

Chapter 6

Agriculture and Poverty Reduction in Cambodia: The Role of Rice Yield

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Summary: Cambodia's rapid economic growth in the past decades was largely supported by the garment, tourism, and construction sectors, while the agricultural sector showed slow growth. There were various causes for stagnation in the agriculture sector, including low rice yield, migration of workers, poor irrigation, inadequate use of fertilizer, and inability to adopt new seed varieties. This chapter aims to discuss two main agricultural issues: (1) stagnation of rural households agricultural income and (2) stagnation in rice output in Cambodia. Regression analysis using the rice production function will be used to analyze the effects of various inputs on rice productivity.

1. Introduction

During the past two decades of high economic growth, Cambodia's poverty rate has been greatly reduced. Over the 2000–2015 period, the average annual GDP growth rate was about 7%, with a low average annual population growth rate of 1.2% and an average annual real GDP per capita growth rate of 6.4%. Recently, the World Bank raised Cambodia's status from a low-income economy to a lower-middle-income country, based on the Bank's estimate that Cambodia's gross national income (GNI) per capita for 2015 was US\$1,070, above the required threshold of US\$1,026. The poverty rate was more than halved, from 53% in 2004 to 20.5% in 2011 (Table 6.1).

Table 6.1. Poverty Rate in Cambodia

Year	Food Poverty			Total Poverty			Cambodia
	Phnom Penh	Other Urban	Rural	Phnom Penh	Other Urban	Rural	
2004	3.81%	11.43%	17.89%	15.83%	39.67%	58.97%	53.20%
2007	0.06%	8.70%	15.26%	2.66%	35.04%	57.86%	50.10%
2008	0.62%	4.54%	7.17%	2.54%	26.83%	44.60%	38.80%
2009	0.56%	1.98%	6.28%	4.27%	12.67%	27.53%	23.90%
2010	0.74%	2.84%	5.86%	4.54%	12.61%	25.42%	22.10%
2011	0.00%	3.75%	4.38%	1.53%	16.10%	23.72%	20.50%

Source: Sobrado et al. (2013)

However, since the global financial crisis of 2008, international rice prices have shown declining trends, and the growth rate of Cambodian agriculture has declined from an average of 5% to just about 0.2% (Figure 6.1). Rice production, which accounts for about 60% of value added in the agriculture sector, has also reached a plateau (Figure 6.2). This slow growth rate in the agriculture sector may impede poverty reduction and the growth of other economic sectors. Research indicates that growth originating in agriculture contributes more to poverty reduction than growth in other sectors, and that enhancing agricultural productivity is critical for poverty reduction (Christiaensen et al. 2006; World Bank 2007).

The following sections will explore the causes of slow growth in the agriculture sector, the relationship between agricultural development and poverty reduction, and finally, provide policy recommendations for reviving the agriculture sector.

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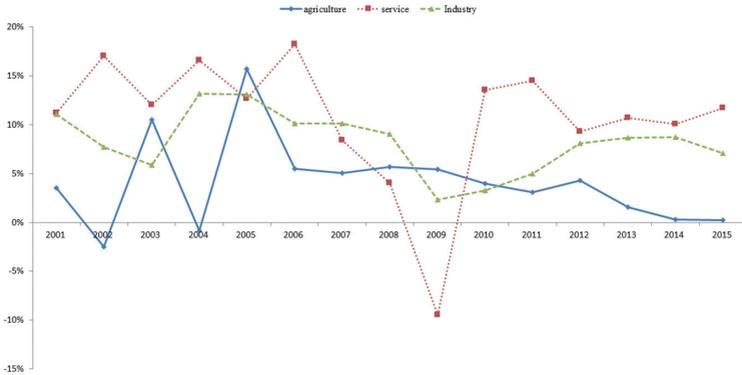


Figure 6.1. Decline in Agriculture Growth

Source: Statista, 2023

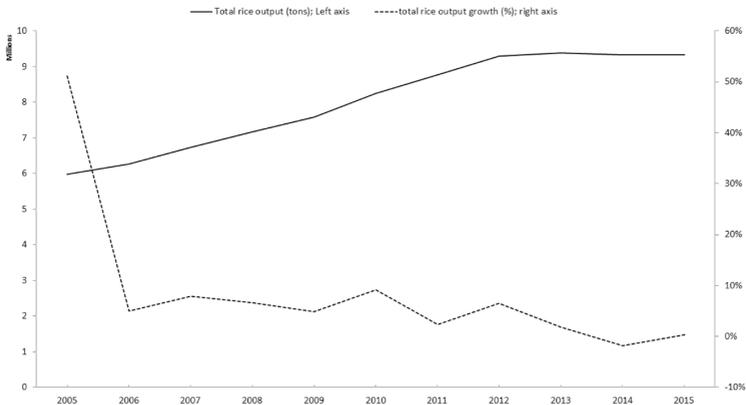


Figure 6.2. Total Rice Output Reached Its Plateau

Source: Ministry of Agriculture, Fisheries and Forestry, 2015

2. Agriculture and Poverty in Cambodia

The agriculture sector in Cambodia was one of the engines of economic growth at least until 2012 and was recognized as the primary

