibrium of product market, LM curve means the equilibrium of money market and BP addresses the balance of payments or international income-payment. Geometrically, the IS curve is downward sloped and the LM curve is upward sloped, while the BP curve is upward sloped unless there is perfect capital mobility, in which case it is horizontal at the level of the world interest rate.

In the IS-LM-BP graph, under less than perfect capital mobility the positions of both the IS curve and the BP curve depend on the exchange rate, since the IS-LM graph is actually a two-dimensional cross-section of a three-dimensional space involving all of the interest rate, income, and the exchange rate. Under perfect capital mobility the BP curve is simply horizontal at the level of the domestic interest rate equal to that of the world interest rate. In pure IS-LM model, the domestic interest rate is a key component for keeping both the money market and the goods market in equilibrium. However, differenciated from the pure IS-LM model, Mundell–Fleming model adds international financial elements, for fitting the open economy assumption.

Among the relative economic rates, interest rate γ, exchange rate π, and tax rate τ are important factors (Floyd, 2010; Sánchez, 2005) in determining economic running. The inflation rate λ and unemployment rate η are also

important factors to reflect economic properties and qualities. To avoid confusing with imaginary unit and time, Greek alphabetic γ, π and τ are applied to denote interest rate, exchange rate and tax rate respectively.

However, not every relative economic rate is independent, though we have no clear relations among these rates. We have only Dombusch's formula (Dornbusch, 1976) for describing a relation linking γ* as real rate of interest and π* as real exchange rate, via nominal interest rate γ and exchange rate π, where they are integrated in vertical coordinate within a quasi-linear relation as approximate formula as follows

$$\gamma - \gamma* = \frac{\pi*}{\pi} - 1$$

(1)

Meanwhile, the relation between the real interest rate, the nominal interest rate, as well as inflation rate is described by famous Fisher equation as

$$1 + \gamma* = \frac{1 + \gamma}{1 + \lambda}$$

(2)

In the Fisher equation, γ and γ* respectively refer to the nominal and real interest rate, and λ means the inflation rate. Since $1+\gamma=(1+\gamma*)(1+\lambda)=1+\gamma*+\lambda+\gamma*\lambda$ and $\gamma*\lambda<<\gamma*+\lambda$, there is linear approximation γ* ~ γ – λ (Feldstein, 1976). Moreover, the inflation rate links with unemployment rate via Phillips curve.

In a proposed synthetic model (Ye, 2017), Mundell–Fleming model (Fleming, 1962; Mundell, 1963), money supply-demand model and Laffer curve (Laffer, 2004) are integrated into a unified framework of interest, exchange and tax rates. The synthetic analytical model is basically illustrated in Figure 2.

Fig-2. The synthetic model integrating interest rate, exchange rate and tax rate
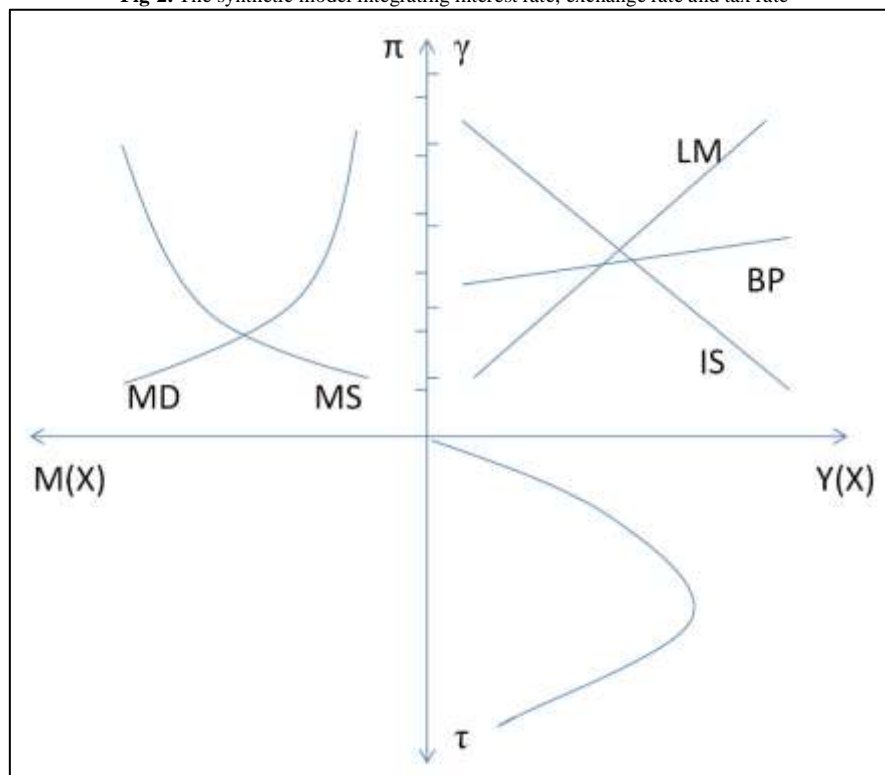
When a steady-state economy is characterized by the inflation rate λ, the nominal rate of interest γ and the real rate of interest γ* are linked by linear relation γ*=γ – λ. If the elasticity of expectations σ is less than unity, there is

