Lecture Note 15: Keynes; Keynesian growth models

The contribution of **John Maynard Keynes** (1883 – 1946) is considered as the most important step in the development of economic theory in the 20th century, and it reestablished macroeconomics as a central part of economics after the marginalist breakthrough which dealt mainly with microeconomics (the terminology *micro-* and *macroeconomics* was introduced in the 1920s, mainly by Ragnar Frisch). Actually, Keynes wrote several books, but *The General Theory of Employment, Interest, and Money* from 1936 is the one which created the Keynesian revolution.

As we have seen, he basic idea of a disequilibrium between the aggregate supply and aggregate demand has been a recurrent theme even with the classical writers, and the use of government intervention to improve the lack of demand was under consideration in many countries, notably in Sweden. Also the considerations of investment and monetary policy were in the air, but the important contribution of Keynes was the to collect this different parts into a single theory explaining the disequilibrium and indicating how to mitigate the problems.

A very common (but recently challenged) viewpoint is that the first step in the Keynesian reorientation of economics must be the recognition of price stickiness – prices do not change smoothly and immediately to over- or undersupply, meaning that the equilibrium must be established through quantities instead of prices (what intuitively is a disequilibrium will be an equilibrium in the model where quantities are changing and prices are fixed). This actually points to what may be the essence of the Keynesian revolution, namely that it is not enough to look at equilibria and market clearing, one needs also a more detailed (and necessarily dynamic) analysis of how one gets there and what happens if leaving it. In a recent work, Marglin (2021) sets out to give a modern (in the sense of model-based) version of the essential content of the General theory, thereby clearing up several misunderstandings which occurred due to Keynes' formulation of his theory. Marglin emphasizes that the fundamentally new is the recognition that equality of supply and demand does not necessarily mean that the economy reached an equilibrium, and that the economy may adapt to many different ways to disequilibria.

The story told by the contemporary textbook versions of the Keynesian model was already in the *General Theory*, but the elaboration with the 45°-diagram or IS-LM came later, they are due to **John Hicks** (1904 – 89) (as are many of the by now well-established textbook ways of presenting economic theory) and **Alvin Hansen** (1887 – 1975), known as the "American Keynes".

In the following (and based on Beaud and Dostaller – shorthand: B&D) we shall return to what happened to Keynes' ideas after Keynes. Here just a comment: in the late 1960s and 1970s, the new developments in the theory of general equilibrium

theory led to a revival of interest in the *microeconomic foundations* of the Keynesian model, and a general equilibrium model with fixed prices and quantity a was set up, mainly due to **Jacques Drèze** (1929 – 2022) and **Edmond Malinvaud** (1923 – 2015). Another direction, mainly staying within the macroeconomic context, was initiated in the 1980s with a renewed interest in modelling stickyness of prices rather than just taking this stickiness as given. We return to this later.

Dynamic extensions of the Keynesian theory: The Harrod-Domar model. In all its essential parts, the *General Theory* deals with a short-term situation of an economy with unemployment, and the long-term development is only treated in broad outlines. An extension of his theory, using the basically the same approach to consider problems of growth and development, was provided almost simultaneously by another member of the group around Keynes, namely **Roy Harrod** (1900 – 1978), who published a book on trade cycles in 1936 and elaborated its arguments in a later work (1939), transplanting the basic Keynesian model to dynamic framework.

The purpose of Harrod's work was to set up a new method in economics in order to explain the business cycle. For this, he considered three growth rates,

(a) the *actual* rate of growth,
(b) the *warranted* rate of growth, and
(c) the *natural* rate of growth.

The purpose was to combine the investment multiplier with what he called the *acceleration* principle. From the Keynesian analysis, we have the equation

$$Y = \frac{1}{s}I,$$

and if we add an equation saying that investment comes about as a response on change in total income,

$$I = \alpha\Delta Y,$$

we get Harrod's fundamental equation

$$\frac{\Delta Y}{Y} = \frac{s}{\alpha}. \qquad (1)$$

Thinking of the investment equation as expressing the investment desired or *warranted* for a change in output, we get that (1) expresses a growth rate which will leave investors satisfied with the development of the economy, but from which the economy may depart occasionally.

Based on this it is possible to analyze deviations giving rise to business cycles. Suppose that the actual rate of growth exceeded the warranted rate. Then actual investment would be smaller than what was desired (inventories were becoming

undesirably low), and the response would be to increase the rate of growth of output in order to replenish inventories and meet the demand, but then again the actual rate of growth would be above the warranted rate. A similar case could be made if the actual growth rate was too low. This is what was later called the "knife-edge problem" of Harrod's model, but it is not as much an analysis of stability as an argument establishing the uniqueness of the warranted rate of growth.

When we add that the economy cannot grow faster than the production technology allows, we get the natural rate, and if it differs from the warranted rate, the economy will experience fundamental disequilibrium problems of either under- or overproduction.

Independently of Harrod, the American economist **Evsey Domar** (1914 – 1997) developed a similar model of growth based on Keynesian ideas, published in 1946. The main difference was the treatment of investment, where Domar assumed that investment triggers an increase in potential output,

$$\Delta Y_p = \sigma I.$$

In this way Domar added the long-term effects of investment in the form of extended productive capacity, while Keynes considered only the short-run demand effects of investment. Adding the short-term effects give another equation (the multiplier effect of changes in investment) and assuming that investment is such that the potential increase in output is realised, we get

$$\frac{1}{s}\Delta I = \sigma I \text{ or, equivalently, } \frac{\Delta I}{I} = s\sigma.$$

This expression is formally equal to (1) when we put $\sigma = \frac{1}{\alpha}$, so that it makes sense to consider the two models as a single one, known as the Harrod-Domar model.

References:

Marglin, S.A. (2021), Raising Keynes – A Twenty-First-Century General Theory, Harvard University Press, Cambridge, Massachusetts.