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Mechanisms of labor transition during agricultural transformation: The cases of South Korea and Indonesia

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Abstract. This paper examines different paths and challenges in stages of agricultural transformation in two Asian countries. It contrasts their respective mechanisms of labor transfer from the agriculture sector to non-agriculture sectors and the up-skilling of the agricultural labor force in the process of an agricultural transformation. The paper describes this as a critical contribution from agriculture to economic growth. The important finding is that without such mechanisms and the corresponding instruments that increase agricultural labor productivity and improve rural livelihoods, an agricultural transformation is not assured.

Keywords: agricultural labor transition, agricultural transformation, agricultural labor productivity

1. Introduction

A significant challenge in a contemporary developing country is to transform from an agriculture-based to industry-based economy while increasing agricultural labor productivity. The success of transferring agricultural labor to other sectors and building the capacity of a labor force are key factors in enabling both rural and urban economic growth. However developing countries undergoing structural transformation have experienced stagnant labor transfer. It is difficult to increase agricultural labor productivity as the rural poor depend largely upon the agriculture sector. With a lack of investment in agricultural activities, rural areas share low output, and in turn living conditions see no improvement. Moreover, prices of agricultural commodities in world markets, with the exception of the recent food crisis, have continued to decline and fluctuate over a long period of time. Thus market signals reflected in structural transformations have misled policy makers in some developing countries (Timmer 1995; Naylor and Falcon 2010).

The challenges in agricultural transformation, particularly agricultural labor transition processes, are not fully explained. However it is persistently argued and documented that there are linkages whereby agricultural development contributes to overall economic growth. In this context, this paper seeks to trace the mechanisms of managing an agricultural labor force through an agricultural transformation, by comparing two different paths of development in East Asia. South Korea followed the Lewis model in their fastest period of economic growth while Indonesia has experienced only slow growth despite its potential (Timmer and Akkus 2008). These countries have their own challenges in completing an agricultural transformation; challenges which are heightened by changing domestic and global conditions.

2. Tracing the mechanisms of agricultural labor transition

2.1. Agricultural transformation in two labor abundant countries

South Korea and Indonesia are comparable despite certain differences. Both countries rapidly accelerated their economic growth in the latter half of 20th century, joined the WTO in 1995 and experienced the Asian financial crisis in 1997. However their development paths are markedly different, as illustrated by the fact that South Korea became one of first-tier Newly Industrializing Countries (NICs) while Indonesia joined the

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second-tier. In the 1970s, Indonesia's GDP per capita lagged over 10 years behind South Korea's, though their annual GDP growth rates were comparable. The gap of GDP per capita between the two countries has since grown such that Indonesia now lags 25 years behind. While an increasing trend of value added in industry has been similar in both countries, their decreasing share of agriculture in GDP continues to diverge. With regard to employment in agriculture, a development gap of over 40 years has grown as Korea made a fast structural transformation through the 1960s to 1980s whereas Indonesia has made slow progress since the 1997 crisis. It can be argued that management of the agricultural labor force has played a significant role in this divergence.

Whereas South Korea was able to establish economies of scale, Indonesia is characterized by the dominant nature of small-scale farming, marketing, and employment. Due to demographic pressures and decreasing agricultural land, especially in Java, the average landholding has decreased while the number of smallholders has increased (Agricultural Census data 1963-2003). As agricultural machinery use is inefficient for fragmented small plots, its use remains extremely limited in Indonesia, when compared to neighboring countries in East Asia, including South Korea. What maintains Indonesian food production at comparable levels to its neighbors is intensive labor input, resulting in low agricultural labor productivity. White (2005) points out that *Bimas* or *Bimbingan Masal* (Massive Guidance), first launched in 1965, was a shift from support for agrarian reform to a technocracy-inspired top-down green revolution without land reform. "Small farm intensification efforts to raise peasant productivity" was regarded as a means of avoiding land distribution to the landless (Ladejinsky 1961,1964; cited in White 2005). Land and tenancy reforms have never been effectively implemented despite the Basic Agrarian Law No.5/1960 as Indonesian farmers protested at the 50th commemoration of the National Farmers' Day in 2010. Although the *Bimas* massively increased food production and improved rural livelihoods, it contained several negative aspects. As it was based on oil revenues—a convenient but unsustainable channel—the foundation of the agriculture production structure was not constructively transformed. Farmer Field Schools launched in the mid-1980s have corrected several negative consequences of the *Bimas* program through sustainable and grass-roots knowledge dissemination. However, this is reportedly a slow process, and is limited in its ability to change farmer behavior and practices (Resosudarmo and Yamazaki 2011).