$$\frac{d\gamma}{d\pi} = \sigma - 1 < 0$$

(3)

Above synthetic model includes following three parts:

The first part is Mundell–Fleming model, characterized by IS–LM-BP curves, described by the domestic interest rate plotted vertically and real GDP (Y) plotted horizontally, where IS curve represents the equilibrium of product market, LM curve means the equilibrium of money market, and BP addresses the balance of payments or international income-payment. Geometrically, the IS curve is downward sloped and the LM curve is upward sloped, while the BP curve is upward sloped unless there is perfect capital mobility, in which it is horizontal at the level of the world interest rate. In the IS-LM-BP graph, under less than perfect capital mobility, the positions of both the IS curve and the BP curve depend on the exchange rate, since the IS-LM graph is actually a two-dimensional cross-section of a three-dimensional space involving all of the interest rate, income, and the exchange rate. Under perfect capital mobility, the BP curve is simply horizontal when the level of the domestic interest rate is equal to the world interest rate level. In the pure IS-LM model, the domestic interest rate is a key component for keeping both the money market and the commodity market in equilibrium. However, unlike the pure IS-LM model, Mundell–Fleming model adds the international financial elements to fit to the open economy assumption.

The second part is the money demand and supply curve, where the demand curve of money illustrates the quantity of money demanded at a given interest rate. Generally, the demand curve of money is downward sloping, which means that people want to hold less of their wealth in the form of money when interest rates on bonds and other alternative investments are higher The supply curve of money illustrates the quantity of money supplied at a given interest rate. Unlike a typical supply curve in the commodity market, the supply curve of money could be vertical, because it might not depend on interest rates. In fact, it depends entirely on decisions made by the central bank, as the central bank controls the supply of money. However, the market mechanism could also introduce the demand-supply interaction into the money market to illustrate the money demand and supply with using normal demand-supply curves. The equilibrium in the money market takes place when the quantity of money demanded is equal to the quantity supplied. Since there are complex relations between interest and exchange rates (Floyd, 2010; Sánchez, 2005), for simplifying discussed issues, it is designated that real exchange rate and nominal interest rate are linked by $\gamma\uparrow\rightarrow\pi^*\uparrow$, characterized by national money vs. foreign money, in other words, interest and exchange rates keep changes in the same direction.

The third part is Laffer curve, which is one possible representation of the relationship between rates of taxation and the hypothetical resulting levels of government revenue. Because the government revenue is proportional to GDP, I translate the Laffer curve into the coordinate system with tax rate plotted down-vertically and real GDP (Y) plotted horizontally here. Following claims to illustrate the concept of taxable income elasticity, taxable income will change in response to changes in the rate of taxation.

Thus, the synthetic model integrates interest, exchange and tax rates, where interest and exchange are plotted up-vertically with different calibration in the same direction, while tax rate is plotted down-vertically. The Mundell–Fleming model (IS–LM-BP curves) is set in the first quadrant; the money supply-demand model occupies the second quadrant; and the Laffer curve is arranged in the fourth quadrant. It is valuable to emphasize that interest rate can be changed by artificial operations via bank in a discontinuously way, while the exchange rate randomly changes following market, and tax rate is rigidly determined by laws, mostly.

By combining Figure 1 and Figure 2, the good policies can keep balance between demand and supply, consumption and production, rich and poor, as well as the true and the good. At the level of nation, reducing tax is the good policy for raising social welfare, and increasing tax is also the good policy for balancing rich and poor. At the level of individual, stable consumption and tax payment are the good behaviors. At the level of bank/enterprise, interest/profit-increase is the good strategy during economic growth and inversely interest/profit-decrease is the good strategy during economic decline. At all levels, epistemological true and axiological good are combined, for balancing economic efficiency and social equality.

