Macro-economic model of aggregate market in the albanian economy, and relevant problems thereto

Alqi Naqellari

Abstract

This paper uses concrete data obtained on the Albanian economy to analyse the positions of aggregate demand/supply curves in the economy. As examples from micro-economics, we have taken the models of Ŵalras and Marshall, to view the possibilities of achieving an economic equilibrium. Data available from the Albanian economy, and from the global economic trends generally, have shown that the positions of curves are such, with differences in their inclination, while the classic position of the aggregate demand curve, with a negative tred, studied in the macro-economic theory, is unique. Therefore, our objective is to try and show the scholars of the field that the macro-economic problems must be viewed in this light, and not through the static scheme used so far.

The equilibrium is met not only when the aggregate demand and aggregate supply curves are met, meaning when the aggregate expenditure are equal to aggregate production, but it exists at every moment, independently of whether it is consistent or not, while the pricing trends continue to increase, similar to two other aggregates. The understanding of such a situation should give the possibility to governments and other policy-making institutions to review their positions and relations with monetary and fiscal indicators, in a view of making the organic connection, and increasing their working effectiveness. The paper aims to show how one can define the relation between monetary and fiscal policies necessary to see their role and relevance in the economic growth of a country.

Dr.sc. Alqi NAQELLARI

Introduction

The economy of Albania is already in the path of market economy. As such, it is characterized by the phenomena and processes known in the Western Europe, but with the indications of an economy just encroaching in the system. Therefore, we have tried to see what are the specialties of this economy in comparison to other economies, and how could such features be useful in further improvement of the status in market economy development. We shall concentrate mostly on the aggregate demand and supply curves, made by the Gross Domestic Product and Domestic Demand. The Gross Domestic Product was calculated by INSTAT with the following formula: GDP = VA (Value Added) + T(Tax on products) - S(Subsidies), while the Domestic Demand DD = EC (End-consumption) + FBKF(Gross Fixed Capital Formation) + Nx(Net Export, EX-IM) + NGJ(Changing situation). Its relevance stands right on the connection of these indicators ith the inflation rate, reflected in the deflator price. It is on these connections that we may view the effects of monetary and fiscal policies.

With this paper, we shall try to build a macro-economic model that has not been seen in conventional analysis situations, but it has been seen as a special focus on individual demand/supply curves in the micro-economic theory presented by Ŵalras and Marshall. The model we have built should be useful as a preparatory measure to elaborate on the analysis, thereby incorporating monetary aggregates, such as the M_1, monetary base, etc.

A view on theory

In this analysis, we will build upon the macro-economic theory of aggregate demand and supply, but simultaneously referring to micro-economic theory as well. We will refer to the theories of Ŵalras and Marshall on certain cases of market equilibrium, namely the first group, when the demand and supply curves are both recording positive inclinations. These models will serve as examples while passing from micro-economic to macro-economic analysis.

Walras and Marshal theories on equilibrium in abnormal positions of individual demand and supply curves[1]. This case is presented with figure 1. Looking at their normal behaviour the supply curve seems to be in its normal range, while the demand curve has the contrary, since it should normally plunge down on the right. Therefore, the demand curve shows a different behaviour than normal, and has taken the form of a normal supply curve.

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[1] Ms. Almarin NAQELLARI. PROBLEMS OF EQUILIBRIUM AND DISTRIBUTION OF TAX BURDENS ON THE ALBANIAN FUEL MARKET, STRUGA 2011. Pages 38-52

In such a situation, two cases may occur, the first when the demand curve is more elastic than the supply one, and the second case when it is more plastic. We will only look on the first case, according to Ŵalrasian and

Marshallian ways.