source of poverty reduction in Cambodia as about 90% of the poor in the country live in rural areas. So far, the four engines of growth over the past decades have been agriculture, construction, tourism, and the garment sectors. However, the agriculture sector showed slower growth in recent years. The recent slow growth in the agricultural sector has been a concern for poverty reduction in the future. Agricultural growth declined from an average of 5% to just about 0.2% in the past 4 years (also shown in Figure 6.1). The slow growth may cause many more poor people who live near the poverty line to fall into poverty, and it may also cause the relative price of agriculture product in terms of other industrial products to increase, which could, in turn, destabilize the development of the industrial sector. It was argued that the process of industrialization could be smooth if the so-called “food problem” faced by low-income economies could be avoided. Rapid population growth and high food demand elasticity can result in high food prices, which pull up the cost of living and the wage rates of workers in non-farm sectors and thereby suppress industrialization and overall economic growth (Hayami 2008; Shultz 1953).

Stagnation in the agricultural income of rural households may cause more farmers to leave their farms and therefore future rice production could be reduced. The more rapid growth in industry and service sectors made the agriculture share of the GDP fall from 45% in 1993 to about 30% in 2016 (Figure 6.3). However, the number of agricultural workers in total employment is still the largest among the three sectors. About 48% of the 7.9 million employed workers are in the agriculture sector (Table 6.2).

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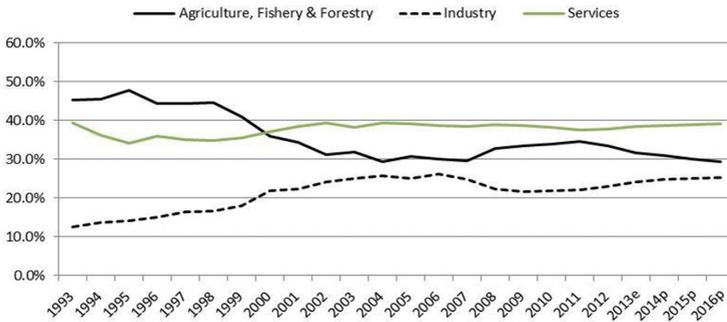


Figure 6.3. Agriculture Share in GDP (at current prices) Continues to Fall.
Source: Statista, 2023

Table 6.2. Employment by Sector

Industrial sector (main occupation)	2004			2007	2008	2009	2010	2011	2012	2013		
	Women	Men	both							Women	Men	Both
Employed population, (thousand)	3,035	3,068	6,103	6,828	6,824	7,469	7,673	7,890	7,706	3,882	4,068	7,951
Agriculture (Primary)	57.1	57.8	57.4	57.7	55.6	57.6	54.2	55.8	51.0	50.0	47.4	48.7
Industry (Secondary)	14.0	12.6	13.3	14.9	15.8	15.9	16.2	16.9	18.6	19.2	20.5	19.9
Services (Tertiary)	28.6	29.5	29.1	27.4	28.6	26.5	29.6	27.3	30.4	30.8	32.1	31.5
Other/Don't know/Not stated	0.2	0.1	0.2	-	-	0.0	0.0	0.0	0.0	-	-	-
Total	100	100	100	100	100	100	100	100	100	100	100	100

Source: National Institute of Statistics of Cambodia, 2015b

The slow growth in the agriculture sector is accompanied by slow growth in the agricultural income of rural households. Looking at the source of income of rural households, it can be seen that income from agriculture was stable, and represented about 24% of total rural household income in 2014. This income from agriculture is lower than income from wages and salaries. The growth of total income of rural households mainly came from a rapid increase in wage and salary income. In 2014, the total income of an average rural household increased by 25% of which 12% came from wages and salaries while agricultural income contributed only about 4% (Figure 6.4). Rural agricultural income was increasing slowly because of many reasons. One

reason could be the high prices of agricultural inputs such as fertilizers, pesticides, seeds, and so on. Most of those inputs were imported. Some farmers bought those inputs on credit with the expectation that they could pay the input sellers when they harvested their crops.

