Means of regressive analysis for econometric estimation of the elasticity model

The mechanism of interaction between the foreign exchange course, the export and import is a subject of study to a number of econometric theories. The elasticity theory is that which gives the most appropriate way to approach the national economy under the now-a day's circumstances of market reforms.

With this article it is set as a purpose the means of regressive analysis for econometric estimation to be adapted to the interaction between the foreign exchange course and the international goods transaction.

The export and import react in various ways to the change in the foreign exchange course, on the strength of which are developed two particular interaction models called for short – particular elasticity models. The alternation in the balance of trade is a final result caused by their common existence. The effect is thought to be an aiming variable of the economic policy. On their base is built a common elasticity model, which defines the mechanism of how the foreign exchange course would influence the balance of trade. It is typical for the particular and the common elasticity models to be characterized whit a lag.

When exploring the economic-mathematical elasticity models it is set as a main task to define the variable parameters and their correlation. As a factoral variable of the particular and common models is assumed the foreign exchange course, while as relative variables are seen the import, the export and the balance of trade.

The economic-mathematical elasticity models are characterized with parameters that are supposed to reveal quantitative interactions between the variables. In this case they stand apart into two groups-elasticity coefficients and the lag of these coefficients. Consequently the coordinates of each parameter of the model are coefficient and lag.

The choice of methods for parameter estimation is directly connected to the operating in the economy currency-rates regime. Such a conclusion is assumed after an analysis on the possibilities of evaluation of the dependency when the foreign exchange course varies.

Following such discourses could be resumed that for each i-period there is a real correlation between the variables of the particular models and their parameters. That is why a generalized correlation for the particular models could be produced by means of regressive model of the allocated lags. Of course there is a risk while using the model of allocated lags to measure fictitious correlation. In order to overcome the mentioned problem the multiple regressive models could be reduced to series of

single regressive models. Analyzing the character of the common elasticity model would be concluded that Marshal-Learner's condition is the most suitable way of its presentation. It explains the final effect on the balance of trade from the change in the foreign exchange course. The practical usage of this condition would be possible after solving these two problems:

– Working out an inequality in the common case of mixed currency exchange rate regime;

– Securing juxtaposition of the allocated in time effects.

After accomplishing researches on the first problem, could be noted that in the common case the change in the foreign exchange course would reach the expected theoretical results only when the difference between the elasticity coefficients of the import and the export is bigger than one. In other case the result could not be defined.

To solve the second problem while determining the common elasticity model would be necessary to find out the complete effect of devaluation /respectively revaluation/ on the international goods transaction. It is possible if it is considered as a function of the lag's depth. In such a case, the Marshal-Learner's critical condition is calculated when comparing the cumulative elasticity effects of the export and import for the corresponding period of lag.

In order to test the developed methods would be used the monthly foreign exchange course data and the exported and imported quantities for the period Jan.1992-Apr.1996. The factoral variable is presented by the index – average monthly foreign exchange course Lv/$. The resulted variables of the import and export are presented by indexes: Goods in credit and Goods in debit from the balance of trade. Some other conditions are used.

In order to exclude auto-correlation in the initial statistic rows chain indexes are used and to exclude the seasonal component-the method of relating factual to smoothed values. For estimation are used The method of the smallest squares and the Kohrein-Orkutl's method of auto-regression transformation.

Analyzing the received results of the particular elasticity methods could be concluded that the export is much less perceptible to changes in foreign exchange course than the import. Non of the monthly regressive coefficients, respectively export elasticity coefficients exceeds one. Consequently it could not on its own to improve the balance of trade. It is not confirmed the widespread opinion that devaluation resources the export competition which would lead respectively to a higher export quantity. The results also made it impossible to estimate the final effect of the change in foreign exchange course on the import.

The analysis on the base of common elasticity model leads to the conclusion that there is an opposite effect to the one that has been theoretically expected. Such an effect could be explained with the adaptation of the inner-state prices to the new foreign currency rate and the elimination of the relative advantage of the native production. Through most of the period time the Marshal-Learner's condition values get contrary to the import means. This confirms the suggestion that devaluation has a short-term effect on the balance of trade. For a long period devaluation doesn't influence that balance, respectively conditional levs' revaluation makes the balance worse through the first two months, the seventh and the eight. But for the whole lagged period the total effect of the alternation could be defined as very insignificant. So could be resumed that nine months is the necessary period for adaptation of the inner economy production after the conditional currency exchange rate change.

The developed method for econometric evaluation of the elasticity model is a useful tool to examine the international goods transaction.

Resumed and translated by Petyo Boshnakov.