

Impact of Internal Migration and Other Significant Factors on Improving Labor Productivity of Agricultural Sector

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Abstract

Escalated amount of studies are being carried out by various scholars from different disciplines to estimate the extent to which labor productivity and its impact on various economic and social aspects. Primarily this study focuses on examining the relationship between labor productivity and internal migration in Sri Lanka for last 10 years. Based on the significance of the factors on labor productivity, production function was developed for the agricultural sector. Factors that are making impact on the migration are recognized based on the internal migration function. Indirect elasticity was used to analyze the bond between agricultural sector labor productivity on internal labor migration. Data were collected from secondary sources pertaining to labor productivity and internal migration during last thirty years and primary data were collected through focus group discussions. Research finding indicates that the literacy, usage of fertilizer and pesticide and production methods have significant impact on the agricultural sector productivity. Additionally wage dissimilarity and age structure has momentous impact on internal migration from rural to urban. Further it is clearly indicated that the equal distribution of power and resources and reduction in economic discrepancy among provinces could be used as tools in controlling the internal labor migration. However fair distributions of the value addition made by the agricultural sector among contributors assume to be much poor and it is considered as one of the major requirement expected by the agricultural sector participants. Improvements in the nature and the quality of the product would be substantially important for the successful addressing the internal migration issue.

Key Word: Labor, Migration, Productivity, Rural, and Urban

Introduction

Sri Lanka is considered as an agricultural economy with long standing history. At the time of the independence from British Empire in 1948 strong export oriented agricultural sector and subsistence agricultural sector exist. Over 60% of the workforce engaged with the plantation and cultivation industry. Statistics indicates that economic liberalization did not boost any significant growth in to the agricultural sector where as it has given major contribution to the secondary and service sectors. As per the central bank facts records 2.7% Annual growth rate over the period of 1977 to 2009 while other sectors attained over 5%. Sri Lankan agricultural sector predominantly experienced certain major structural issues to scale down its contribution for the gross domestic production (GDP) from 38% to 20% during last 20 year period. On the other hand agricultural sector importance for the national income figures has gone down to 12% from the stand of 40% since independence. More importantly working population engaged with the agricultural sector has reduced to 43% of the total population from 55% (FAO, 2009). Researchers argue that such decline in the agricultural sector is due to certain inherited and internal shortcomings, where major changer in the labor force is due to internal and sector based migration of labor from agriculture to other well paid labor intensive industries. (Todaro, 2009). It is further argued that rural urban migration is one of the facts that have major influence on the agricultural performance since rural workers tent to compare income generated from agriculture with income that can be generated from work engagements in cities. In order to support this view Todaro and Harris (1970) hypothesizes that rural urban migration in developing county as a function of the difference between the expected wage from migration and agricultural wage. Such expected wage is similar to the urban wage that can be obtained from the industrial or service sector engagements. Additionally, Goldsmith (2002) insists that such expected wage has similarity with probable monetary wage that can be extracted from industrial job from urban sector.

There is an average urban population growth of 6.8% recorded during the period of 1975 – 2005 in Sri Lanka while south Asian regional population has grown at an average of 4.2% (Hugo, 2007). United Nations Report on South Asia (2008) depicts that the major changes in the urban population is manly due internal migration where it is estimated probable urban population growth by 2015 as 10,025 million compared to 21.451 million total population in Sri Lanka. Additionally it is anticipated that the total urban land coverage to be 932,400 hectares which is 19.4% of the total land extent of the country by 2015 in Sri Lanka

(Indrasiri, 2005). According to the statistics of department of census and statistics (DSS), it is clearly indicated that urban population in western province drastically changed. As per the global report on human settlement (2009) urban rural migration could constitute major urban sector based problems such as domestic and social valance, urban unemployment, environment deprivation, poor health and standard of living, sense of insecurity among people. Further it has emphasis that there are major dilemmas experienced by the urban local authorities in city planning and controlling the population due to unplanned settlements especially in town and critical reservations. Such could restrict authorities to enhance infrastructural facilities thus the poor living conditions. As evidence to the UN report, DSS 2008 survey designate that the urban unemployment as 13.5% where rural unemployment is 19.5%, which is amounted to significant difference compared to the world standings. Even age based unemployment analysis indicates rural sector unemployment as predominantly lower (bandara, 1996). According the Ministry of public administration and home affairs extensive capacity to generated government employment opportunities has regarded as stumpy. There are serious strategies articulated by various researchers to mitigate rural urban migration specially Todaro (2009), Stiglitz (1969), Byerlee (1974) and Sobot (1979) suggesting the possibilities of reducing such migration through the per capita earning in rural sector (Goldsmith, 2001). With such perspective this paper attempts to recognize and analyze the relationship between agricultural production and the rural urban migration.