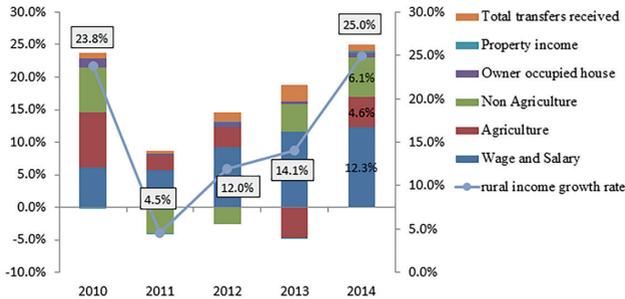


Figure 6.4. Contribution to Total Income Growth of an Average Household in Rural Areas

Source: National Institute of Statistics of Cambodia, 2015b

However, crop prices during the harvest season sometimes were not as high as expected. Therefore, some farmers, mostly small holders, sold their land to pay the debt they owed to microfinance institutions or input sellers and then migrated to work in urban areas or in Thailand or other countries. Another reason is that most farmers were forced to sell their crops during harvest time, even though the price was low at that time, in order to pay their debts. Most farmers had to take on loans, because, in addition to demand for funds to buy agricultural inputs, they also needed to smooth consumption over the year, or to pay for medical costs. Lenders monitored farmers closely to know when they sold crops so that they could collect their funds back. Thus, this reduced the ability of farmers to store their grain and to wait for the high price season to come. Therefore, rice prices in urban areas were so stable for many years, at least until 2011, despite a surge in 2009 due to global food crisis (Figure 6.5). But when we look at the food

price index, which includes many imported items, it continues to surge over a longer period (Figure 6.6). However, the price of food is a double-edged sword. The poor spend a considerable amount of their household income on food. How a given policy affects the well-being of the poor depending on how the wage rate responds to the enhanced opportunities. If the increased profitability of agriculture results in a surge in investment, the productivity of workers will increase, and so will the wage rate. If the wage rate increases by a greater amount than the price, the poor will benefit.

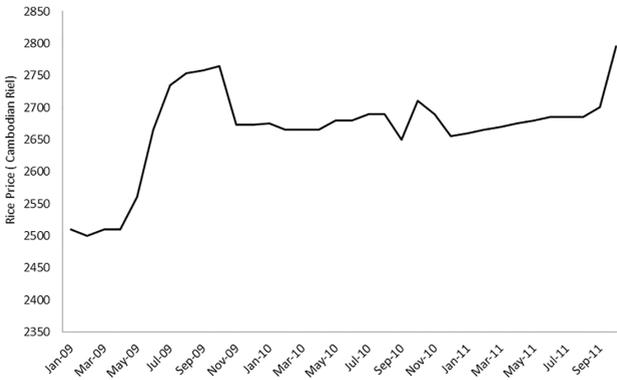


Figure 6.5. Rice Price (Cambodian Riel, 1\$= 4000 Riels)

Source: National Institute of Statistics of Cambodia, 2015a

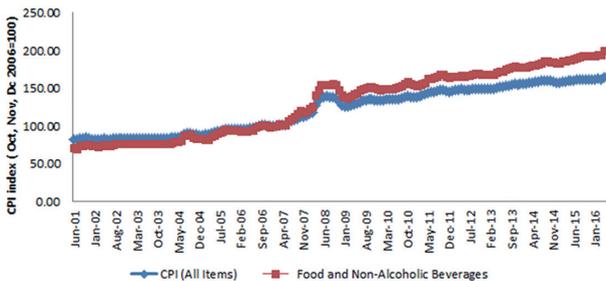


Figure 6.6. Surge in Food Price

Source: National Institute of Statistics of Cambodia, 2015b

The rice sector, which is one of the main sectors in agriculture, has shown stagnation since 2012. Cambodia has achieved a rice surplus for export since 1996, despite some segments of the population including urban poor and landless people continuing to face a food shortage. The total rice surplus reached 2.9 million tons in 2015 (Table 6.3). After the adoption of the government rice policy in 2010, a fairly large number of rice millers have been established for milling rice to export, and as a result, Cambodian milled rice was exported to international markets such as Europe and the US. In 2016, the total quantity of milled rice exports which was officially registered increased to 0.54 million tons from 0.37 million tons in 2013. This export figure is officially recorded by the Ministry of Agriculture, Fisheries and Forestry. A large quantity rice paddy trade was made across borders to neighboring countries. Foreign traders in collaboration with local rice buyers often bought the entire harvest of a rice paddy directly from the farmer's gate. Local rice buyers collected information about when farmers would harvest their crops, and then they negotiated the purchase price with the farmer. But most viewed that buyers had monopoly power to set the price, as they would divide up the regions among themselves, and there were no competitors. The phenomenon of selling low and buying high also happened in Cambodia. Cambodia exported mostly high-quality rice during the harvest season and at times when rice was in short supply, different quality rice was imported.

