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INVESTMENTS IN EDUCATION DEVELOPMENT

Course:

Economics II (macroeconomics)

Chapter 6

6.1 Inflation, Part I

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Introduction

The aim of this chapter is to deepen understanding of the nature and causes of inflation, respectively inflationary process whose source is the fault of the aggregate demand and explanation of the effects of inflation on changes in equilibrium production (income) assuming positively sloping aggregate supply curve in the short term.

Here we will deal with the inflation rate and the growth rate of real income (production) and derive the SP and LPC curves. We will attend to the analysis of inflation rate and the growth of nominal income (product), we derive the demand curve of growth DG and we will have its characteristics. I will conclude my analysis of the determinants of the growth rate of aggregate price level (inflation) and growth rate of real output (income), define adaptation course in case of adaptive expectations of inflation. At the same time highlight some fundamental connection of this process.

1 The inflation rate and the growth rate of real income

Inflation means the continued growth of the aggregate price level in the time that permeated all goods and services.

The growth rate of aggregate price levels between the two periods we call inflation or inflation only briefly. The inflation rate is usually measured by consumer price index (CPI), price deflators GNP (GDP) and producer price index (PPI).

According to primary sources (generators), which cause inflation, there are two types of inflation:

1) ***demand-pull inflation***, is the primary source on the side of aggregate demand in the excessive growth;

2) ***cost-push inflation***, initial source is on the supply side in the form of price increases which is due to the increase in costs for companies induced growth of nominal wages, prices of materials, energy prices and other services production factors, technological changes, etc.

a) Demand-pull inflation and real income growth

Generator demand inflation = overgrowth, respectively continuous excessive increase in aggregate demand.

The causes of aggregate demand:

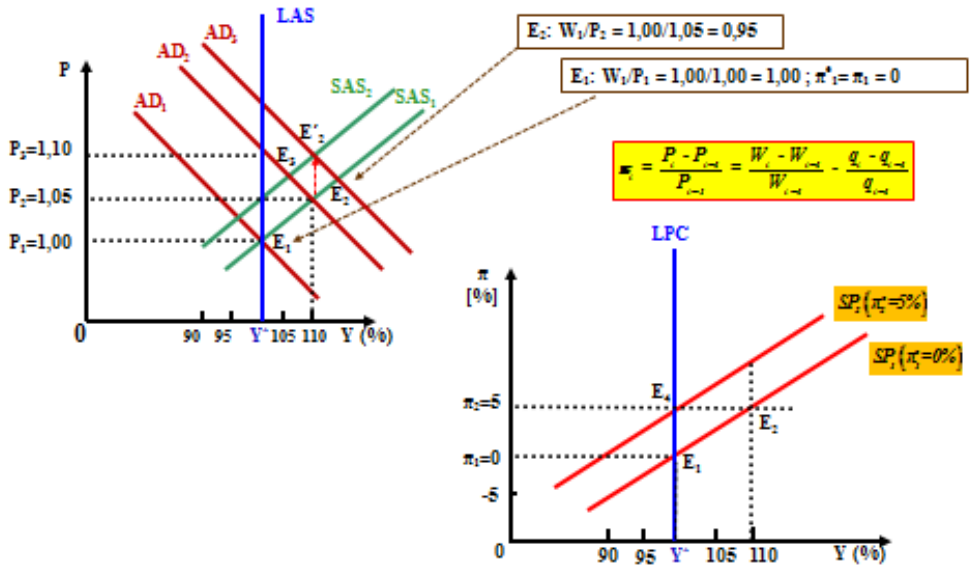
- efforts to permanently keep the unemployment rate below the natural rate of unemployment, i.e. keep the actual product persistently above potential GDP;
- significant and sustained government budget deficits, which (if they cannot be financed by bond issues and selling them at capital markets, e.g. due to its lack of absorption) are covered by emissions, respectively "printing" money. At

present, the cause of so-called "quantitative easing", i.e. increasing masses of cash on hand, increasing money supply.

The source that drives the demand-pull inflation is either overly expansionary (inflationary) monetary policy or excessive expansionary fiscal policy.

Using a graphical model (Fig. 6.1.1) we are able to explain why continuous excessive acceleration in aggregate demand leads to a constant increase in the aggregate price level, i.e. inflation generates a curve to derive the SP.