● First case, when the demand curve is much more elastic than the supply curve. In this case, the Ŵalrasian equilibrium is unstable, while the Marshallian equilibrium is stable. Figures 1a and 1b show the process of equilibrium regulation.
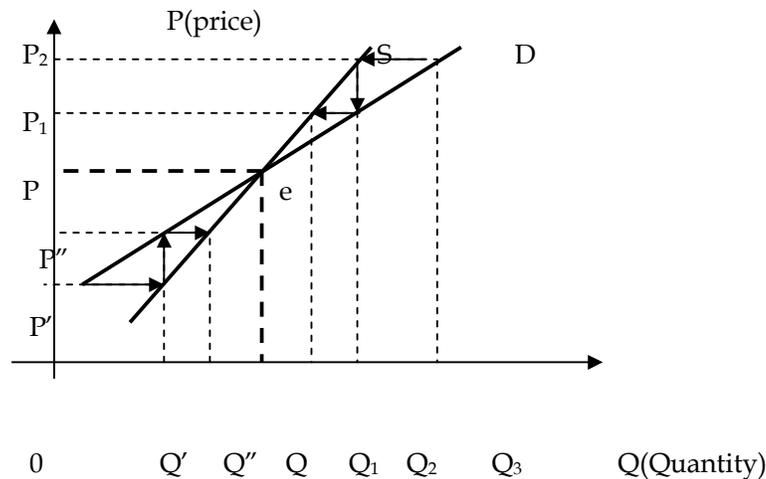
Fig. 1(a) Process of equilibrium regulation, Ŵalrasian method
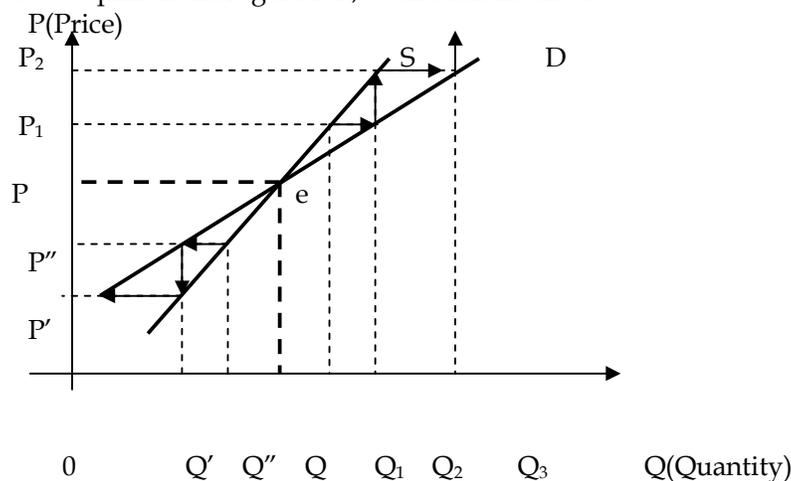
Ŵalrasian method. When demand and supply curves both incline right side, as shown in the figure, the equilibrium attained is unstable in the Ŵalrasian process, but more stable in the Marshallian one. Concretely, the price and quantity equilibriums shall be attained at OP and OQ respectively. Initially, let us see the movement of Ŵalrasian pricing process. This has been shown by the figure 1.a. Let us assume a changed price at OP_1. This price is relevant for the supply OQ_1 and demand OQ_2. In this situation, we have excess demand, which begins to exert pressure on the price, drawing away from the equilibrium level. This action takes the character of an inconsistent equilibrium. Further, if we change again the price to OP″, the situation of excess supply at Q′Q″ will exert downward pressure on the prices, pushing them towards the OP′. The Ŵalrasian regulation process continues in this way, expressing on the market, and drawing away from the balanced level. *In this way, in the panel a, in the Ŵalrasian view, the equilibrium is unstable.*

Marshallian method. Let us continue with an analysis of the figure 1.b in the Marshallian view. In contrary to what was stated above, the Marshallian process regulating quantity, the presentation with the panel b of figure 1 is characterized by a stable equilibrium. T see this, we assume that the vendors choose the quantity offered OQ′ over OQ. The corresponding price of the supply is OP′, while the demand price is OP″. The demand price is higher than the supply price, and the experience of vendors makes the supply move towards Q′Q″. Also, at the supply at OQ″, the demand price continues to be higher in relation to the supply price, thereby resulting in the situation that the supply continues to increase the demand, while the supply price equals at point e. Continuing further, if the supply moves to OQ_2, the demand price at OP_1 will fall below the supply price at OP_2, making vendors to reduce the initial supply at OQ_1, and further, the demand and supply prices equal at e. *In this manner, the equilibrium is stable in the Marshallian process of regulation of quantity.*