Table 6.3. Rice Production, Rice Surplus, and Yield

Item	Unit	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cultivated area	ha	2,374,175	2,443,530	2,541,433	2,585,905	2,615,741	2,719,080	2,795,892	2,968,529	3,007,545	3,052,420	3,055,507	3,051,412
Rainy	ha	2,075,646	2,121,591	2,212,015	2,241,114	2,255,104	2,334,228	2,391,016	2,496,569	2,512,038	2,567,723	2,564,572	2,561,957
Dry	ha	298,529	321,939	329,418	344,791	360,637	384,852	404,876	471,960	495,507	484,697	490,935	489,455
Harvested area	ha	2,109,050	2,414,455	2,516,415	2,566,952	2,613,363	2,674,603	2,777,323	2,766,617	2,980,297	2,968,967	3,028,836	3,025,630
Rainy	ha	1,815,619	2,093,564	2,188,726	2,222,596	2,252,733	2,290,552	2,372,519	2,294,784	2,484,832	2,485,521	2,537,976	2,536,175
Dry	ha	293,431	320,891	327,689	344,356	360,630	384,051	404,804	471,833	495,465	483,446	490,860	489,455
Yield	tons/ ha	1.977	2.479	2.489	2.621	2.746	2.836	2.97	3.173	3.117	3.163	3.079	3.085
Rainy	tons	1.725	2.261	2.272	2.413	2.54	2.62	2.76	2.92	2.872	2.925	2.815	2.827
Dry	tons	3.536	3.901	3.938	3.959	4.03	4.126	4.201	4.406	4.349	4.383	4.443	4.422
Total rice output (tons)	tons	4,170,284	5,986,179	6,264,123	6,727,127	7,175,473	7,585,870	8,249,452	8,779,365	9,290,940	9,389,961	9,324,416	9,335,284
Rainy	tons	3,132,581	4,734,300	4,973,694	5,363,690	5,722,142	6,001,385	6,548,709	6,700,439	7,136,139	7,271,251	7,143,521	7,170,684
Dry	tons	1,037,703	1,251,879	1,290,429	1,363,437	1,453,331	1,584,485	1,700,743	2,078,926	2,154,801	2,118,710	2,180,896	2,164,600
Consumption	tons	1,905,896	2,013,533	2,053,983	2,096,025	1,970,270	1,979,214	2,076,542	2,108,022	2,142,178	2,137,878	2,178,050	2,222,078
Surplus (rice)	tons	416,118	1,319,571	1,433,880	1,649,640	2,025,033	2,244,598	2,516,752	2,780,328	3,031,017	3,090,452	3,013,783	2,975,809
Surplus (paddy)	tons	650,184	2,061,830	2,240,438	2,577,562	3,164,114	3,507,185	3,932,425	4,344,263	4,735,964	4,828,832	4,709,036	4,649,702

Source: Ministry of Agriculture, Forestry and Fisheries, 2015

The slowdown in rice production resulted from the decrease in yield and slow growth in rice cultivated areas (Table 6.4). Over the 2004–2015 period, the average annual growth of yield per hectare was 4.1% and 3.3% for cultivated areas. However, when we look at the shorter 2010–2015 period, the average annual growth of yield per hectare was -0.7% and 2.2% for cultivated areas. Productivity or yield decrease is influenced by two main factors, mechanization and the concentration of the land in the hands of the better farmers. When many farmers migrated to work in urban areas or in other countries, wages in rural areas started to increase, and farmers started to use tractors or harvesting machines to replace farm workers. Some migrant farmers also sold their land to better farmers or if they did not sell, they spent less time taking care of their crops. Greater concentration of the cultivated areas leads to an increase in hired labor in rice cultivation. However, hired labor suffers from problems of adverse selection and moral hazard, problems that do not affect family labor, where members are residual claimants on the fruits of their work efforts (De Janvry and Sadoulet 2016). Now, mechanization has been implemented at almost all stages of the rice cultivation process from ploughing land to harvesting rice. Although mechanization varies across provinces, about 76% of rice fields are ploughed by tractors. Figure 6.7 seems to show a negative relationship between rice yield per hectare and the percentage of land ploughed by tractors. Using a tractor can be less productive than using traditional methods because the land quality resulting from ploughing by tractor is worse.

Table 6.4. Decomposition of Rice Production Growth

	2004–2015	2004–2010	2010–2015
Average annual yield growth	4.13	7.02	(0.70)
Average harvested area growth	3.34	4.69	2.26
Total rice output growth	7.60	12.04	1.55

Source: Ministry of Agriculture, Forestry and Fisheries, 2015 and Author's calculation