Fig. 6.1.1 Demand-pull inflation – the acceleration



Initial situation: the economy is in a state of long-term equilibrium:

- there is a balance between aggregate demand and supply,
- the actual inflation rate is equal to the expected rate of inflation,
- real wage rate equals the equilibrium wage rate (the index = 1.00).

When increase in aggregate demand (monetary or fiscal expansion), the production and employment will fluctuate, it means that although the increase in aggregate demand results in higher product (retired) and reducing unemployment, but if further expansionary shock does not come, the economy begins to return gradually to a state of long-term equilibrium.

To avoid fluctuation in output and employment and to maintain production levels above potential output it is possible only that there is a permanent increase in aggregate demand, i.e. the permanent acceleration.

b) SP curve and long-term Phillips curve

Curve expresses SP (as shown in the graph in its derivation) a combination of levels, respectively production growth rate and inflation rate, which are compatible with the (constant) the expected inflation rate. SP curve is just a reformulation of the curve short-term dynamic aggregate supply (see previous lecture). In other words - SP along the curve is a measure of expected inflation unchanged.

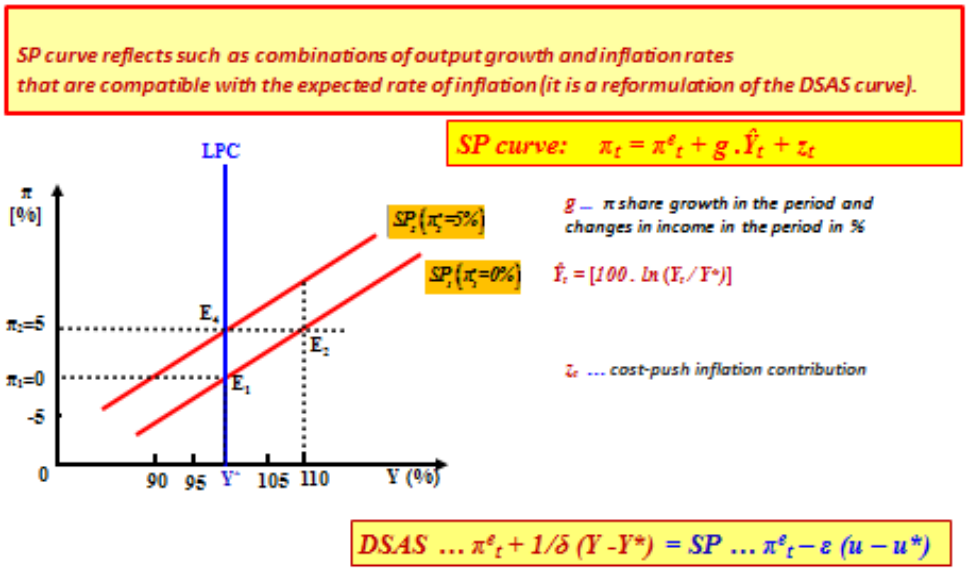
SP curve equation establishes the relationship between the actual rate of inflation on the one hand (= dependent variable) and the expected inflation rate and the rate of actual income (product) to the natural product (retired) as a basis, i.e. coefficient ratio (product) and the percentage deviation from 100% on the other.

SP curve equation is equivalent to the equation of the curve short-term dynamic aggregate supply (DSAS), which was addressed to the previous lecture.

Long-term Phillips curve (LPC) is vertical, based on the level of potential GDP and is made up of points at which the rate of actual inflation and expected inflation equal.

The potential product is compatible with any measure of the actual and expected inflation, and therefore in the long term there is no substitution between inflation and unemployment growth rate, respectively production (see Fig. 6.1.2 – the LPC curve is vertical).

Fig. 6.1.2 SP Curve and Long Run Phillips Curve (LPC)



c) The formation of the expected (anticipated) inflation (this problem was partially solved in connection with the interpretation of the Phillips curve). The mechanism of

forming expected inflation, i.e. the prediction of the behavior of economic variables (and thus inflation) is implemented:

- either on the basis of information about the behavior of economic variables in the past;
- or on the prediction of the behavior of economic variables on an economic model (a special case of this case predictions are rational expectations - will be characterized in the next part of the lecture).