Fig. 1(b) Equilibrium regulation process, Marshallian method

Therefore, when both demand and supply curves show upward inclinations, where the demand curve is more elastic, and the supply curve is less elastic, the equilibrium is not stable with the Ŵalrasian process of price regulation, but it is stable in the Marshallian process of regulating quantity. Now, what is the situation of aggregate demand and supply in the Albanian economy of the recent years? This shall be analysed further.

In the paper, we have used a number of macro-economy papers, most of which have been listed as literature by the end of the paper.

3. Methodology. In this paper, we have used the methods of analysis and synthesis, method of comparison, econometric method for calculating curve functions, etc.

Analysis of demand and supply curves' functions, and building aggregate and theoretical market schemes.

The data used is summarized in the Table no. 1. These data were extracted from the Statistical Report of the Bank of Albania for 2010[2] and 2011.

Table no. 1 Data on aggregate demand and supply, linked to price levels in years.

Quantity in Billion Lek, price in Lek

Year	Deflator price	Nominal Aggregate Demand	Nominal Aggregate Supply	Real Aggregate Demand	Real Aggregate Supply
1996	21	443	346	21.095	16.476
1997	24	443	346	18.458	14.417
1998	26	505	409	19.423	15.731
1999	26	545	472	20.962	18.154
2000	27	616	523	22.815	19.370
2001	28	696	583	24.857	20.821
2002	29	772	623	26.621	21.483
2003	30	878	694	29.267	23.133
2004	31	948	751	30.581	24.226
2005	32	1,025	814	32.031	25.438
2006	32	1,114	882	34.813	27.563
2007	34	1,248	967	36.706	28.441
2008	35	1,389	1,088	39.686	31.086

The real GDP after the year of 2000 was accounted based on percentage of economic growth, building upon the data of the same Bank. To calculate the deflator price, the nominal GDP was divided by Real GDP.

Based on these data, we have calculated the curve functions, and built relevant graphs as per figure no. 2.

Figure no. 2. Aggregate supply and demand curves, in years, relative to price levels.

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[2] Annual report 2010. 1. 5 GROSS DOMESTIC PRODUCT, AS PER EXPENDITURE METHOD (1996-2008) with current prices, in Million Lek), page 226.
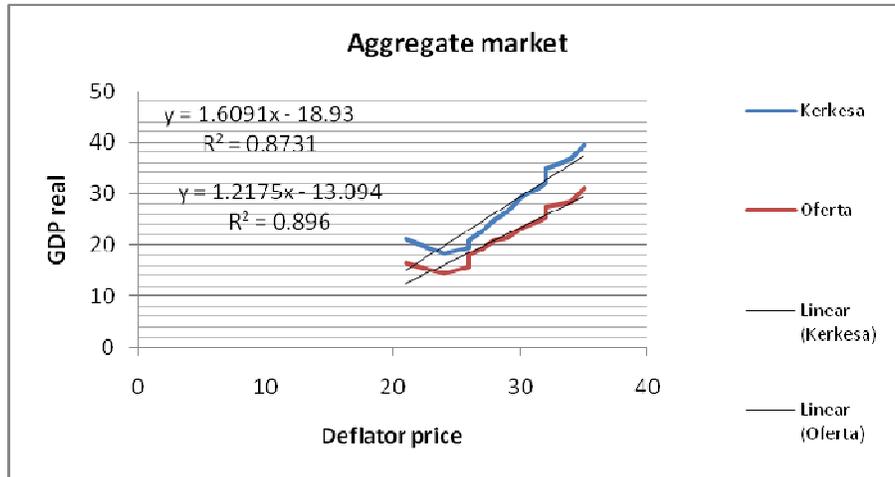
Based on aggregate demand and supply curve functions, we may extract aggregate price and quantity in equilibrium. When we say equilibrium price, we mean a level where the aggregate expenditure is equal to aggregate production, by eliminating all other factors, and only viewing the relation quantity/price.