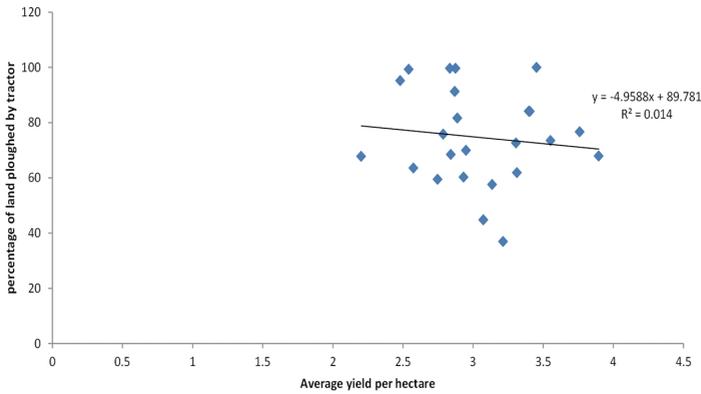


Figure 6.7. Mechanization and Yield

Source: Ministry of Agriculture, Fisheries and Forestry, 2015

The recent decline in rice prices in international markets caused some rice millers which were springing up across many provinces after the adoption of rice policy by the government in 2010 to go bankrupt. Rice millers have a facility to store rice in their warehouses. Some rice millers borrow funds to buy paddy for storage. The government provided subsidies in the form of a lower interest rate than the market rate to rice millers. The Rural Development Bank, with support from government subsidies provided loans at lower interest rates to millers. However, many millers still cannot get this low-interest loan as it is so limited, so the rationing mechanism of the loan was through connection or relationship with the lenders. Many rice millers complained about high interest rates on loans from banks or microfinance institutions. For a large loan, a bank charged an interest rate of about 10%.

The huge migration from rural to urban areas and to other countries such as Thailand, Korea, and Malaysia may cause a severe labor shortage in the agricultural sector. The main reason for migration is to

find work (Figure 6.8). The garment, construction, and tourism sectors in urban areas which are mainly supported by foreign direct investment, help release surplus labor from the agricultural sector. Wages in investor host countries such as China, Hong Kong, and Korea are higher, and investors in those countries avoided high labor costs by exporting their capital to countries where there is still abundant labor at a subsistence wage. The garment sector, which is the main industry sector, has absorbed mostly female workers from rural areas. The number of garment factories has grown from 20 in 1995 to 742 in May 2014. Moreover, the total employment in the industry (textile, non-textile, and footwear) increased from 18,700 in 1995 to 681,182 workers in May 2014. The total monthly wage payment for all garment workers reached US\$93,707,224.90 for May 2014. On average, a worker received US\$137.5 /month in May 2014.

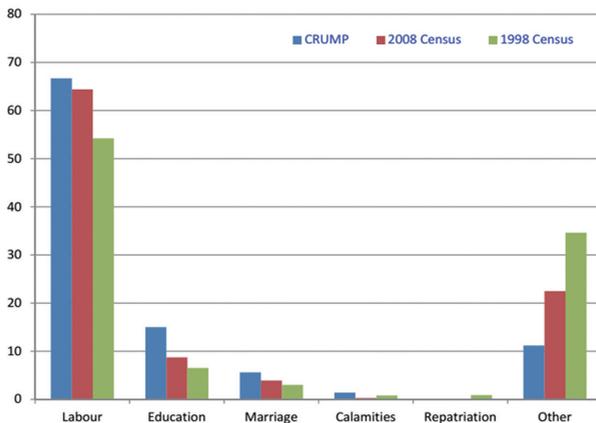


Figure 6.8. The Causes of Migration
Source: Ministry of Planning, 2012

The wage rate in the garment sector remains relatively low, but it continues to increase in nominal and real terms. The garment workers were successful in demanding better working conditions and a higher minimum wage, which was previously believed to be too low and even below the subsistence level, through tripartite negotiation of a body consisting of representatives from the Ministry of Labor, employer associations, and trade unions. The basic minimum wage increased from US\$40 in 1997 to US\$140 in 2016 (Figure 6.9). Considering an average meal in the capital of Phnom Penh, which costs US\$3, the total payment for 90 meals in one month should be US\$270. In addition to the monopsony power of labor unions, the increase in wages in the garment sector can be attributed to the increase in migration to foreign countries, which leads to a speedy shortage of surplus labor with zero marginal product of labor in the agricultural sector. Lewis (1954) argued under the assumption that the subsistence sector consists of peasants producing food, while the capitalist sector produces everything else, industrialization is dependent upon agricultural improvement; it is not profitable to produce a growing volume of manufactures unless agricultural production grows simultaneously. Because the expansion of the industrial sector (capitalists) increases the demand for food, raises the price of food in terms of capitalist products, and so reduces profits and capital accumulation. The increase in price of rice can be good for net rice sellers who are farmers, but it cannot be good for industry development.