4. Three Key Linkages to Unify Micro-Macro-Economics

According to Weintraub's conclusion, Arrow-Debreu general equilibrium model (Walrasian equilibrium model) has the following characteristics (Weintraub, 1977)[1]

(1) There is a class of agents, called consumers, who have preferences over different bundles of final goods.
(2) The consumer preferences are sufficiently regular so that preferences can be represented by utility indicators.
(3) Consumers' income comes from sales of factor services and distributed profits of firms.
(4) Members of another class of agents, called firms, have preferences over output configurations, which lead to profits.
(5) Consumers, taking product and factor prices as given, attempt to maximize utility subject to their income constraint.
(6) Firms, taking product and factor prices as given, attempt to maximize profits subject to technology constraint.

Those mean that we have the first key to link microeconomic foundations with macroeconomic results, via the relation of demand and supply.

4.1. The First Key Linkage: From Micro-Demand-Supply to Macro-Aggregate Demand-Aggregate Supply

The consumers' demand (D) and firms' supply (S) at individual level as well as aggregate demand (AD) and aggregate supply (AS) at national level are basic micro-macro-relations in economics. From micro-demand (D) - supply (S) model to macro-aggregate demand (AD) - aggregate supply (AS) model, the form is very similar, i.e. demand curve is a downward-sloping curve and supply curve is upward-sloping one, as shown in Figure 3, which gives strongly sign to unify micro-economics and macro-economics.

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[1] See Weintraub, E.R. 1979. Microfoundations: the compatibility of microeconomics and macroeconomics. Cambridge University Press, p.89

Fig-3. A Descriptive Micro-Macro-relation
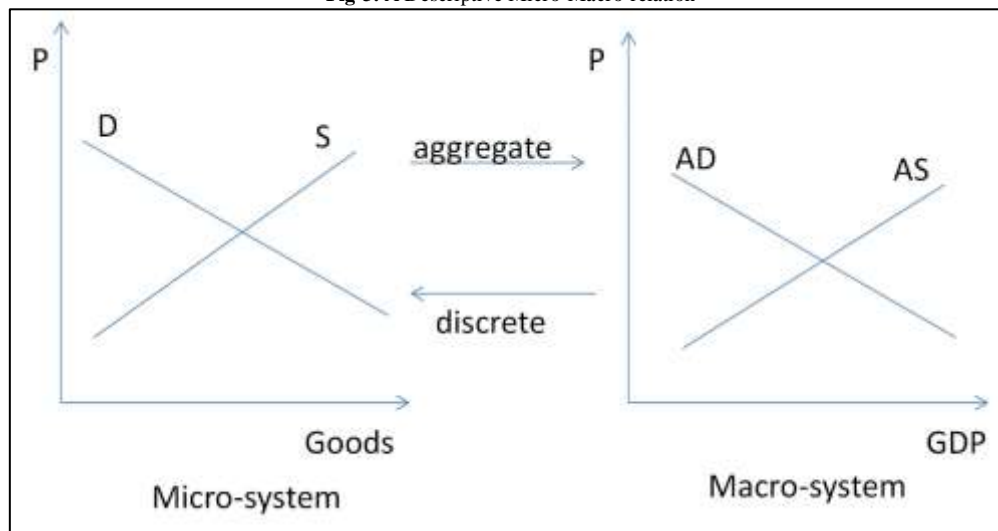
The above figure suggests us that micro- D-S system can be integrated to become aggregate macro- AD – AS system, while macro- AD-AS system can also reduce to discrete micro D-S system. With using logarithms of the real output Y, nominal money M, nominal prices P and nominal wages W, the aggregate demand – aggregate supply framework can be expressed as

$$Y = \begin{cases} a(M-P), a > 0 \\ b(M-W), b < 0 \end{cases}$$

(4)

When nominal wages are fixed at level W*, the above framework plus W=W* constructs Keynesian general theory, where the increment in M will increase both output Y and the price level P. However, the linkages of discrete and aggregate processes need other two keys, namely marginal effect and multiplier model.

4.2. The Second Key Linkage: Marginal Effects in Both Micro- and Macro-Economies

The utility-maximizing consumers and the profit-maximizing firms are considered to be important rules in economics, which can be expressed by marginal effect, as follows (Samuelson and Nordhaus, 2005).[2]

(1) The ratios of marginal utilities of goods for all consumers are equal to the relative prices of those goods.
(2) The ratios of marginal costs of goods produced by firms are equal to the relative prices of those goods.
(3) The relative marginal revenue products of all inputs are equal for all firms and all goods and are equal to those inputs' relative prices.