$Qd = 1.6091Pd - 18.93$

$Qs = 1.2175Ps - 13.094$

If taken in the micro-economic context, at the equilibrium condition, we will have:

$Pd = Ps = Pe$ and $Qd = Qs = Qe$

Equalling each side:

$1.6091Pe - 18.93 = 1.2175Pe - 13.094$

$1.6091Pe - 1.2175Pe = 18.93 - 13.094$

$0.3916Pe = 5.836$

$Pe = 14.92$ lek
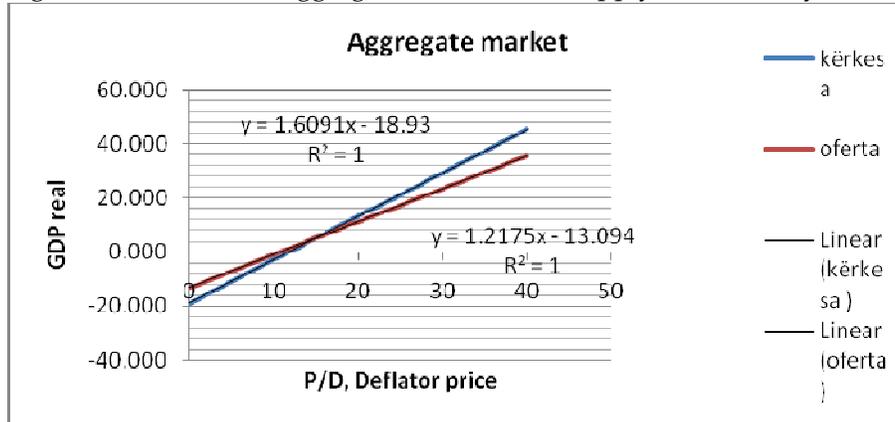
$Qe = 1.6091*14.92 - 18.93$

$Qe = 5.07$ Billion Lek

Below, we have presented the theoretical curve of aggregate demand and supply, calculated at a zero price. The GDP is in Billion Lek, while the Price P/D in Lek.

Figure no. 3 Curves of aggregate demand and supply, theoretically calculated

To facilitate analysis of theoretical data, we have enabled the construction of a theoretical graph, as per figure no. 3. By placing quantity in the x-axis, and price in the y-axis, we have obtained the following transformation of figure 3 as per figure no. 4.

Figure no. 4 Theoretical curves of aggregate demand and supply
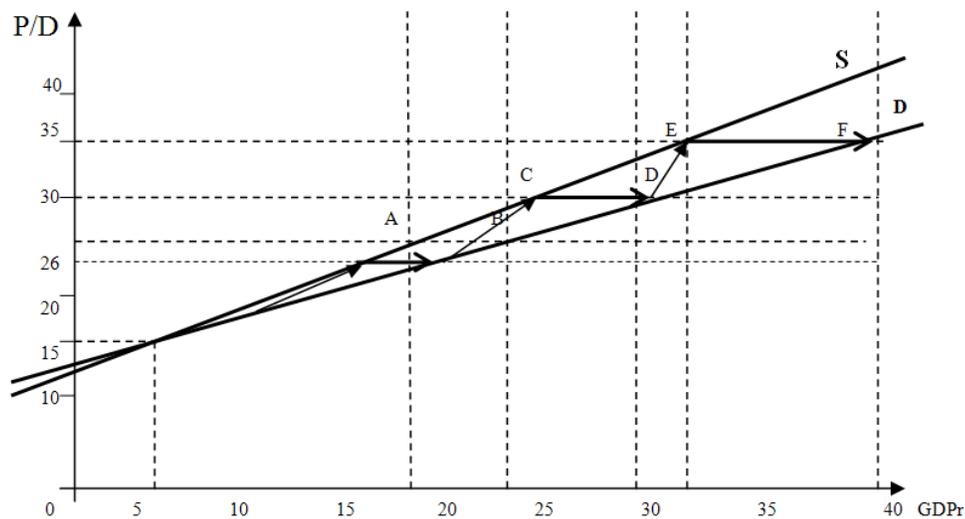
The graph above was built based on the equilibrium level, and the data of years 1998, 2003 and 2008, with respective prices and quantities, P (26, 30, 35 lek) and AB (19.4, 15.7), CD (29.2, 23.1), EF (39.6 and 31 Billion Lek). If we would have an individual market, with one type of good, and referring to the Ŵalrasian