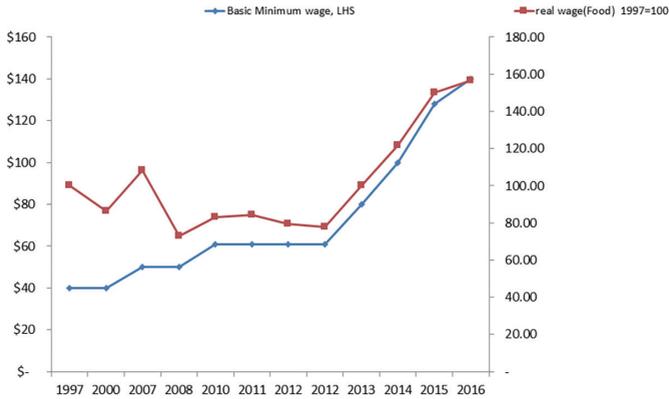


Figure 6.9. Real Wage and Nominal Wage in Garment Sector

Source: International Labor Organization (ILO), 2016 and Author’s calculation

Rice yield per hectare in Cambodia is low compared to other countries and varies across provinces and seasons and with farm size. The average yield in Takeo province was 3.9 tons per hectare compared to 2.2 tons in Ratanak Kiri province. The average yield in the dry season was 4.4 tons per hectare, while it was 2.8 tons per hectare for the rainy season in 2015. Cross-provincial data from 24 provinces in Cambodia also suggests a negative correlation between farm size and yield per hectare (Figure 6.10). Figure 6.10 shows a negative relationship between average farm size and average yield in each province without controlling the difference in land quality. The land quality among those provinces cannot be the same because some farms are located near lakes with water, and some are in highland areas. Rice yield per hectare across provinces is shown in Figure 6.11. If there is an inverse relationship between farm size and land productivity, the land reform is

While some farmers have successfully switched to high-yield varieties and high-valued-added varieties, many farmers are reluctant to use new varieties even though those varieties can provide higher gross margins. Traditional farmers use varieties that have been used for generations, as those varieties are already suited to their soil and the natural water level in their fields. The high-yielding varieties have higher expected yield but also higher exposure to climatic risk. In Cambodia, farmers do not make much use of irrigation systems to adjust water for growing rice, as irrigation systems are very limited. Rice grows largely depending on rainfall. According to the Census of Agriculture in Cambodia 2013, around 32% of the country's agricultural holdings used irrigation in growing their crops. So, farmers do not want to use new varieties that are risky in terms of being too fast or too late to get a yield.

Compared to some African countries, farm size in Cambodia is small; it was about 1.64 hectares per agricultural household in the first agricultural census in 2013, but this is higher than some countries in Asia, such as China, Vietnam, Korea, and Japan. The number of Cambodian normal households is about 3.3 million, with 15.2 million people living in Cambodia as of 2014. Of the 1.87 million agricultural households with separate agricultural land with a total land of 3,267,302 hectares, around 47% had plots of land measuring less than 1 hectare in size. A further 45% comprised agricultural land measuring between 1 and 3.99 hectares. Thus, 90% of Cambodian household agricultural holdings with separate land conducted their agricultural activity on less than 4 hectares of land. A very small number (1.21%) of household agricultural holdings reported separate agricultural land of 10 hectares or more.

There have been opposing views on the economic effects of large farms and small farms. At the beginning of industrialization, large farms were viewed as a good way to advance it, but as countries became more industrialized, small farms were regarded as beautiful. In the 1960s

small farms were regarded as being efficient because they could fully use their resources, particularly family labor, and they could monitor their production activities more closely (Fan and Chan-Kang 2005). In the 1970s and 1980s, however, as many Asian countries moved rapidly toward industrialization and urbanization, small farms were regarded as a major obstacle in this process. In the 1990s, however, “the small is beautiful” view was once again revived. Large farms and input-intensive practices (i.e., fertilizer, pesticides, and machinery) have led to the degradation of natural resources and the environment. When these externalities are considered, large farms may no longer be viewed as efficient.

Land concentration seems to increase when a country becomes more industrialized. The farm size in Japan and Korea became larger when those countries grew more industrialized, as more and more people moved to urban areas (Table 6.5). Land concentration in Cambodia has also been observed recently as some farmers sold their land and migrated to urban areas or other countries because they were heavily in debt and the return from farming was too low. However, the key to social welfare is the pace at which land concentration may occur relative to the labor-absorption capacity of the non-agriculture sectors. If the land concentration is too rapid, displaced farm labor will accumulate in urban slums; if it is too slow, rural poverty will be reproduced, and rural-urban income disparity will grow. Securing the competitiveness of the family farm without excessively rapid land concentration in relation to employment creation in the non-farm economy is thus a necessity for both efficiency and rural welfare (World Bank 2007).