In mathematical analysis of general equilibrium (Samuelson and Nordhaus, 2005), the conditions for competitive general equilibrium are classified into two categories: consumer equilibrium and producer equilibrium. In consumer equilibrium, the ratio of the marginal utilities of two goods (MU_1/MU_2) is equal to the ratio of their prices (P_1/P_2). In producer equilibrium, the ratio of the marginal costs of two final products (MC_1/MC_2) is equal to the ratio of their prices (P_1/P_2). Therefore, in the market, when final products become goods, combing consumer equilibrium and producer equilibrium, the general equilibrium means

$$\frac{MC_1}{MC_2} = \frac{MU_1}{MU_2}$$

(5)

The Eq. (5) reveals that one of the essences of general equilibrium or Arrow-Debreu mode focuses on marginal effect of goods.

On the other hand, macroeconomics marks that the marginal propensity to consumption (MPC) and marginal propensity to save (MPS) related like mirror images, i.e.

$$MPC + MPS = 1$$

(6)

The Eq. (6) reveals one of characteristics of national consumption behaviors, and the 1/MPS=1/(1-MPC) is just the expenditure multiplier or investment multiplier.

4.3. The Third Key Linkage: AD–AS Model can be Approached by Multiplier Model

The existence of a multiplier effect was initially proposed by Keynes' student Richard Kahn in 1930s. Although some scholars reject or downplay the importance of multiplier effects, particularly in terms of the long run, the multiplier model has been used as an argument for the efficacy of government spending or taxation relief to stimulate aggregate demand.

A multiplier is a factor of proportionality that measures how much an endogenous variable changes in response to a change in some exogenous variable in macroeconomics. Including both money multipliers and fiscal multipliers,

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[2] Cf.: Samuelson, P.A. and W. D. Nordhaus. 2005, Economics (18th ed.). McGraw-Hill Co., Chapter 14 Appendix

multiplier model causes macroeconomic effects. While a fiscal multiplier is a ratio of a change in national income to the change in government spending, it causes that a money multiplier is one of various closely related ratios of commercial bank money to central bank money under a fractional-reserve banking system. More generally, the exogenous spending multiplier is the ratio of a change in national income to any autonomous change in spending (including private investment spending, consumer spending, government spending, or spending by foreigners on the country's exports). A money multiplier measures the maximum amount of commercial bank money that can be created by a given unit of central bank money. That is to say, in a fractional-reserve banking system, the total amount of loans that commercial banks allowed to extend (i.e. the commercial bank money that they can legally create) is a multiple of reserves; this multiple is the reciprocal of the reserve ratio, and it is an economic multiplier.

One of the main assumptions in the multiplier analysis is that prices and wages are fixed in the short run. Although this is an oversimplification (as many prices adjust quickly in the real world), this assumption captures the point that some of the adjustments to AD shifts will come through output adjustments if some wages and prices are sticky. So, Keynesian economists calculate multipliers that measure the effect on aggregate demand (AD) only. Then, American Economist Alvin Hansen and Paul Samuelson extended it to get the multiplier-accelerator model, i.e. Hansen-Samuelson model.

As multiplier model can approach AD–AS model (c.f. (Samuelson and Nordhaus, 2005), we can combine marginal effect with multiplier model then penetrate demand and supply for unification. Thus, we can find a unified model via three keys to link micro- and macro-economics, in which demand and supply, marginal effect and multiplier model are interrelated to each other.

While Arrow-Debreu model describes general micro-economic equilibrium, Mundell-Fleming model expresses general macro-economic one. There are three keys to link A-D model and M-F model together: (1) Demand-supply relation, which penetrates micro- and macro-economy with similar pattern; (2) marginal effect, which reveals same principles in micro- and macro-economy and constructs expenditure multiplier or investment multiplier; and (3) multiplier model, which approaches to AD-AS. As aggregate demand (AD) – aggregate supply (AS) is approached by multiplier model and linkage of expenditure multiplier or investment multiplier to marginal effects, it is revealed that micro-Arrow-Debreu model can be combined with macro-Mundell-Fleming model. Indeed, a macro-economic model is much more complicated than micro-economic one, because there are complex money interactions, as well as global interest rates and exchange rates. Fortunately, demand-supply relation, marginal effect and multiplier model become key bridges across them. Thus, we can understand unified micro-macro-economics. For the unified understanding, it is suggested that the Arrow-Debreu-Mundell-Fleming model become standard economic model, which is characterized by a geometrical analytical system constructed by AD-AS-IS-LM curves. Then plus Laffer curve, the unified synthesized model completed, which could promote economic analysis.

