

<Article>

An Analogy between Macro Economic Body and Human Body

Toshihiro Iwata

I want to thank Dr. Johnson (UWEC), Dr. Lucien Ellington (UTC) and Mr. Mohammad Kaviani (IUPUI).

How do the teachers teach macroeconomics, which is one of the important elements of economics? I would like to answer this question by utilizing analogies between economic body and human body. One is on their structures. Another is on their fluctuations.

I Introduction

I think one of the most helpful means to teach macroeconomics is through using an analogy between macroeconomics and the human body. Both bodies are living, and have a delicate mechanisms (especially on equilibrium system). Also they have a curve of boom and slump. I feel that these three points of commonality should be addressed attention when we teach economics. Above all the general concept of equilibrium is found only in economics of all social sciences. Against several disturbances, a lot of reactions act in two bodies. In a dynamic economic system, the warranted (or desired) rate of growth (G_w) that most capitalists attempt to achieve and the natural (or inherent) rate of growth (G_n) are not equal everytime, because G_w and G_n are entirely different concepts, and they have different determinants. But G_w and G_n trace together around an equilibrium path.

In the human body if an inflammation is generated by internal or external causes, several reactions will result. Their cardinal signs are reddening, tumor, pain and fever in general. The reddening is produced by a hyperemia of a white blood corpuscles. The tumor is produced by the exudation of corpuscles; the pain and fever are produced by hyperemia and a rise of metabolism. These responses are the reactions of an organization of a living body.

Let's analyze the following two concrete analogies: (i) the analogy won structure (ii) the analogy won fluctuation.

II Analogy on Structure

In recent years we have heard a controversy between Keynesians and Monetarists. This controversy arises from the question of which is the key point in the economic system, control of money supply or fiscal expenditures.

I think that two controls or policies are connected. Hence we can't separate one being more important than the other either economic theory or in economic policy. Money and markets are similar to the most important organs in a human body, "heart" and "liver". Of course both organs are important and they are connected.

I would like to make another analogy between two bodies. Government as the head or cerebrum. Monetary policy and fiscal policy are the controllers of the cerebrum. The central bank (Federal Reserve Bank) is the heart. Money is the blood. Factory is the stomach. A (free) market is the liver.

(1) Consider Fig 1. We take in food through our mouth and digest it in our stomach. Similarly we know that raw materials are processed in the factory. And the nutritive and absorbable things which have

An Analogy between Macro Economic Body and Human Body

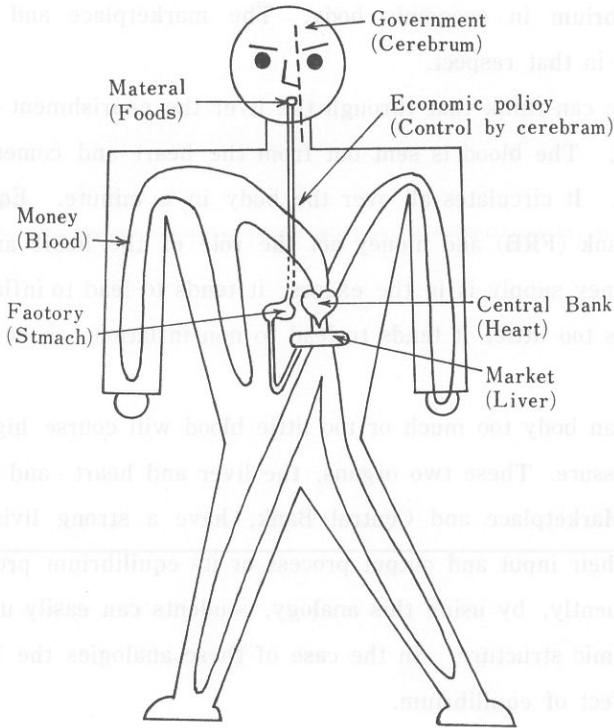


Fig 1

passed a digestive organ are absorbed in the liver only in certain quality and quantity for human body. In this process the liver exhibits the counteractive effects and the ability of storage and regeneration itself. We can say the liver has a balancing effect.