Methodology

Study is conducted based on the deductive method where Data were collected with special emphasis on secondary data available with the Urban Development Authority (UDA) central bank of Sri Lanka – center for banking studies, Department of census and Statistics Hector Kobbakaduwa Agriculture Research and Training Institute (HARTI) and the Food and Agriculture Organization (FAO) for the respective period (2005-2010). The research is intended to study the relationship between agricultural production and the rural urban migration through the development of functions, agricultural production function and migration function to elucidate urban rural migration.

Production Model

It is generally considered that the level of agricultural output as a function of variable and available factors of production (Labor, Land and capital), education level and availability of fertilizer and machinery for agricultural activities.

$$Y = f [L, LA, E, C, F, M]$$

Y = Agricultural sector output

L = Labor

LA = Land

E = Education Level

C = Fundamental capital

F = Fertilizer

M = Machinery

Migration Model

As it is highlighted in the literature rural urban migration take place mainly due to the wage difference in rural agricultural sector and the urban industrial sector. In addition to that statistics indicates that rural urban migration has become major trend among youth, whereas age included in the model,

$$M = [WD, A]$$

Additionally,

$$WD = (Y_u / P_u) / (Y_a / P_a)$$

M = Rural urban migration

WD = Wage difference ratio

Y_u = Urban out put

P_u = Urban population

Y_a = Agricultural output

P_a = Agriculture centered labor population

A = Age structure

Derivation of Indirect Elasticity

In par with the Goldsmith et al, (2002) elasticity derivation, agricultural sector impact on labor migration is derived,

$$\eta_{M X_i} = \eta_{W, WD} \times \eta_{Y_a X_i}$$

Additionally,

$\eta_{M X_i}$ = indirect elasticity of rural urban migration in relation to factor X_i

Linear-linear, linear-log and Cobb Douglas functional model were used estimate the agricultural population function for the research. Special attention is given to the Cobb Douglas function in order to interpret based on the supper R² where significance parameter is being designated as Pr < 0.05. In relation to the agriculture production model (Table 1) it is found that the labor force coefficient as significant whereas 1% increases in the basic labor force usage would enhance the agricultural production at least by 1.3%. Labor engage in the agricultural sector is generally considered as unfortunate since they do not nave bargaining power in relation to their own labor. In other words external and market factors having the capacity to dictate all sort of terms in agriculture related labor market. Basically there are couple of reasons behind this, initially the when there is an extensive increase in the cost of

labor for the capital intensive production where one could shift in to labor intensity in to the production. Subsequently the output prices are substantially higher than that of the labor in use firms may intend to utilize more labor in to production. However in the migration model (Table 1) wage ratio is considered as somewhat significant and the level of elasticity rural urban migration is denominated as 1.3. In other word every 1 % change in the urban rural wage ration could make positive or negative impact on the labor migration by 1.3%. Further it depicts that there is a major wage differences in rural sector agriculture and urban sector is comprised with industrial and services sectors.

Table 01 – Regression Results

Agricultural Production Model			Migration Model		
Variables	Coefficient	Probability	Variables	Coefficient	Probability
Constant	11.226	0.113	Constant	-24.357*	0.000
Labor – L	1.322*	0.022	Wage difference ration (WD)	1.350*	0.004
Land _ LA	-0.177*	0.038	Age Structure - A	2.257*	0.000
Literacy – E	1.57**	0.06			
Capital – C	0.017	0.109			
Fertilizer – F	0.106*	0.037			
Machinery - M	0.020**	0.067			
Adjusted R ²	0.988		Adjusted R ²	0.903	

*Significance at 5%

** Significance at 10%

Additionally such analysis elaborates that increase of demand for the urban worker could result in the increase in the rural urban migration rates. Such increase in the demand for labor in the urban would result in the increase in the wages in industrial and services sectors. This is clearly confronted with the results reported by central bank in 2005 – 2010. As per the central bank provincial GDP analysis there are three major sectors recognized.

Table 2 – Average Per-Capita Income 2005 - 2010

Sector	GDP %	Per-capita Income (USD)
H	49	1455
M	36	607
L	15	492

Source: Central Bank (2005-2010)

H – Western province where half of the country’s GDP is generated.

M – Central province (CP), North western province (NW), Sabaragamuwa province (SAP), Southern province (SP) each had contributed more than 5% over last 5 years.