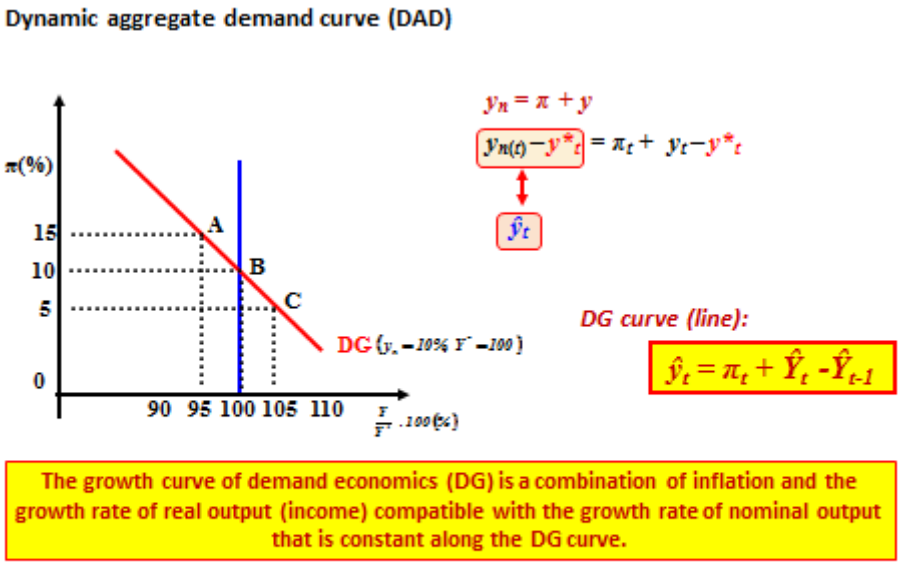
2 The inflation rate and the growth rate of nominal output

SP curve (as an analytical tool) is not sufficient to determine the effect of a permanent increase in aggregate demand at the current rate of increase in output growth and inflation. This is necessary to develop yet another analytical tool, along with the SP curve would provide a solution to this problem. This is so because the SP curve represents a large set of combinations of inflation rate and real product growth, which are compatible with the expected inflation rate. To do this, we can determine at which point the economy specifically located, it is necessary to develop a curve of growth of aggregate demand (DG), respectively dynamic aggregate demand curve (DAD).

The starting point for the development of DG curves, respectively DAD is a relationship describing the determination of the equilibrium real product (formulated previously - recall). By adjusting this relationship (equation) we get equation for the growth rate of nominal output, which is approximately equal to the sum of the growth rate of aggregate price level (inflation) and growth rate of real output ($y_n = \pi + y$).

Using this relationship we calculate a curve in the graph, illustrate the growth in demand economy (DG), respectively dynamic aggregate demand curve (DAD), which has a negative slope.

Fig. 6.1.3 DAD Curve



DG curve represents the combination of inflation and the growth rate of real output (income) compatible with the growth rate of nominal output. Along the curve DG is a constant growth rate of nominal output, which is alternatively divides between different combinations of growth rate and inflation rate of growth (decline) in real output.

3 Determination of inflation and real product growth rate: adaptation course

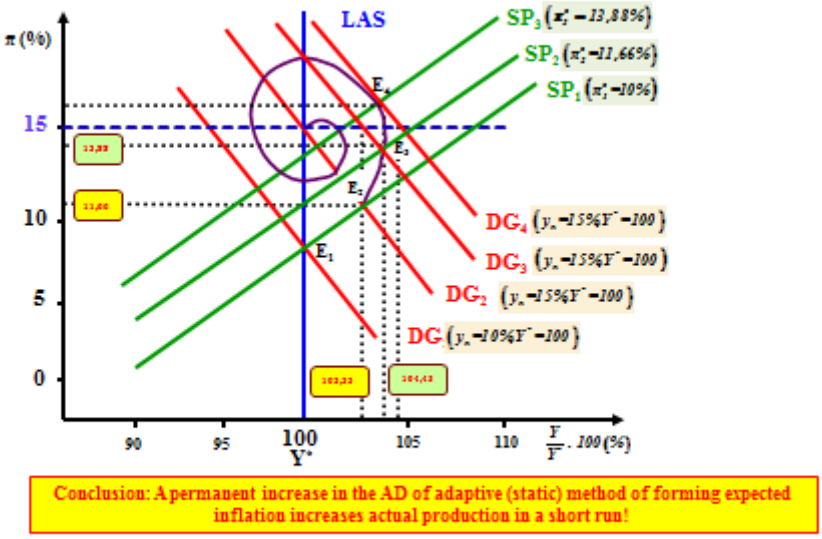
Here we will address the problem of how permanent increase in aggregate demand is divided between real output growth and inflation. Crucial to finding the right answer (and thereby address the problem) are two facts:

- type of expected inflation forming;
- SP slope of the curve, i.e. size g.

a) Adaptation path, inflation rate and the rate of growth of output in case of adaptive (static) method of forming expected inflation

The answer is obtained by using algebraic calculations, tables and graphic solutions: permanent increase in aggregate demand (growth rate of nominal output) in case of adaptive (static) method of forming expected inflation increases the actual production for a short time. In the long run leads to growth in production, but production is returning to the level of potential output. The inflation rate during this process increases, eventually exceeds, respectively overshoots the growth rates of aggregate demand to eventually returned to the level rate of growth of aggregate demand.

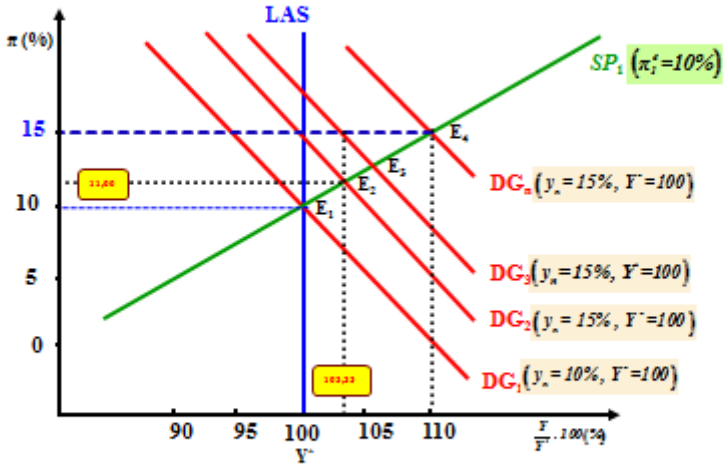
Fig. 6.1.4 Adaptation path and adaptive (static) method of forming expected inflation



b) Adaptation path of inflation rate and the rate of production, provided that the expected inflation rate remains unchanged

In this case the adjustment path has not the spiral shape. The SP curve (along which the expected inflation rate remains the same) is unchanged, while the curve DG is gradually shifting in every other period right. Adaptation course in the direction of a linear displacement curve DG ends when the actual inflation rate to be aligned with the growth rate of aggregate demand. As long as the growth rate of nominal output (aggregate demand) is higher than the actual rate of inflation and real output will continue to grow. This is so because the rise in prices reduces real wages, which are not adapted (by assumption) price development and the companies have a motive to increase employment and production.

Fig. 6.1.5 Adaptation path of inflation rate and the rate of production, provided that the expected inflation rate remains unchanged

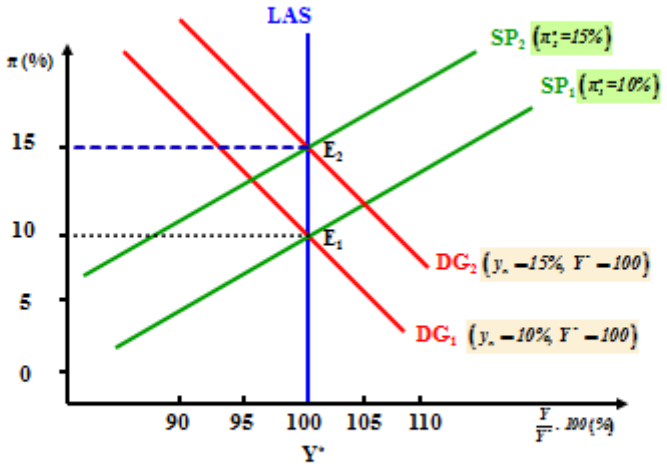


c) Adaptation path and rational expectations

Earlier, it was stated that the adjustment process can also be done assuming the formation of inflation expectations based on rational expectations.

This process is performed so that businesses take as a basis for their decisions all available information and on this basis adopted statistically the best solution.

Fig. 6.1.6 Adaptation path and rational expectations



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