method, we would move away from the equilibrium level with the further logic.

What happens in the actual case of the Albanian economy?

We are initially at the price level of 26 Lek per unit, where the unit is the AB segment. At this price level, the demand is higher than supply. Knowing that the demand is higher than supply, there is obvious inflating pressure. Producers and further vendors will raise the price level to 30 Lek, at point C. At this point as well, in relation to demand, we are at the previous position, where the demand remains ever larger than supply. Only increasing prices and its growth at the calculated trend may cope with the increasingly larger demand.

4.2 Relation with monetary aggregates

The demand growth as expenditure is expressed best in growing monetary aggregates as monetary base, out-of-bank money, aggregates M_1, M_2 and M_3. For the three years taken as example in the analysis aboe, we have the following figures for BM and M_1.

Table no. 2 Two monetary indicators for 1998, 2003 and 2008[3] in billion Lek.

Monetary aggregates	1998	2003	2008
Monetary base	89,887	160,554	271,7
M_1	83,667	144,730	282,8

If we compare the growth of the monetary base from 1998 to 2008, it has grown 3 times, while the real product only twice, in conditions in which the price has increased for 9 Lek.

What do these data show? They show that the demand in our case is reflected on the monetary base, or the aggregate M_1, has grown with a greater pace, by adapting to the inflation rates. It is the growth of aggregate demand that has pressured on Domestic Product. It has preceded its growth. In this case, there is no possibility for the curves of these two aggregates, which are organically connected to each other, to have opposite directions. This is not the inflation/unemployment connection, but the relation between monetary supply expressed in an aggregate demand and domestic product. Hence, in these figures, we see materially the influence of the monetarist theory, expressed in the formula V*M = P/D*GDPr or V*M = GDPn. If one takes the data for the years mentioned above, we will have the following positions (figure no. 3).

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[3] Statistical Report 2010, and Monthly Statistical Report of the Bank of Albania, 05/2011.

Table no. 3 Speed of money circulation, and its multiplicators[4]

| Years	GDPn	M1	V=GDP/M1	M3/BM
1998	409	83,728	4.9	2.7
2003	694	144,730	4.8	2.8
2008	1088	282,800	3.8	3

The Gross Domestic Product and aggregate M_1 are expressed in Billion Lek. If we would use the data since 1998, and further until 2009, then the differences with the data shown above would be minor, the average of V (GDP/BM) would be 4.1,V (GDP/M_1) 4.2, and the multiplicator 2.8. What do these data show? They show that the economic growth was preceded by an increase of monetary indicators such as monetary base, aggregates M_1,M_2,M_3 and out-of-bank money. In short, the aggregate demand growth has stimulated the growth of Gross Domestic Product, or the economic growth. Further, it is this increase that has covered for the increased aggregate price, or the deflator price, and the decreasing speed of money circulation.

What would be the position of curves of aggregate demand and supply in a stagnating or long-term situation?

What would be the position of the curves of aggregate demand and supply when the economy is increasing?

