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**Price transmission along the supply chain of
fertilizer in Ethiopia**

Master Thesis

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ABSTRACT

High prices of fertilizer are the major constraints hindering increase in fertilizer use by farmers in Ethiopia. However, increased use of fertilizer is a requirement to improving agricultural productivity, which is a pre-requisite for widespread poverty reduction in the country. Therefore, the determinants for high prices of fertilizer need to be addressed. This study aimed at describing the supply chain of fertilizer in Ethiopia, assessing the price gap for fertilizer and evaluating price transmission from world to domestic markets. The study also contributed to filling the knowledge gap on price transmission studies for agricultural inputs in the country. Supply chain framework was used to describe and map the supply chain of fertilizer in Ethiopia. Enterprise budgeting was used to evaluate price gaps. Granger causality test and co-integration analysis were carried out to assess market integration. Finally, vector error correction models were specified to estimate the extent to which price shocks on world markets transmit to import and retail prices in Ethiopia. The study was conducted in Arsi zone, a major grain production and fertilizer use area in Ethiopia. The sample was composed of 80 farmers, 4 retailers (primary cooperatives), 2 wholesalers (cooperative unions) and 1 importer, namely the Agricultural Import Supply Enterprise (AISE). Primary data collected during the field survey as well as secondary data were used for the analysis.

The results pointed out a monopoly at each stage of the supply chain of fertilizer in Ethiopia. Indeed, since 2008, fertilizer market has been regulated. Fertilizer importation is run by a single company (AISE), which is a governmental firm. Wholesaling and retailing are managed by cooperative unions and primary cooperatives. The results also indicated an increasing mismatch between fertilizer supply and actual consumption, leading to large carry-over stocks of 24 – 26% of total supply. As recommended levels of stocks were 12 – 15% and optimum level was estimated to 10% by IFPRI, carrying such large stocks locks up scare resources that could be directed to alternative uses. The evaluation of price gap showed that retail price of Di-Ammonium Phosphate (DAP) almost doubled world price, while retail price of urea was threefold world price. Price transmission for DAP was complete from world to import prices and from world to retail prices. However, between import and retail prices, price transmission was incomplete. For urea, the results showed incomplete price transmission between world and import prices, as well as between import and retail prices. Consequently, transmission between world and retail prices was also incomplete.

Incomplete price transmission between import and retail prices for both DAP and urea was due to the implementation of price stabilizing policies and indirect subsidies. However, while complete transmission between world and import prices for DAP reflects competitive procurement on world markets for this product, it was not the case for urea. Therefore, in order to improve procurement at more competitive prices on world markets, it was suggested to develop a model to predict world prices as a decision tool for the committee that selects international suppliers for fertilizer procurement. It was also suggested to revise current price stabilizing policies and indirect subsidies, in order to improve transmission between import and retail prices for both DAP and urea. In order to improve chain efficiency and minimize left-over stocks, it was suggested to replace the current demand estimation approach by more transparent, objective and efficient models including all important decision variables. Finally, the policy of awarding the monopoly to some actors over each stage of the chain needs to be evaluated. More competition could shorten the supply chain, ensure more competitive prices and would require less administrative control and fiscal cost for the government.

Key words: price transmission, market integration, supply chain, fertilizer, Ethiopia.