

In the first chapter, by introduction of output augmentation and input reduction I extend additive models for stochastic data envelopment analysis (SDEA), which were developed by Li (1998) to handle the noise in the data. Applying the linearization procedure by Li (1998) the linearized versions of models are derived. In the empirical part of this chapter, the efficiency scores of West Java rice farms are computed. The computed scores are compared to the stochastic frontier approach scores by Druska and Horrace (2004) and weak ranking consistency with results of stochastic frontier method is observed.

The objectives of the second chapter are to evaluate technical and scale efficiency of rice farms in West Java and to identify determinants affecting farms' efficiency. Data Envelopment Analysis is used for estimation of technical efficiency scores. Additionally, Tobit regression is used to explain the variation in the efficiency scores by farm-specific factors. I conclude that the farm size is one of the most important factors of farm technical efficiency and that high land fragmentation was the main source of farm inefficiency during the final period of intensification era, known as Green Revolution.

In the last, chapter I examine macroeconomic stability and the properties of business cycles in the model with an announced change of the monetary regime type. Further, I solve for the optimal monetary policies over the transition towards the pegged exchange rate with respect to alternative loss function specification for the monetary authority and to transition length. The subject of my study is the Czech Republic. The results of calibrated experiment show that monetary policy should be more concerned about demand type shocks when announcing a switch towards the exchange rate peg.