4.3 Analysis of the existing equilibrium model

To provide an answer to these questions, we will interpret the existing model, where the aggregate demand curve marks a negative inclination, and touches on three positions of the curve, the aggregate supply, the Keynesian, intermediate and classical supply. For this, we construct the structure of an aggregate market, like in the figure no. 5, where we have placed the curve of aggregate supply AS and aggregate demand AD in 5 positions, in all three segments.

Figure no. 5 Aggregate market[5]

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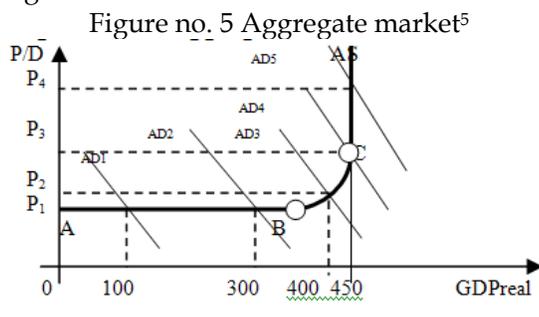
[4] Ibid.
[5] Macroeconomics. 2007 ediction. A.Naqellari. Page 50

We are at the AB segment. At this segment, the economy is in depression. To come out of this situation, we are not applying an expansionist monetary policy, but an expansionist fiscal one. We are increasing public expenditure with an influence on the GDP, 200 Billion Lek. Therefore, from the position AD_1, we go to position AD_2. At AD_1, AD = AS for the price level P_1, which does not change at all, because the factors are low-priced and we have a high unemployment rate. At AD_2, AD_2 = AS for the price level P_2. This status quo will continue until the point B. After this, the price of economic factors begins to grow. Therefore, another increase of public expenditure would take us to the figure of 450 Billion Lek, which is achieves the potential product and the product for a longer term. If we try again to increase expenditure, by an assumed figure of 30 Billion, this growth would make the curve moving upwards to the right, to the position AD_5, but failing to show the expenditure. Until the point C, we were okay. After such point, we cannot know for how much have the expenditures grown, but we know that such move of the curve takes to the increase price level to P_4 and further.

5. Analysis of our model for the intermediate and classical and Keynesian stages, with a positively inclined demand curve.

5.1 Analysis of the intermediate stage of the aggregate supply curve. There is no reason to make the analysis for the intermediate stage, because we have the concrete case of the Albanian economy.

5.2 Analysis of the case when the aggregate supply is in the classical or the long term position, or the economy is stagnating. Below, we will make such an analysis with the aggregate supply curve, when it is fully plastic.

In the first case, on the right side, we have drawn the aggregate demand curve with a positive inclination. In the x-axis, the real GDP in Billion Lek, and in the y-axis, P/D in Lek. With the price P_1 = 30 Lek AD is 30, and AS at potential product is 25. If the Government increases its expenditure for government purchase by 10 Billion, what will happen in the market? It is obvious that at this level, we will have the price of 35 Lek without any change in the quantity of product. Therefore, in the classical case, an increase in the governmental expenditures will not increase production, it will increase only the price. It is the price that puts the market in equilibrium at all times. The market is not at equilibrium only when the supply is equal to demand, but it can be at equilibrium when they are not equal as well. The price makes that equilibrium. The figure presenting the demand curve at a positive inclination shows that clearly, while in the existing model structure, that was unclear. In our case, we see the price fluctuations. These fluctuations show a combination of differences between AD and AS with minimal and maximal price levels.

