

Chapter 9

International Trade and Productivity, Efficiency and Technical Change in Agriculture: Cases of the European Union and Asia

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Introduction

Roles of agriculture in economic development change as the economy grows. At the beginning of the developing process, the agriculture sector is expected to contribute to the national economy through the provision of a large tax base to the government and a large pool of labor force to the rapidly growing manufacturing and service sectors. Additionally, agricultural product prices are intentionally kept low through policy interventions of *cheap food policy* to avoid the wage hikes in the urban labor markets which would have negative impacts to economic development of the national economy.

When the national economy achieves a certain level of economic development, the agricultural sector becomes a sector which receives a net inflow of capital. Wage gaps between the rural area based agricultural sector and the urban area based manufacturing and service sectors can widen. Policy interventions to financially support the agricultural sector and to protect agricultural product markets through border control measures are typically introduced by the governments of the medium to highly developed industrialized countries.

The policy interventions by the developing and developed countries must have impacts to the

performance of agricultural production measured by productivity growth, efficiency improvement and technical change. This study attempts to analyze the relationship between the policy measures and the production performance indicators. The impacts of the participation to a regional economic union are examined using the data from Asia and Europe. The cases related to the Association of South-East Asian Nations (ASEAN) and the European Union (EU) are particularly evaluated. A Solow (1957) type growth accounting model and a Malmquist decomposition tool are utilized for this empirical analysis. Then, the impacts of the performance differences on international trade structures are studied using the calculated values of total factor productivity (TFP), efficiency measures and technical change measures in the Malmquist analysis.

1. Growth Accounting Analysis

The case of Japanese agriculture in the 1930s and 1940s shows that the shift of the policy toward more protectionist directions lowers the TFP growth, which was a driving force in the initial development process of Japanese agriculture. The case of Asian countries in recent years also proves that liberalized markets make the TFP contribution larger in growth accounting of

agricultural production. Competitive market environments seem to help agricultural development based on the desirable path of TFP based growth.

The case of Central and Eastern European countries also demonstrates the successful case of TFP based growth in agricultural production in the recovery period of the post socialist decade of the 1990s. The impacts of the integration to the EU are mixed among the new member countries with the diversified performance in the sources of agricultural production growth.

2. Malmquist TFP Index Analysis

Using a Malmquist decomposition tool, the factors contributing to the TFP growth were examined for Asian and European countries. For the analysis of Asian countries, three periods were set to derive policy implications: Pre-GATT Uruguay Round period of 1985-1993; Post-GATT Uruguay Round period of 1994-1996 and Post Asian Crisis period of 1998-2005.

The current ASEAN member countries outperformed the non-ASEAN member countries in 1985-1993 thanks to the improvement in production efficiency. For the rest of the study period, the same group of ASEAN member countries performed worse than non-member countries. Among the ASEAN member countries, the initial member states of Indonesia, Malaysia, the Philippines, Singapore and Thailand, achieved a higher productivity growth. A challenge exists for the newer members of the ASEAN to promote technical change in agricultural production.

For the new EU members from Central and Eastern Europe, efficiency improvement was a source of better performance in achieving higher productivity growth compared to the performance of the existed EU 15 member countries for 1995-2003. Even for the

period of 2004-2006, efficiency increase remains important for agricultural TFP improvement.

3. International Trade and Productivity Growth, Efficiency Improvement and Technical Change

The variation in performance of agriculture measured in terms of productivity, efficiency, and technical change would induce the transformation in international trade practices and institutions. An empirical study was carried out to test this hypothesis. For Asian countries, productivity growth showed a strong correlation with trade openness indices such as the ratio of the value of import and export of agricultural products to the GDP of the economy for the period of pre-Uruguay Round agreement of 1985-1993. This relationship stayed valid even for the period after the Uruguay Round agreement and post-Asian economic crisis period. Technical change factor was the source for the significant correlation between productivity growth and trade openness indicators. The short-term impact of the GATT Uruguay Round agreement on the liberalization of international trade was found to be the direction to increase the openness for importing agricultural products. The long-term influence was to boost the openness of agricultural product export activities.

4. Conclusions

This study found the existence of relationship between production performance of the agricultural sector and the trade openness indices. Further studies need to be done to understand this relationship deeper and to derive more practical policy implications.