5. Policy Analysis Towards Economic Efficiency Via Interest and Exchange Rates

In policy analysis, traditionally, macroeconomic policy is usually implemented through two sets of tools: monetary policy and fiscal policy. Both forms of the policy are used to stabilize the economy, which usually means boosting the economy to the level consistent with economic resources.

On monetary policy, central banks implement the policy by controlling the money supply through several mechanisms. Typically, central banks take action by issuing money to buy bonds (or other assets), which boosts the supply of money and lowers interest rates, called expansionary money policy; or in the case of contractionary monetary policy, banks sell bonds and take money out of circulation. Also, bank can continuously shift the money supply to maintain a fixed interest rate target. Some banks allow the interest rate to fluctuate and focus on targeting inflation rates instead. Central banks generally try to achieve high output without letting loose monetary policy to create large amounts of inflation.

On the other hand, fiscal policy is the use of government revenue and expenditure as instruments to influence the economy, including tools such as expenditure, taxes, and debt. However, the effects of fiscal policy may be limited by crowding out. When government adopts spending projects, it limits the amount of resources available for private sectors to use. Crowding out occurs when government spending simply replaces private sectors output instead of adding additional output to the economy. Crowding out also occurs when government spending raises interest rates with restricting investment. Defenders of fiscal stimulus argue that crowding out is not a concern when the economy is depressed, plenty of resources are left idle, and interest rates are low.

When the economy is producing less than potential output, government spending can be used to employ idle resources and boost output. Although government spending does not have to make up for the entire output gap, the multiplier effect could boost the impact of government spending.

However, the effects of fiscal policy may be limited by crowding out. When government takes on spending projects, it limits the amount of resources available for the private sector to use. Crowding out occurs when government spending simply replaces private sector output instead of adding additional output to the economy. Crowding out also occurs when government spending raises interest rates with restricting investment. Defenders of fiscal stimulus argue that crowding out is not a concern when the economy is depressed, plenty of resources are left idle, and interest rates are low.

Fiscal policy is also implemented through automatic stabilizers. Without suffering from the policy lags of discretionary fiscal policy, automatic stabilizers use conventional fiscal mechanisms but take effect as soon as the

economy takes a downturn: spending on unemployment benefits automatically increases when unemployment rises and, in a progressive income tax system, the effective tax rate automatically falls when incomes decline.

Economists usually favor monetary over fiscal policy because it has two major advantages. First, monetary policy is generally implemented by independent central banks instead of the political institutions that control fiscal policy, where independent central banks are less likely to make decisions based on political motives. Second, monetary policy suffers shorter inside lags and outside lags than fiscal policy does, as central banks can quickly make and implement decisions while discretionary fiscal policy may take time to pass and even longer to carry out.

Yet, actually, the economic effects of monetary or fiscal policy could be restricted, as the changes of three ratios will affect each other. With integrating analytical framework of interest, exchange, tax rates in above synthetic model, the situation is clear as a case of raising interest rate (by bank) as shown in Figure 4.

Fig-4. Policy analysis in the case of changing interest rate with implying exchange rate change
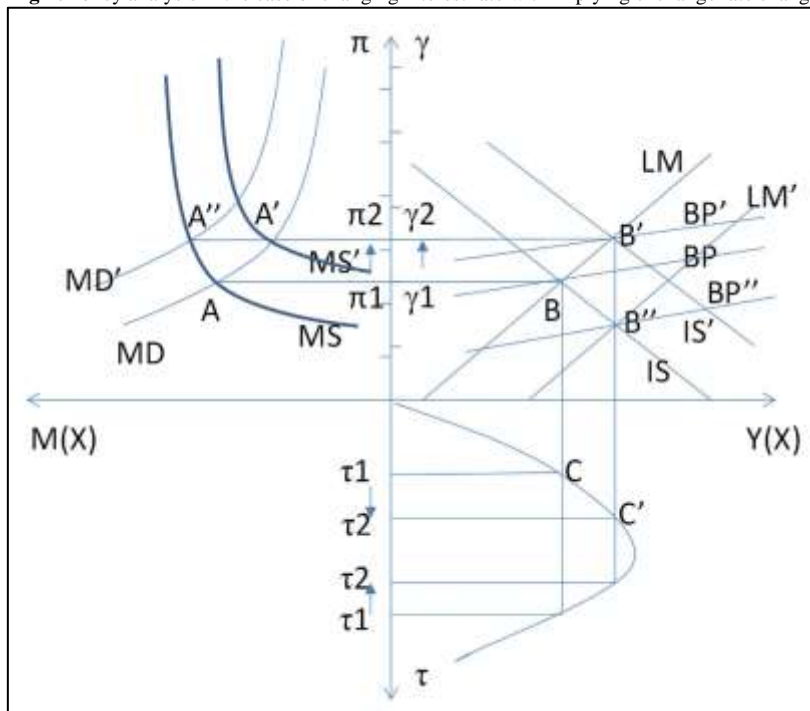
The policy of raising interest rate could cause feedback chain: $\gamma\uparrow \rightarrow MS\downarrow \rightarrow Y\uparrow$, which is equivalent to tax cuts as $\gamma\uparrow \rightarrow \tau\downarrow$, as it is same to $\tau\downarrow \rightarrow \gamma\uparrow \rightarrow MS\downarrow$, which means that the policy effect of raising interest rate is equivalent to that of tax cut, or, the policy effect of tax cuts is equivalent to the raising interest rate, leading to less money supply. Inversely, increasing money supply is equivalent to lower interest rate or lifting tax, i.e. $MS\uparrow \rightarrow \gamma\downarrow \rightarrow \tau\uparrow$. However, once money supply increases, the inflation could occur, resulting in offseting the policy effect. Thus, the policy tools are limited by the correlated links, where any rate impacts each other, leading to restricted economic effects.