These fluctuations show that the market price is not the same at different periods of the year. The increase in the vertical axis exerts pressure on demand, and on monetary supply as a result. What does that mean? It means that the increased difference between minimal and maximal price requires an addition of money in circulation, to compensate for the increase in the price levels. Therefore, the Government would index the salaries, or the Bank would need to intervene with monetary policies. The Central Bank must react with its monetary policy instruments.
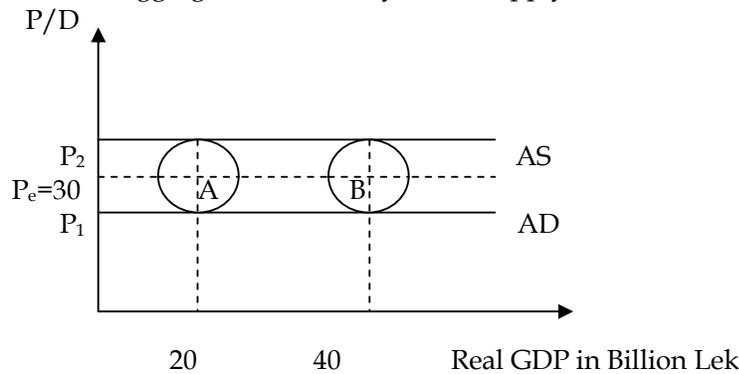
Figure no. 6. Aggregate market structure
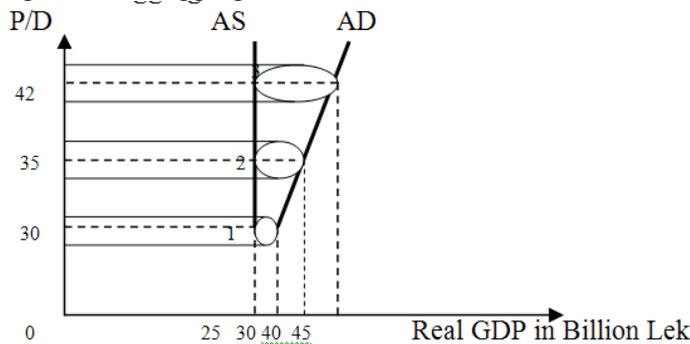
5.3 Analysis of the case when the aggregate supply curve is fully elastic, or the economy is in a growing depression.

This case is presented by figure no. 7.

Figure no. 7 Aggregate market, Keynesian supply curve.

At the point A, we have a macro-economic equilibrium, where the demand matches the supply at the price level of 30 Lek.

An increase in aggregate expenditure would draw the supply at the same size, without demanding a change in price levels. This occurs because the factors are at high supply in the market, while the unemployment rate is high. Therefore, the economy goes from level A to B, where again we have AD = AS with P = 30 Lek. In this case, the price curve is round, and makes no influence on demand. If we continue to increase expenditure, we go to the intermediate model, which is the case of the Albanian economy, where both curves draw upwards to the right. The demand curve is more elastic than the supply curve. The circle becomes an elipse, and pushes the demand to the right, with the increase of the vertical axis, which represents the change in the price level.

6. Concrete results

1. The traditional concept of placement of aggregate demand and supply, where the aggregate demand has a negative inclination, while the aggregate supply has a positive inclination. In the concrete case of the Albanian economy, both are positive. The aggregate demand curve is flatter than the aggregate supply curve. In the concrete case, the aggregate demand is identified with the national expenditure, while the aggregate supply is identified with the Gross Domestic Product. The aggregate market model studied today is a unique case.

2. Equilibrium is not only achieved when the aggregate demand curve and the aggregate supply curve meet, hence when aggregate expenditure is equal to gross domestic product, but it is present at all time. This equilibrium is achieved by changing the level of aggregate prices, which exerts pressure on aggregate demand, therefore monetary aggregates such as monetary base, out-of-bank money, M_1, M_2 and M_3. The meeting point of the aggregate demand and the aggregate supply is a unique case, linked to the stages of economic fluctuation.

3. A general tendency of the price level is their continuous increase.

4. The increase of Gross Domestic Product is associated with a growth in aggregate demand, and as a result, of monetary aggregates.

5. The recognition of our suggested aggregate market model provides an opportunity to the Government and other policy-making institutions to review their positions and the relation to monetary indicators, so that an organic connection is made.

7. Recommendations

We recommend to the Ministry of Finance, the Central Bank and the Statistical Institute to have the basis on the model we have presented above in their studies on growth tendencies of the Albanian economy, and the factors impacting thereto. This model should be built and combined with other macro-economic factors, so that the effect of its use is larger. We recommend it to lecturers of macroeconomics.

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