L – Eastern province (EP), North central province (NCP), North province and Uva province (UP) had contributed less than 5% to the GDP during last 5 years.

As per the analysis (Table 2) it is undoubtedly observed that there is a significant disparity among three sectors in relation to the per capita income. Average per capita for sector H record as average of \$1455 which can be recognized as greater than that of developing countries in the region (Central Bank, 2010). Such deficiencies in the income distribution and other economic movement, one can observe that there is a greater importance for the industrial and services categories in the sector H which could lead to the higher per-capita income level. Invariably lower magnitude of such categories in the sector L resulted in lower per-capita for individuals.

Table 3 – Share of Categories in Sectors

Sector	Agriculture %	Industrial %	Services %
H	9.7	57.2	33.1
M	57	33	10
L	79.7	10.6	9.7

Source: Central Bank (2005 -2010)

As per the table one effect of land on agriculture has become significant at 5% significant level (Table 01). However its elasticity on agricultural output found to be negative. On the

other hand literacy level has become significant at 10% probability level where 1% increase in literacy level could enhance the output by 1.57%. Institutional influence on the development of the education and awareness among the individual engage with the agriculture could augment the level of output. As it is experience by the develop countries, employability skills at different levels through the training and development activities to be executed with the assistance of modern technology. Knowledge on use of pesticide and fertilizer, different types of developed seeds and techniques needed to be communicated among the agricultural workforce. On the other hand there are many arguments on market orientation among Sri Lankan Farmers, which is assumed to be at the lowers level. Such developments would even leads to reduce the wastages in agro-productions. Effect of the capital has no significant impact for the level of output where very low level of investment by both individuals and government is observed during the period under consideration. This would be mainly due to the civil war and other political conditions and there is a requirement of continuous investment and the resource allocation in agricultural sector for the future is found important. Specially organized establishment for research development and innovation is required where lessons can be learnt for develop countries such as Japan (FAO, 2009). The effect of use of fertilizer in agricultural output amounted to be significant (Table 1). In kontras with the capital fertilizer require only a little attention which is at a considerably low expense. On the other hand government policy of subsidizing the fertilizer for farmers has given evidential justification by the enhancement of level of agro-output. However pattern of usage and the type and the nature of the cultivation could deteriorate the fertility level of soil. The use of machinery in local agro sector has become significant where greater level of investment in agro machineries observed. Such significance in agricultural output illustrates the productivity level in agricultural sector. However increasing prices of power and exchange rate disparities could impact negatively on usage of agro-machines. Age structure of the agro-sector elasticity with the rural urban migration found to be positive and significant (Table 1) where national labor force surveys (2007) indicated that majority of the unemployment is scattered among youth (15-24 years).

As per the indirect elasticity equation, urban rural labor migration has -1.76 indirect elasticity to the labor usage. It explains that the 1% increase in the use of labor could reduce the rural urban migration by 1.76%. Such fact has established by Harris and Todaro (2009) in their previous study. The literacy level has -2.1 indirect elasticity with rural urban migration. Where significant reduction of migration can be constitute through the increase in rural literacy rates while other factors remain constant. Other significant indirect elasticity is

observable in relation to the fertilizer usage. Increase in the fertilizer usage by 1% could enhance the output as well as the individual income where 0.14% reduction in migration could be observable. Finally the lowest indirect elasticity is observed in relation to the machine usage which is constituted as 0.05. Invariably one would observe that the labor usage, literacy level of the rural and the fertilizer usage indicated significant indirect elasticity to the urban rural labor migration while low level of indirect elasticity is imposed by machine usage.

Table 4 – Indirect Elasticity (Xi)

Variable	Indirect Elasticity
Labor	-1.76
Literacy	-2.1
Fertilizer	-0.14
Machinery	-0.03

Conclusion

With the structural conditions of the Sri Lankan economy it has recognized that, advancement of the standard of living in the rural sector to alleviate rural-urban migration as a momentous challenge, especially due to uneven income distribution and infrastructure developments. Generation of regional economic development through sector driven infrastructure augmentation and decentralization can be recognized as the strategies there many of the developed countries have proved their viability through achievements. In such process significant attention on labor, literacy, fertilizer and machine usage required where awareness, training and development, innovation and research and development can be used. This study fundamentally considered few factors where social factors such as belief, attitudes were not taken into consideration and it opens avenue for further research. In the journey with the ultimate target of becoming the miracle of Asia, immediate attention on the findings of the study would ensure smooth and steady economic development.

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