Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics

Extended Abstract of Diploma Thesis

Foreign Trade of Thailand – Case study of rice export

Author: Bc. Barbora Mandrysz

Supervisor: Assoc. Prof. Ing. Mansoor Maitah, Ph.D. et Ph.D.

Summary

The diploma thesis is focused on foreign trade of Thailand, with the intention on rice export in the period of 1986 – 2016. The thesis is divided into theoretical and practical part. The theoretical part firstly deals with a world production and consumption of rice. Furthermore, it describes the significance of rice to the world economy, major rice exporters and importers, determinants of rice export and international organizations in the world rice market. In addition, it describes an econometric analysis and its methods. The practical part initially examines trade balance of Thailand, Thailand's rice production, export and analysis of chosen determinants. Moreover, there is processed analysis of Thai rice export from the year 1986 to 2016. Within the frame of analysis, there is constructed one-equation econometric model for Thai rice export, through which it is determined which factors significantly influence Thai rice export. The model is sequentially verified from the economic, statistical and econometric point of view. In addition, there are computed elasticities of the variables to determine which of the exogenous variables influence the endogenous variable the most and there are derived prognoses of the variables for the year 2017, 2018 and 2019.

Keywords: Thailand, rice, export, foreign trade, econometric model

Objectives

The main objective of the diploma thesis is to conduct analysis of foreign trade of Thailand with the intention of rice export during the period 1986 – 2016. Partial aims are to analyze trade balance of Thailand, to identify determinants influencing the export of rice from Thailand and to test which of the determinants has a significant impact on Thai rice export.

Methodology

To achieve set objectives, there were used several methods in the diploma thesis. The literature review of the thesis is processed on a basis of available scientific articles and books with a focus on the foreign trade of rice, econometrics and statistics. The analytical part of the thesis firstly deals with the trend analysis of selected determinants of rice export within the period from 1986 to 2016. This is followed by an econometric analysis in which the main tool is an econometric model. The model is constructed through the transformation of economic theory into economic-mathematical model. There is performed one-equation econometric model, a linear regression model. In the first part of the econometric analysis, there is constructed economic model corresponding to the relevant economic theory, which is subsequently transformed into econometric model. The following step is the collection of data and its verification. The data are obtained from the International Rice Research Institute, Food and Agriculture Organization of the United Nations (FAO), FAOSTAT, Thai Rice Exporters Association, the U.S. Department of Agriculture (USDA) and World Bank. Another step is the estimation of the formulated model. The individual parameters of the model are estimated through the method of Ordinary Least Square. After the estimation, there are performed economic, statistic and econometric verification of the one-equation econometric model.

The econometric analysis is concluded by the application of the model, which consists of calculation of elasticities and prognoses for the year 2017, 2018 and 2019. The analytical part of the thesis is conducted using statistical tests and techniques elaborated in Gretl software and MS Excel.

Results and Conclusion

In the first stage of the practical part there was analyzed the trade balance from the year 1993 to 2016. Based on comparison of exports with imports, the first half of 90's indicated a trade deficit. From 1999 to 2012, Thailand was running a trade surplus except the year 2005, when the economic growth was slowed down primarily due to droughts and tsunami. Also, the increased import of iron and steel, oil and non-monetary gold resulted in a negative balance of over $8 billion. In 2013, Thailand recorded the largest trade deficit in the selected period when there occurred a sharp increase in imports of fuel and vehicle parts.

In 2016, Asia accounted for 62% of Thailand's exports and majority of exports included automobiles and vehicle parts, computers, refined petroleum, rice and rubber. Major export destinations of Thailand were China, Japan, the United States, Hong Kong and Malaysia. In the same year, approximately 76% of Thailand's imports were from Asian countries. The largest imported commodity was the crude oil, followed by iron and integrate circuits. Imports were mainly from China, Japan, the USA, Malaysia and Singapore. In the second stage there were firstly analyzed development trends of Thai rice export and chosen export determinants and subsequently there was constructed a one-equation econometric model. The value of Thai rice export indicated increasing trend with the average value of $2.7 billion. This trend is estimated to continue in following years with the 73.3% of reliability. All exogenous variables, namely the export price of rice, exchange rate (Thai baht/USD), production of milled rice in Thailand and GDP per capita in China indicated increasing trend as well. However, in case of exchange rate, there is only 24% probability that the Thai baht/USD will increase in next years.

The one-equation model consisted of Thai rice export value as the endogenous variable and the export price of Thai rice, exchange rate, production of milled rice in Thailand and GDP per capita in China as exogenous variables. Firstly, there was computed the correlation matrix to detect a high multicollinearity in the model. The high multicollinearity was not present in the model. Subsequent step was the estimation of individual parameters, after which there was constructed the final one-equation econometric model.

Economic verification showed that assumptions formulated in the part of the construction of economic model were in conformity with the results. Findings revealed that increase in Thai export price of rice positively contributes the value of Thai rice export. The effect of exchange rate on the value of Thai rice export is positively significant. The total production of milled rice in Thailand and the GDP per capita in China are positively associated with the value of Thai rice export as well. All the findings were consistent with previous studies performed by other authors mentioned in the thesis.

In the statistical verification of the model, there was interpreted the result, that the value of Thai rice export is from 92.45% explained by the changes of exogenous variables in the model.

The model was considered as a statistically significant, since the p-value (F) was 3.32e-14, thus lower than a significance level. Individual parameters were put into a table and computed p-values were compared with significance levels and the results were interpreted. The parameter export price of Thai rice and the GDP per capita were found to be statistically significant at the significance level $\alpha = 0.01$. The exchange rate was statistically significant at the significance level $\alpha = 0.1$. The total production of milled rice in Thailand was found to be statistically insignificant, since its computed value was bigger than the level of significance. However, it still plays an important role in the development of the value of Thai rice export due to a high vulnerability of Thailand towards extreme weather events.

Within the frame of econometric verification of the model, there was tested the presence of autocorrelation, heteroskedasticity and normality of residuals. Results from Gretl were compared with set hypotheses. In the model the autocorrelation was not present, there was no heteroskedasticity and the residuals had a normal distribution.

In the application of the model, there were calculated elasticities to detect which of the exogenous variables influences the endogenous variable the most. Results showed that the variable Thai export price of rice has the largest impact on the value of Thai rice export. If the Thai export price of rice increases by 1%, the value of Thai rice export increases by 1.06% per year. In this section there were also performed prognoses of variables for the year 2017, 2018 and 2019. Based on results, it is estimated that the value of Thai rice export will tend to decrease in the next 3 years. In 2017, the value of Thai rice export was estimated to be $4.403 billion, in 2018 it will be $4.217 billion and $4.085 billion in 2019.

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