South Korea made a comparatively smooth, yet rapid, transition from an agriculture-based to industry-based economy. This is a consequence of the fact that land reforms in Korea were radical, transforming the agriculture sector from landlordism to owner-cultivation in just three years (1947-50). However, in the 1970s Korean agriculture employment growth reached a saturation point. Moreover, urban-biased policy including low prices of agricultural products, grain imports, and rapid industrialization, did not provide "the right incentives to increase production" (Kang and Ramachandran 1999). This was when the enthusiastic, village-based community development program known as *Saemaul Undong* (New Community Movement) was introduced. The result of the program was the improvement of rural infrastructure and an increase in agricultural productivity through the revitalization and reconstruction of rural villages. The movement supported smallholder farmers and boosted agricultural development that had previously lagged behind, while shifting policies to high grain prices and increasing farm productivity and income—which until 1969 was only half that earned by urban workers (Boyer and An 1992). In addition to more widely available extension services and market information, more inputs such as fertilizers and credits were provided. This movement reduced over-crowdedness in cities and the loss of young population in agricultural labor force. Nevertheless, rural flight accelerated and most of the agricultural labor force was absorbed into urban-based industries.

The divergence of South Korea and Indonesia has been enlarged by their different development strategies. South Korea promoted labor-intensive industry resulting in agricultural labor shortages whereas Indonesia encouraged capital-intensive industry, led by foreign direct investment, leaving an agricultural labor surplus. The industry sector in Indonesia has exhibited limited labor absorption: its share in employment was less than 10%, while its share in GDP and growth rate was more than 40% and 10% respectively. This stemmed from a lack of investment in agricultural development since 1985, when Indonesia achieved rice self-sufficiency through the green revolution. Indonesia then commenced to prioritize the development of other sectors over the agriculture sector, yet without sufficiently sharing profits with people in rural agricultural areas. Premature liberalization contributed to this trend. By comparison, South Korea soon moved to capital,

skills and technology-intensive industries in order to accelerate economic growth, and protected its agriculture sector.

2.2. Mechanisms of agricultural labor transfer and up-skilling

Agricultural transformation fuels overall economic growth at the start of a development path. However, this requires socio-political intervention because economic signals expire when the share of agriculture in an economy decreases. In this sense, agricultural transformation requires two aspects of labor force management: (i) agricultural labor transfer from the agriculture sector to non-agriculture sectors, and (ii) agricultural labor up-skilling to both rural and urban sectors. As mentioned, successful management of the agricultural labor force is considered a major factor in enabling agricultural transformation—at the end of this process agricultural labor productivity equalizes to labor productivity in other sectors. These two aspects can be illustrated by the following interrelated mechanisms observed in agricultural transformations of both countries.

Technological and institutional advancement in agriculture

Technological advancement in the agriculture sector encourages increasing agricultural production at low cost as well as the returns to schooling (Foster and Rosenzweig 1996). In South Korea, mechanization has affected labor force management, promoting economies of scale and effective labor transfer. Mechanization and the migration from rural to urban areas—searching for better channels of education and jobs—coincided. Indonesia had a similar transition period of technological advancement, but high-yielding varieties (HYVs) and the consequential institutional shift such as from *bawon* to *tebasan* deprived employment opportunities of agricultural laborers without providing any other means to survive (Collier *et al.* 1973; Maurer 1986). As urban jobs were not sufficiently available, an agricultural labor surplus was pervasive. In addition, Indonesia favored using family farm workers because separation between managerial or supervisory functions and hired farm labor was unprofitable (Hayami and Kawagoe 1992). Therefore, tangible tension among the landless surged in the absence of effective land reforms.