Since the exchange rate relates to interest rate according to Eq. (1), the change of interest rate implies the change of exchange rate at same time. Therefore, the modification of exchange rate resembles relative effects of interest rate. Especially, if the exchange and interest rates change at same directions ($\pi\uparrow \rightarrow \gamma\uparrow$, $\pi\downarrow \rightarrow \gamma\downarrow$), the effects of changing exchange rate will similar with the effects of changing interest rate. However, if the exchange and interest rates change at different directions ($\pi\uparrow \rightarrow \gamma\downarrow$, $\pi\downarrow \rightarrow \gamma\uparrow$), complex situations will happen. The exchange rate is also a relatively independent variable, and it affects and is affected by international economy. When we need to simulate national local market, we can raise the exchange rate. Otherwise, when we need to promote international global trade, we may lower the exchange rate.

6. Policy Analysis Towards Social Equality Via Taxation

Generally, tax is dominated by government, which is rigidly restricted by laws. For social equity, it is better to set high tax rate for charging rich people and low tax rate to protect poor persons. Interest rate can be changed by central bank, referring to economic level and situation. And exchange rate seems random changeable following international money market, though some nations could also do impacts on its changes.

Politically, tax, interest, and exchange rates serve for national objects, so that a national government cannot abandon the domination of tax rate, interest rate, and exchange rate. In a national view, interest rate focuses on money efficiency, which could optimizes the money market and the liquidity. Exchange rate also expresses national finance policy, which could regulate international trade and is determined by international financial market. The tax rate marks national policy for the redistribution of social wealth, which pursues social equality. The interest rate can be changed by the central bank, referring to economic level and situation. The exchange rate is randomly changeable following international money market, though some nations could also exert impacts on its changes.

Using the above synthetic model integrating interest, exchange and tax rates, when economy overheats or expands (Y ↑ ↑), a policy analysis for the tax reduction and the tax increase is shown in Figure 5.

