

BIOFUELS AND FOOD SECURITY

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Factors Affecting the Demand for Food

- **Overpopulation (by 2050 increase from 6.2 to 9.2 bil. people)**
 - Pressure in the supply of food, increased imbalances between supply and demand.
 - Problematic regions: Developing Countries, India, China

Accounts for 40% of the increase in the price of food

Factors Affecting the Demand for Food

- **Increase in income of emerging economies (China , India, etc.)**
 - Income elasticity of demand for food inelastic. A large proportion of the income increase is allocated to food expenses

Accounts for 40% of the increase in the price of food

Factors Affecting the Demand for Food

Three effects of the increase in income of emerging economies

1. Increase in the demand for meat, increase in production of meat which in turn increases the demand for feed stuff (1kgr of meat, requires 3.5kgr of cereals).
 - **Tendency: from 20 kgr of meat consumption to 50 kgr**
 - **Result: Increase in the prices of cereals and meat**
2. Increase in the demand for intermediate inputs (seeds, water, pesticides, fertilisers) → increase in the cost of production → increase in the price of cereals → increase in the price of meat
3. Increase in the demand for land, leading to higher land value, affecting the rent of land and the cost of production

Factors Affecting the Demand for Food



- Climatic Change

- Reduced rainfall (desertification, extreme conditions, drought/floods)
- Effects: Reduced productivity, fluctuating prices of feedstuff, reduction in supply, higher risk premium incorporated in the price of feedstuff.

Factors Affecting the Demand for Food



- Speculation

- Higher risk in financial instruments (stocks/bonds) leading to increased investments in energy and foodstuff in the future market leading to higher increase in the price of energy and food compared to a stable state of financial markets. (Overshooting effect)

Factors Affecting the Demand for Food

Direct effect of Biofuels market to agricultural products market

- Increase in demand for biofuels leads to:
 - Reduction of feedstuff supply for human consumption → Increase in the price of food
- The higher the cost of oil energy, the higher the demand for biofuels, leading to a higher the prices of foodstuff.

Accounts for 20% of the increase in the price of food

Factors Affecting the Demand for Food

Indirect effect of biofuels on agricultural markets

Market of biofuels are also related to crop markets which are not used as an input to biofuels.

1. Crop production compete for the same resources (Land) and inputs (fertilizers, pesticides, water)
2. Allocation of land between biofuel and non-biofuel crops production depends on best return on investments.
3. Return on investment depends on the price of Agricultural Products.
4. Cost of non-biofuels crop production depends on:
 - a. *Price of biofuels*
 - b. *Cost of intermediate inputs*
 - c. *Land rent*
 - d. *Elasticity of substitution between biofuel and non-biofuel crop production*

Conclusion: The market for biofuels and agricultural products are strongly related

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Long term effect of biofuels on agricultural markets

1. Overtime the relative cost of the production of biofuels from different source may change.
 - ▣ Example: Demand for maize in the food and animal feed market is low and at the same time the demand for sugar is high so that ethanol produced from maize can be less costly than ethanol from sugarcane.
2. The augmentation of the biofuels market will tend to increase the impact of the oil price on the agricultural market.