The New Community Movement in South Korea was characterized by self-help and rural exodus, accelerated by technological advancement, and linked to the opportunity of up-skilling through providing urban jobs or access to higher education. By contrast, Indonesia's *Bimas* failed partially in terms of building the capacity of farmers: it was too strict an approach. Farmers were instructed to follow a certain formula without any flexibility and "the entire system was opened to abuse" (Resosudarmo and Yamazaki 2011).

Rural-urban migration and dualism

In South Korea, the agricultural labor force was effectively reallocated. It can be assumed that members of landowning families benefited from their higher education to gain higher paying jobs while those of landless families became factory workers in labor-intensive industries with low wages and low recognition of labor rights. It would also follow that smallholders who sold their plots and became landless tenants, or sharecroppers who became small landowners, would choose to invest their savings to educate their children with hopes for the future. This not only contributes to a transfer of low skilled labor from the agriculture sector to urban industrial sectors, but also to building a highly skilled labor force supported by physical capital accumulation. Further labor shortage introduced an exponential increase in the use of labor-saving farm machinery since the early 1980s. In addition, a low skilled agricultural labor force grew into a semi skilled and even high skilled industrial labor force, arguably through promoting the virtues of diligence and education.

In fact, there was decreasing incentive for farmers to continue farming and hold on to their land due to still extant rural poverty, deterioration of farmer income, tax disadvantages and an upward spiral of indebtedness. Some farmers were thus forced to sell their land and/or migrate to the cities. In comparison, industries attracted the labor of landowning family members, as that labor had greater access to emerging urban opportunities such as education and jobs, and the ability to relocate to cities. Thus landowning families rent their land to tenant farmers, and tenants rent out their labor. The increasing number of tenants matched a shortage of agricultural labor: over half of Korean farmers were tenants until the mid 1980s, working in order to relieve their indebtedness. This was despite the fact that tenant farming was formally abolished by the Land Reform Law with a three-hectares ceiling (Boyer and An 1992).

In Indonesia, rural-urban migration is limited. Smallholders do not abandon farming despite low and decreasing profits. This lagging labor transition over the long-term can be explained by the minimal differentiation of assets, skills and access to education among farmers. In other words, the costs of labor adjustment to urban areas are too high for a majority of farmers, due to imperfect information and uncertain incentives (Willems and Wijnbergen 2009). The cultural importance of land and farming, and the absence of an efficient land and labor market can be also added as preventing factors. However, in terms of non-farm sectors, mostly combined with farming activities, a social gradient exists. Schwarze and Zeller (2005) note that in Indonesia the better-off farms derive 40% of their income from non-farm activities whereas these account for only 10% for the poorest households, implying a dichotomy between residual and productive employment.

In both countries, there is limited research on the different responses to the transition by landowning farmers and tenants or landless. Presumably the latter group in both countries has been deprived of employment opportunities in a situation of decreasing agricultural land, decreasing prices of agri-products due to increasing technological or institutional changes, and decreasing investment in the agriculture sector, which is more pronounced in Indonesia. There exists a dualism of an educated landowning labor force transitioning to better job opportunities, and a landless, or resource-poor, labor force remaining in agriculture.

Spillover effects: increased nutritional standards and skills transmission

Low cost and high quality food benefits urban consumers with low wages, and improves nutritional levels of the labor force. Thus labor productivity increases. HYVs and other green technologies has allowed sufficient and cheap rice and other grains. Until recently, Indonesia focused on rice and sugar self-sufficiency and in her early development stage South Korea built import substitution industries including sugar processing.

In addition, the agriculture sector transmits managerial skills from agriculture to other sectors. The management of hired or family workers and the maximization of farm output is "a stepping-stone for a society learning how to manage workers in a manufacturing environment" (Dawe 1995, cited in Timmer 1995). Farmers have to deal with enormous risk and uncertainty in the market and weather and need the capacity for adaptation in their daily tasks. Hayami and Kawagoe (1992) present a similar argument through their analysis of the marketing processes of Indonesian farmers.

