FOREIGN TRADE ELASTICITY

(ABSTRACT)

Foreign trade elasticity of exchange rate is a specific measure of the influence of exchange rate fluctuations on foreign trade dynamics. It reflects self-regulation and adaptivity capacity of the economy towards changes in foreign trade policy. Therefore, it appears to be an important element in the transition process concept of the countries from Central and Eastern Europe (CEE).

The major task of the monograph is to identify the character and intensity dependence between foreign trade and price of local currency units in six CEE countries – Bulgaria, Czech Republic, Hungary, Poland, Slovak Republic and Slovenia – in the period 1992 – 2000. It is implemented in the framework of the following purposes: first, economic theory monitoring and definition of elasticity parameters as a basic characteristic of foreign trade. Second, determining the advantages and disadvantages of the econometric approaches and methods in analyzing the foreign trade - exchange rate dependence and third, econometric estimation and interpretation of foreign trade elasticity of exchange rate in the aforementioned CEE countries.

There are two important aspects in the analysis of foreign trade - exchange rate dependence: the presence of a lag effect and the difficulty in estimating the impact of exchange rate dynamics on trade balance. A positive step in that direction is the implementation of the Marshall-Lerner condition that determines the cases, in which the devaluation or revalorization of a given currency leads to the expected theoretic effects. These theoretic effects are the results of applying various models for econometric analysis of foreign trade elasticity. The monograph focuses on five of them:

- *Single-factor Regression Analysis*, which estimates the lag indirectly based on the sugnificance of single-factor regression models and their parameters using F- and t-criteria;

- *Polynomial Distributed Lag Model* (also called Almon technique), the basic advantage of which is the overcoming of the multicolinearity of the lag-factor parameters. It is based on two major parameters: the length of the lag and the polynomial order. The various combinations of these parameters allow the building of a series of models, the optimal of which is defined by two types of criteria: Akaike Information Criteria and Schwarz Criteria;

- *Unrestricted Vector AutoRegression Model* based on the estimation of simultaneous systems with exact structure, equations and

variables. In that model each endogenous variable is a function of the current lags of all endogenous variables and current exogenous variables. Its advantage is the elimination of the serial correlation by the added y-lag variables;

- *Auto Regressive Distributed Lag Model* – a specific Vector Error Correction Model, applied in the cases when the endogenous variables are integrated in d-order and there is such a linear combination of them, which is integrated in zero-order. It is called cointegration equation and identifies the long-run equilibrium (the most famous test for its identification is the Johansen Test). The order of integrity is determined by the Dickey-Fuller Test;

- *Spectral Analysis*, which defines the cyclic recurrence of the considered phenomenon.

The empirical analysis of the foreign trade elasticity, applied in the six CEE countries is based on three of the aforementioned models: PDL, Unrestricted VAR and ARDL. Each of these models is developed into four basic relations: export elasticity – real exchange rate, export elasticity – nominal exchange rate, import elasticity – real exchange rate and import elasticity – nominal exchange rate, for the purpose of analyzing the multi-dimensional dependence between foreign trade and exchange rate.

The advantage of applying three different models is the building of a more complex view on the dependence, subject to analysis, because each of them concentrates on a specific aspect of it: 1) PDL and VAR models focus on short-run foreign trade elasticity, while ARDL models – on long-run elasticity; 2) PDL and VAR models data is denominated in USD, while ARDL data – in local currency units; 3) PDL and VAR models are based on a monthly statistics, while ARDL model – on a quarterly statistics.

As a result the analysis defines the mechanism of foreign trade - exchange rate dependence, the factors determining the elasticity lag and the specific application of the econometric models for the CEE countries.

Conclusions:

- The foreign trade elasticity of exchange rate in the analyzed countries is based on the so-called income effect;
- There are two major groups of countries according to the elasticity lag value: the first group consists of Bulgaria and Poland (elasticity lag: 2-6 months) and the second group consists of Czech Republic, Slovak Republlic, Hungary and Slovenia (elasticity lag: over 12 months);
- The influence of real and effective real exchange rate on foreign trade is more significant than that of nominal exchange rate;

• The ML-condition is fulfiled in the cases of the Czech republic, Slovak republic, Poland, Hungary and Bulgaria, while the empirical analysis has not found sufficient proofs for its fulfilment in the case of Slovenia.

Overall, the foreign trade of the considered CEE countries is elastic, which means that they have the capacity to adapt their economies to the exchange rate dynamics.

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Resumed and translated by Gospodinka Georgieva and Dobromir Dobrev.