Table 6.5. Farm Size in Selected Countries

Country	Smaller farm	Other farms	Nationally
Niger, 2011	2.63	9.38	4.13

Ethiopia, 2012	1.01	4.18	1.82
Bolivia, 2005	0.89	15.97	1.5
Tanzania,2009	0.9	4.1	1.5
Uguanda,2012	0.7	2.39	1.12
Nepal,2003	0.55	2.63	0.94
Kenya, 2005	0.47	2	0.86
Malawi, 2011	0.46	1.48	0.72
Vietnam, 2002	0.32	2	0.65
Bangladesh,2005	0.24	1.1	0.41
China,* 1999			0.4
Korea,* 1999			1.37
Japan,* 1999			1.5
Cambodia, 2013			1.64

Sources: National Institute of Statistics, 2015a and * from Fan and Chan-Kang, 2005

The rural-urban income disparity has been narrowed down recently. The total income of households in Phnom Penh was about 3.6 times more than the total income of rural households in 2009. This figure shrank to 2.5 in 2014 (Figure 6.12). The main driving force of this convergence in income was a surge in rural wage income which increased about 25% annually over the 2009–2014 period (Table 6.6).

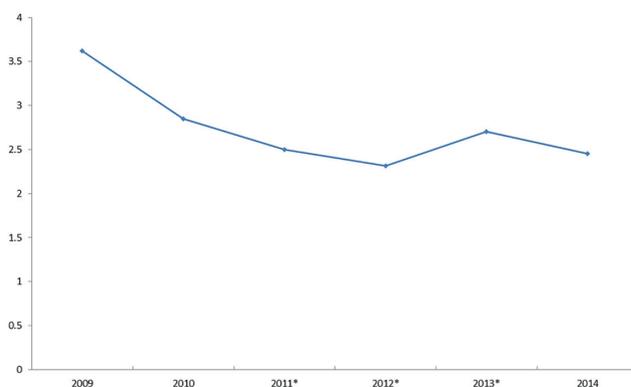


Figure 6.12. Urban-Rural Income Gap

Source: National Institute of Statistics, 2015b

Table 6.6. Household Income Composition in Urban Areas and Rural Areas

Source of income (Value in thousand Riels)	2009	2010	2011	2012	2013	2014	average growth
Phnom Penh							
Primary income	1,986	1,940	1,770	1,847	2,478	2,806	7.2%
Wage and Salary	765	910	991	930	1,135	1,385	12.6%
Self-employment Income	1,203	1,023	769	909	1,326	1,399	3.1%
Agriculture	22	20	8	22	11	27	4.2%
Non-Agriculture	878	650	423	560	935	957	1.7%
Owner occupied house	304	354	338	327	381	415	6.4%
Property income	17	7	10	8	17	22	5.3%
Total transfers received	54	47	50	40	38	50	-1.5%
Total Income	2,039	1,987	1,819	1,886	2,517	2,856	7.0%
Total transfers paid	24	44	26	17	19	20	-3.6%
Disposable Income	2,016	1,944	1,793	1,870	2,498	2,836	7.1%
Rural							
Primary income	550	679	707	784	878	1,101	14.9%
Wage and Salary	167	202	241	309	403	518	25.4%
Self-employment Income	382	476	465	474	474	580	8.7%
Agriculture	189	237	253	276	237	280	8.2%
Non-Agriculture	152	190	162	143	178	235	9.1%
Owner occupied house	41	49	50	55	59	65	9.7%
Property income	2	1	1	1	1	3	8.4%
Total transfers received	13	18	21	32	53	62	36.7%
Total Income	563	697	728	816	931	1,163	15.6%
Total transfers paid	10	21	16	3	3	8	-4.4%
Disposable Income	554	676	713	813	928	1,155	15.8%
Income gap (Phnom Penh/Rural)	3.64	2.87	2.52	2.30	2.69	2.46	

Source: National Institute of Statistics, 2015b

Despite a sharp increase in salaries and wages in rural areas, the agricultural income of households remained stable (Figure 6.13). The wage income in Phnom Penh increased only 12.5% per year over the same period. The gap in household wage income between Phnom Penh

and rural areas decreased to 2.7 in 2014 (Figure 6.14). In addition, according to a study by the World Bank in Cambodia, for 1 hectare under cultivation, farmers had a gross margin of US\$296 for dry season rice, and US\$245 for wet season rice (Eliste and Zorya 2015). The gross margin here is defined as gross revenue less intermediate inputs and hired labor. This phenomenon suggests that the labor in rural areas has become scarce, and to attract more labor to work in the industry sector, wages must be increased to a level higher than the subsistence level. The “Lewis turning point” takes place and the labor supply curve becomes positively sloped as modern-sector wages and employment continue to grow.