Fig-5. A policy analysis for the tax reduction and the tax increase during economic overheat
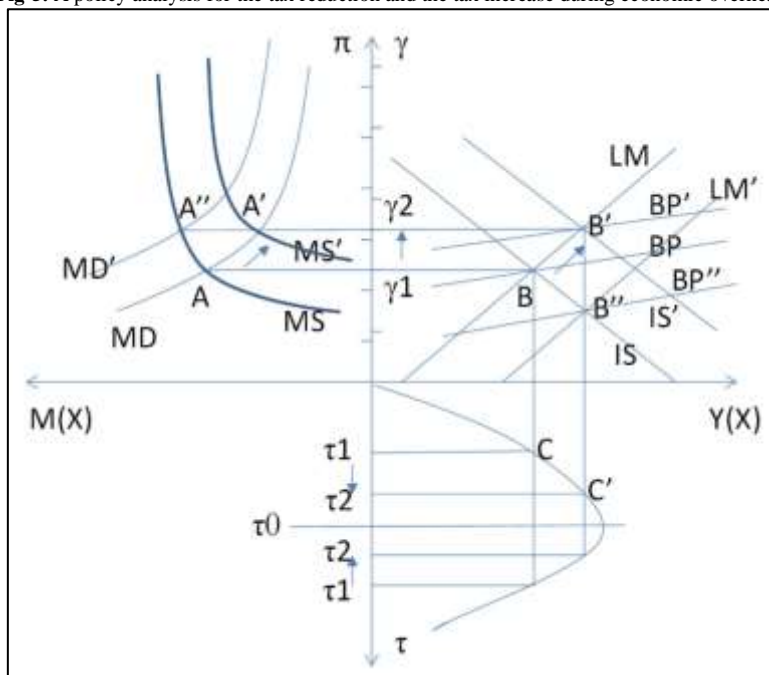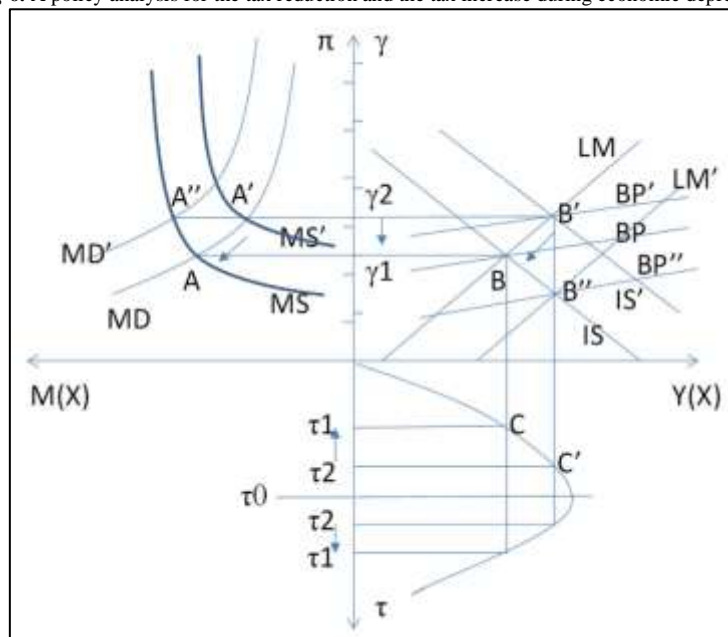

The policy of Figure 5 implies that the tax reduction should be good if tax rate is lower than normal ($\tau < \tau 0$) and tax increase should be good if tax rate is higher than normal ($\tau > \tau 0$), during the period of economic overheat or expansion (Y ↑ ↑), which would benefit following items.

(1) At national level, decreasing official corruption (Y ↑ ↑ caused B -> B', policy $\tau 2$ -> $\tau 1$ would lead to IS' -> IS, or via LM' -> LM and B'' -> B for reaching optimal equilibrium A-B-C).

(2) At enterprise level, increasing R&D input (Y ↑ ↑ caused A -> A', policy $\tau 2$ -> $\tau 1$ would lead to MS'->MS, or via MD' ->MD and A''->A for reaching optimal equilibrium A-B-C).

(3) At individual level, stimulating consumption and charitable donation (Policy $\tau 2$ -> $\tau 1$ would lead to MS'->MS or MD'->MD for reaching optimal equilibrium A-B-C).

On the other hand, when economy depresses or contracts (Y ↓ ↓), a policy analysis for the tax reduction and the tax increase is shown in Figure 6.

Fig-6. A policy analysis for the tax reduction and the tax increase during economic depression

The policy of Figure 6 implies that the tax reduction should be good if tax rate is higher than normal ($\tau > \tau 0$) and tax increase should be good if tax rate is lower than normal ($\tau < \tau 0$), during the period of economic depression or contraction (Y ↓ ↓), which would benefit following items.

(1) At national level, balancing the rich and the poor (Y↓↓ caused B' -> B, and then policy τ1 -> τ2 would lead to IS -> IS', or via LM -> LM' and B'' -> B' for reaching optimal equilibrium A'-B'-C').

(2) At enterprise level, decreasing bank loan (Y↓↓ caused A' -> A, and then policy τ1 -> τ2 would lead to MS->MS', or via MD ->MD' and A''->A' for reaching optimal equilibrium A'-B'-C').

(3) At individual level, reducing consumption, particularly deleting luxury (Policy τ1 -> τ2 would lead to MS->MS' or MD->MD' for reaching optimal equilibrium A'-B'-C').

In both Figure 5 and Figure 6, the normal point of tax rate (τ0) can be defined as legal point in tax laws, or theoretical expected point.

Certainly, the tax policy look complicated, more than monetary policy, where the interest ratio is an effective tool for regulating economy by raising or reducing interest rates. However, the tax policy may be useful tool for balancing social wealth, particularly combining efficiency and equality. A good tax policy could reach axiological good. In considerations of political economics, the tax reduction on enterprises could benefit all enterprises, while the tax increase on rich persons could benefit poor people.