The success of a South Korean labor force transitioning from agriculture to labor-intensive or agricultural industry continues to contribute to the transition to capital and technology-intensive industry. The example of Samsung mirrors this process of development. Lee Byung-chul, the son of a Korean farmer, started a rice mill in Masan as his first business in 1936. Under Japanese colonization Masan was a hub of rice milling developed to send rice to Japan. After the Korean War, Lee established a sugar mill, a fertilizer factory and other agricultural business (planting fruit trees and agro-livestock) for agriculture development. He later became the founder of Samsung, which grew into one of the world largest multinational conglomerate corporations. Starting as a sugar refinery, Samsung moved to textiles and continued to diversify to other industries such as electronics, semiconductors and telecommunications. The increase of refined sugar exports was not irrelevant to the building of Samsung's industrial diversification and successful advancement to other sectors. In 1980-81, the share of refined sugar as agriculture products exports in Korea accounted for over 30%.

2.3. Different challenges of the agriculture sector in the two countries

Increasing environmental concerns have had multiple impacts on the agriculture sectors in both countries. Both are taking advantage of this global trend as an opportunity for growth. In the case of South Korea, this is through the promotion of green growth through new technologies, and for Indonesia through palm oil production. However, Indonesia lacks the capability to deal with negative environmental impacts, in addition to the prolonged challenges of the agriculture sector such as a widening discrepancy of income and living standards between rural and urban areas and surplus agricultural labor force. Originating from increasing environmental concerns industry and labor restructuring threatens Indonesia by preventing the enjoyment of the benefits that other developing countries could have gained from agriculture in the past. Concerns relating to deforestation add pressures on already decreasing arable land areas.

The Korean government announced the National Strategy for Green Growth 2050, including an increase in the share of environmentally friendly agricultural products to 18% by 2020. However, investment for green growth focuses mainly on high value added industries such as renewable energy, even though agriculture

continues to be relevant for green issues and further growth. This disregard of the agriculture sector is coupled with the sector's poor prospects. Korea is now struggling with food security and decreasing agricultural land. Food self-sufficiency was 49% in 2009 and grain self-sufficiency was only 26% (Ministry for Food, Agriculture, Forestry and Fisheries). Consequently, Korea started to establish "planting factories" or vertical farms, where vegetables and other crops are grown under LED. It also began to look to overseas farming.

Additionally, Korea has not completely dealt with income disparities between the agriculture and urban-based sectors. This income gap has been widening since the late 1980s. The ratio was 1.13 in 1985 but 0.78 in 2005. Farm household debt increased threefold between 1995 and 2005 (SERI). Aging in agricultural rural areas is also becoming a serious concern: agricultural laborers over 60 years old accounted for 40.3% of the workforce in 2005. SERI predicts that the proportion of agricultural laborers over 65 years old will reach 63% in 2017. Moreover, young male farmers cannot find wives, so they flee to urban areas or import Southeast Asian women to marry. The burden that individual farmers should bear is growing heavier to the extent that farmers cannot cope with the increasing risk and uncertainty of the open global market and climate change. In South Korea, dramatic impacts have included a couple of farmer suicides following WTO negotiations that led to the liberalization of 243 agricultural products in 1989 and recent FTA negotiations with the US. Currently, South Korea is aiming to complete the final stage of agricultural transformation to be comparable to European developed countries such as Switzerland, Denmark, the Netherlands, and France. The agriculture sector in South Korea is attempting a transformation into a business-oriented, competitive, specialized industry.

3. Conclusion

This article has given a snapshot of agricultural transformation in two countries with different mechanisms and challenges. It emphasized the importance of increased labor productivity and efficient labor transition for moving forward through agricultural transformation. In order to fully understand the mechanisms of agricultural labor transfer and up-skilling of the labor force, we need a micro level analysis to determine *how* and *why* people decide to continue, combine or change their jobs during a transformation. In fact, there are no data or research on the actual transition of agricultural labor in a disaggregated manner, taking into account the availability of labor information and extension services, communication between labor demand and supply in agriculture and non-agriculture sectors, and combinations of economic activities at the farmer level.

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