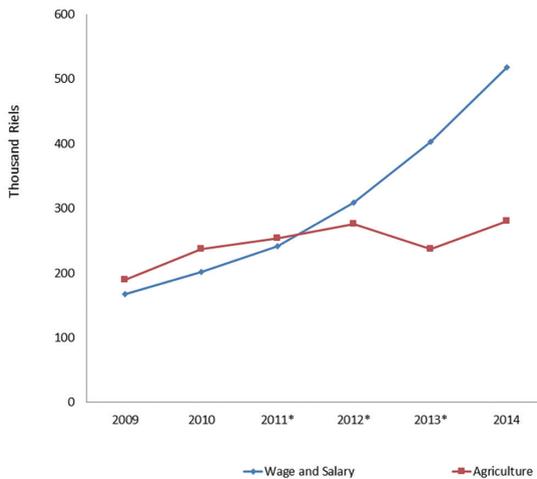


Figure 6.13. Household Agriculture Income and Salary Income in Rural Areas

Source: National Institute of Statistics, 2015b

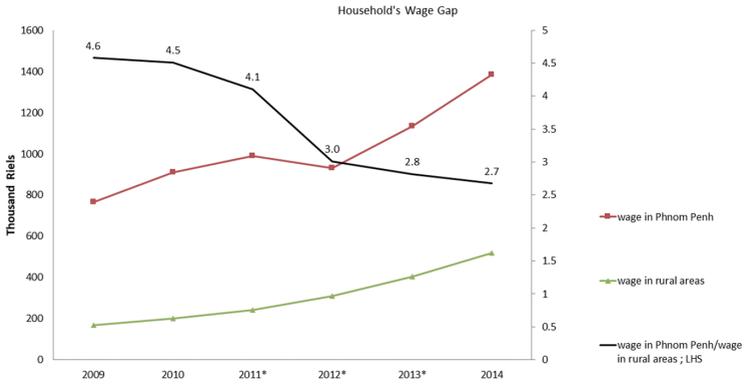


Figure 6.14. Rural-Urban Wage Gap Shrank
 Source: National Institute of Statistics, 2015b

3. Policy Implications

At the early stages of development, agricultural growth is the main engine of poverty reduction because most of the poor are in rural areas. Supplying food at reasonable prices to the industrial sector makes industrialization possible, and the growth also helps agriculture itself to continue to prosper. However, after 2012, the Cambodian agricultural sector, including rice production, became stagnant. This can be a concern for industrialization and poverty reduction in the country, and in the worst case it may drag poor people who live just above poverty line down into poverty. The following are policy recommendations to overcome this problem:

- Improving rice yield to increase the income of agricultural households while maintaining rice price stability to stabilize development of the non-agriculture sector. Since there is market failure due to positive externalities in developing high-yielding varieties, the public sector should work more on developing

- new rice varieties that meet the demand of international markets.
- Maintaining a private sector-friendly agricultural policy environment, with added attention to lowering the regulatory burden in farm input sectors to lower the cost of production. The private sector should be encouraged to participate in providing high-yielding seeds and fertilizers on a competitive basis.
 - Continuing to develop the agribusiness and agro-processing industry to curb the export of unprocessed rice and to maintain reasonable prices for farmers through the development of storage facilities.
 - Providing a mechanism for farmers to take the risk of using new high-yielding varieties by providing clear guidance about growing techniques, timing of receiving yields, etc.
 - Providing clearer information about job markets available outside farming in the industrial sector, so that labor cannot be thrown into slum areas in urban areas or become unemployed for a long time in rural areas. The speed of land concentration can be well adjusted.
 - Promoting trade in agricultural products, in particular, rice, with other trading partners.
 - Improving irrigation and transportation systems to reduce transportation costs.
 - Promoting land-saving technological innovation favoring smallholder farming. Because many farmers have little land, smallholder farmers need access to land-saving technological change. This includes farming systems for high-value crops and agro-ecological production techniques, with low use of purchased inputs if they have liquidity constraints.

- Encouraging farmers to acquire financial literacy to understand more about the costs and benefits of borrowing to avoid an over-indebted situation. Some farmers are forced to sell their land to pay their debts because the funds they borrowed were not well utilized in productive agriculture.
- Providing more short-course vocational training at the farm level to farmers about job markets in the industrial sector or in foreign countries, so that they could be ready to work without being unemployed while searching for a job in urban areas. Most Cambodian farmers, as well as employed workers, do not have a high level of education, as they do not finish primary school. About 65% of rural employed workers had an education below the primary school level in 2012 (Table 6.7).

Table 6.7. Education Level of Employed People

Unit: person	Cambodia	Urban	Rural
Total	7,197,416	1,783,646	5,413,770
	In percentage (%)		
None	12.5	5.8	14.7
Primary	44.9	31.8	49.2
Secondary	35.5	44.1	32.7
Vocational	3.3	6.9	2.2
University	3.8	11.4	1.2

Source: National Institute of Statistics, 2023

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6. Dr. Hay CHANTHOL



Chapter 6. Agriculture and Poverty Reduction in Cambodia: The Role of Rice Yield

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