Similarly many useful commodities are supplied in the market place. The supply is the quantity of goods and services that producers are willing and able to sell at various prices at a given time. The demand is the amount of goods and services that consumers are willing and able to purchase at various prices at a given time. Accordingly, we have Supply and Demand. Thus the market is a place of regulation

or equilibrium in economic body. The marketplace and liver are just alike in that respect.

(2) We can think that through the liver the nourishment goes into our blood. The blood is sent out from the heart and comes back to the heart. It circulates all over the body in a minute. Equally our central bank (FRB) and money act the role of the heart and blood. When money supply is in the excess, it tends to lead to inflation, and when it is too little, it tends to lead to non-inflation (or demand deflation).

In human body too much or too little blood will course high or low blood pressure. These two organs, the liver and heart—and these two places, Marketplace and Central Bank, have a strong living power through their input and output process or its equilibrium process.

Consequently, by using this analogy, students can easily understand the economic structure. In the case of these analogies the key point is the effect of equilibrium.

III Analogy of Fluctuation

For many years another main theme of macroeconomics has been the analysis of business cycles.

In the private sector, when income exceeds households' consumption, positive saving results. Saving is the fund needed for investment. Therefore, profit—investment ratio from the firms stand point is the major cause of supply and demand discrepancy or business cycles.

A lot of the theoretical economists (including Marxist economists) have discussed the ultimate peaks and troughs of the business cycles. However, the real curve of the business cycles scarcely has run against the ultimate peak and trough. We can say that this has been

An Analogy between Macro Economic Body and Human Body

caused by a character of investment movements which is unstable itself but stable along the trend line (Economic growth curve). And as the economy suffers from several effects, this curve overshoots or undershoots above or under the trend line.

Let's look at Fig 2(a). Regarding skin diseases we could have several

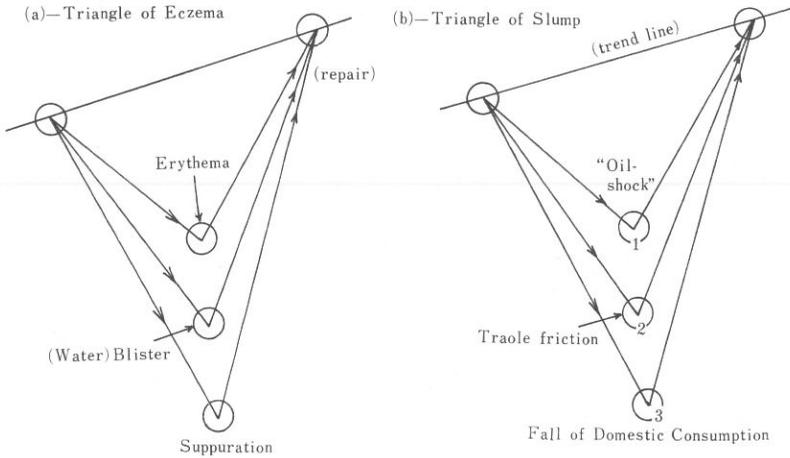


Fig 2

different cases. For example, the triangle of the eczema is a very famous case in this point. Similarly, we can have multiple troughs in business cycles. Look at diagram 3 on the next page. Case ① may be caused by "Oil-shock". Case ② may be the trade frictions between foreign countries. Case ③ may be the fall of domestic consumption. Case ③ by itself does not necessarily cause such fluctuation. As the living human body may have light, medium, or severe illnesses. Just

as human illnesses vary in cause and degree of severity, so can economic fluctuations arise from varying causes and be of varying degrees of severity.



Fig. 2

different cases. For example, the triangle of the boom is a year
 (annual) in the point. Similarly, we can have multiple troughs in
 business cycle, look at diagram in the next page. Case 1 may be
 caused by "oil shock". Case 2 may be the trade balance between
 foreign countries. Case 3 may be the fall of domestic consumption.

※ This paper is based on my lecture for the summer workshop of economics at Indiana University-Purdue University at Indianapolis, Indiana, USA 1986.