

DESCRIPTION FOR THE GENERAL PUBLIC

Sensitivity of exports to exchange rate fluctuations

- application of non-linear cointegration methods

The aim of the research project is to analyse the price and volume reactions of Polish exports to exchange rate fluctuations. Of particular interest are nonlinearities in these reactions, i.e. the existence of asymmetry and thresholds in the relationship between the exchange rate and export prices and volumes. The analysis will be carried out using disaggregate data. This will enable the estimation of price and volume elasticities in both sectoral and geographical disaggregation.

Despite mixed empirical evidence exports is widely perceived as one of the engines of economic growth, especially in the context of the catching-up process. Therefore empirical investigations into its determination date back as early as the 1940s. In this classic - yet still valid - framework export volume is modelled as a function of its relative prices and foreign demand. Relative export prices are, in turn, a function of exchange rate. Therefore, export volume depends indirectly on nominal exchange rate fluctuations.

Macroeconometric research on the responses of trade to exchange rate fluctuations is typically carried out using aggregated (i.e. economy-wide) data. This imposes the homogeneity assumption on price and quantity elasticities across goods and trading partners, which results in the estimation bias in the case of heterogeneity. On the other hand, the disaggregated analyses rarely decompose the responses into their price and volume components. This gap has been recently filled by microeconomic investigations based on firm-level data. This approach has an obvious advantage of direct observability of price and quantity responses of exports, but it does not provide insight into the adjustment patterns (specifically, the long-run responses) that are most relevant from the macroeconomic perspective.

Apart from homogeneity restriction, another potential source of estimation bias is the linearity assumption. Most studies in the literature assume that changes in the exchange rate exert similar influence on trade prices and volumes irrespective of their sign or magnitude. However, in light of numerous considerations brought up in the literature this may prove to be too restrictive. Firstly, the exporters may partially absorb exchange rate movements by adjusting their markups and not prices. Secondly, the presence of sunk costs of exporting or importing diminishes firms' responsiveness to exchange rate fluctuations in terms of export supply or import demand. This would be particularly true for small changes in exchange rate implying the existence of a band of inaction within which export prices and volumes are relatively non-responsive, but beyond which a stronger reaction is triggered.

Against this background, the proposed research project aims to contribute to the literature by taking a nonlinear and disaggregated approach to modelling export sensitivity to exchange rate fluctuations. Therefore, the analysis will be carried out without imposing sectoral homogeneity and linearity restrictions. In order to mitigate the aggregation bias the estimation will be carried out in sectoral and geographical disaggregation. Moreover, the linearity restriction will be relaxed allowing for asymmetric and threshold (specifically in the form of a band of inaction) reactions.

The analysis will also have potential practical implications. For every sector and geographical direction included in the analysis a 'pain' threshold of nominal appreciation will be estimated that hinders exports (and by the same token: a threshold for nominal depreciation which boosts exports). These estimates may prove useful in conducting exchange rate policy.