Totally, the tax rate, interest rate, and exchange rate really represent different views of political economics. The tax rate marks national policy for the redistribution of social wealth, which expresses social equality. The interest rate describes national financial policy, which is a way to optimize national financial market. The exchange rate characterizes the interactions of international economies, which is determined by international trade and international financial market.

7. Discussion Wealth Distribution and More

There are two economic issues concerned by economic analysis towards the social good: 1) How to distribute social wealth between rich agents and poor ones, as well as nations and enterprises? 2) How to maintain social justice combining efficiency and equality?

In political economics, wealth distribution and capital profit are always important issues for discussion, in which the former concerns social equality and the latter represents economic efficiency. In some cases, if we pay attention to social equality of wealth redistribution, we might lose partly economic efficiency. For maintaining high economic efficiency, we might lose partly social equality. Economic policy actually resembles an art for balancing efficiency and equality, where the social wealth redistribution (regulation via tax rate) and economic efficiency (realization via interest rate) become important factors for applications.

In any societies, there are always rich and poor people. The governments get tax revenues to support public affairs and to regulate rich-poor difference, for realizing social equality via wealth redistribution. Both social and personal surplus money would cumulatively transfer to capital, and the capital demands effective reciprocation via interest or investment. More issues on the capital and wealth distribution have been discussed by Piketty's analysis (Piketty *et al.*, 2014).

Taxation is not only a technical matter, but also preeminently a political and philosophical issue, perhaps the most important political economic issue. Without taxes, society has no common destiny, and collective action is impossible. It is certainly correct that progressive taxation plays a key role in wealth redistribution. A progressive tax is a crucial component for social equality, which plays a central role in its development and in the transformation of the structure of inequality in the world, and remains important for ensuring the viability of social equality in the future.

Generally, tax, which is dominated by government and rigidly restricted by laws, is the key element to answer these questions. For social equity, it is better to set high tax rate for charging rich agents and low tax rate to protect poor ones. In a country with taxation ~ 1 billion dollars, if tax rates changes 1%, more than million dollars taxation will be changed. Given that consumption and investment expenditure together account for a large percentage (about 80%) of GNP in major nations (Abel, 2000), taxation is a political economic consideration for approaching the axiological good to adjust rich and poor via tax. If we consider more factors, including wages, inflation, employment, welfare and so on Lucas and Rapping (1970), Phelps (1967), we will meet a very complicated economic system, in which the taxation also keeps an important factor.

Also, the tax rate may be affected by interest rate. In Figure 3 and Figure 4, all policies of tax regulations are equivalent to reducing interest (γ2 -> γ1) when economy overheats or expands (Y ↑ ↑), and all policies of tax regulations are equivalent to increasing interest (γ1-> γ2) when economy depresses or contracts (Y ↓ ↓). Therefore, it is better to keep reducing interest during economy expansion and keep increasing interest during economy depression.

Above analysis gave a trustable reference. The economic analytical methods focus on geometric analysis, yielding tendency estimation, rather than complete exact computation.

8. Conclusion

The interest, exchange and tax rates are three important control factors in both macroeconomic and microeconomic systems, where interest, exchange and tax rates interact with each other. Tax expresses the economic policy of governance, which reflects social equality. Interest↓ rate is a key parameter for regulating money supply, which determines the national finance with reflecting economic efficiency. Exchange rate is a vital factor for international business, which determines the international economy.

We know that tax rate had long-term stability regulated by laws, while interest rates had short-term stability controlled by banks and the exchange rate changed randomly following market's change. As tax rate regulates

wealth redistribution for approaching social equality, interest policy represents national finance policy for optimizing economic efficiency, and exchange rate describes international economic policy for realizing national benefits, the three ratios possess key role in regulating national demands. We should pay more attention to modify the three ratios under the synthesized framework for balancing economic efficiency and social equality.

As the results, it is suggested to utilize modified strategies via exchange and tax rates besides normal monetary and fiscal policies mainly via interest and tax rates. When ones need to simulate national local market, ones can raise the exchange rate. Otherwise, when ones need to promote international global trade, ones may lower the exchange rate. Meantime, it is found that tax reduction is good policy when tax rate is lower than normal, and that tax increase is good social policy when tax rate is higher than normal, during economic overheat. Also, tax reduction is good policy when tax rate is higher than normal and that tax increase is good social policy when tax rate is lower than normal, during economic depression. While economic system seeks efficiency and social system pursues equality, common interest modifications with elastic exchange and tax rates can be applied for balancing efficiency and equality, which will benefit economic social development towards epistemological true with axiological good.

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